The European University of Post-Industrial Cities

Towards a collaborative approach and structure for engaged research (UNIC4ER)

D3.4 Toolkits for engaged researchers (M18)

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Introduction

Toolkits for engaged researchers mainly aim to assist the professional development of researchers in conducting engaged research projects and enhance their existing knowledge of engaged research methodologies, terminologies, and practices.

The toolkits include a UNIC for Engaged Research Glossary and various written and online sources collected from the consortium members in different languages (English, French, German, Spanish, Croatian, etc.) together with practice insights on engaged research that will be available to the whole UNIC community of engaged researchers through the online platform, which was facilitated in M12 under Microsoft Teams and will be migrated to the UNIC webpage after the launch of Open Science Campus in M24.

This toolkit will be a live source, further developed and enriched through new sources, materials, and practices produced via UNIC partner institutes, researchers, and their collaborative initiatives.

Content of the Toolkit

- UNIC for Engaged Research Glossary: various terms, concepts, and methodologies about research and engaged research are defined and collected together in one document, with relevant links and practices. With this glossary, a shared understanding of engaged research and other related methodologies is aimed to be achieved among the community of UNIC researchers.
- Research-related guidelines and documents produced by UNIC institutes: These sources, which were gathered from the UNIC member institutes, will be made available to all researchers in UNIC.
- Practice insights: Best practices from UNIC institutes on engaged research

Dissemination of the Toolkit via UNIC Tools

The sources under the toolkit, together with the UNIC for Engaged Research Glossary, will be made available to the whole UNIC community of engaged researchers through the online platform, which was facilitated in M12 under Microsoft Teams and will be migrated to the UNIC webpage after the launch of Open Science Campus in M24.

Future Steps

- Awareness about the toolkit will be made and enhanced through the communication sources of UNIC and internal sources.
- Workshop(s) on embedding engaged research into teaching and learning will be used to enhance knowledge of engaged research methodologies and practices.

- The glossary and the toolkit will be considered a live folder, enriched with new materials and methodologies when available.

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UNIC/UNIC4ER Glossary of Useful Terms for Researchers		
Term	**Description**	**Useful links**
Action Learning Research	Action Learning is a strategy utilised by members of a community or an organisation to tackle real life problems by reflecting on their experience as members of that grouping and collaboratively arriving at solutions. It represents a commitment to learning in an active way that emphasises openness and synergy, while taking into account the specific contextual circumstances of the community that is using the approach. Action learning becomes action learning research when the lessons learned by that community are added to the existing store of knowledge for use by others.	Irish Univerities Association (Campus Engage) and Irish Research Council. 2016. Engaged Research for Society and Higher Education: Addressing Grand Societial Challenges. Together. 104pp. https://research.ie/assets/uploads/2017/07/FINAL-JAN-16_ER-Report-2016-Jan-v2.pdf
Action-Oriented Research	The purpose of Action-Oriented Research is to generate knowledge that can be used to address practical concerns of local communities, organizations, and groups and incorporate local understandings of specific practices and issues into projects that usually have some type of change (individual, social, organizational) as an ultimate goal.	Irish Univerities Association (Campus Engage) and Irish Research Council. 2016. Engaged Research for Society and Higher Education: Addressing Grand Societial Challenges. Together. 104pp. https://research.ie/assets/uploads/2017/07/FINAL-JAN-16_ER-Report-2016-Jan-v2.pdf
Arts Based Research	Research methodologies that fall under the umbrella of 'Arts-Based' are, to varying degrees, artistic in nature and guided by art forms that are traditionally not associated with academic inquiry. Some examples of such art forms include short stories, essays, theatre, poetry or the performing arts. Arts-based research does not aspire towards certainty in the form of robust findings but rather aims to achieve an enhancing of perspectives. It is often conducted on activities at the intersection of the artistic and educational spheres, with a view to questioning accepted common sense and taken-for-granted notions.	Irish Univerities Association (Campus Engage) and Irish Research Council. 2016. Engaged Research for Society and Higher Education: Addressing Grand Societial Challenges. Together. 104pp. https://research.ie/assets/uploads/2017/07/FINAL-JAN-16_ER-Report-2016-Jan-v2.pdf
Challenge-based learning	The UNIC CTL group advises to understand CBL as an umbrella term that covers many student centered approaches that are to a certain extent similar (e.g. 'Impact Learning' at EUR; 'capstones or project-based and case-based courses at different levels' at Koc; specific forms of problem-based learning elsewhere), because it is required to build on existing practices. In the context of UNIC/UNIC4ER,it is suggested to introduce the term CBL in connection with the UNIC City Labs approach. The CTL group concluded that a common denominator is visible under the CBL umbrella: a) students work in small groups on 2) actual problems in 3) collaboration with non-university partners and 4) teachers do not just deliver knowledge, but operate as (well informed) facilitator.	Contact UNIC CTL group: astrid.tan@rub.de
Citizen Science	Citizen Science is the inclusion of public research beneficiaries in the scientific research process by asking questions, collecting and/or analysing data as part of a scientific project. Citizens are actively engaged in scientific work, and research is being done with citizens and not just for them. Citizen Science projects are regularly started and supervised by professional scientists and are carried out for research that lends to geographically dispersed contributions, including environmental observation work, or work that does not necessarily involve professional knowledge.	Irish Univerities Association (Campus Engage) and Irish Research Council. 2016. Engaged Research for Society and Higher Education: Addressing Grand Societial Challenges. Together. 104pp. https://research.ie/assets/uploads/2017/07/FINAL-JAN-16_ER-Report-2016-Jan-v2.pdf
Citizen Summit	A Citizen Summit is an engagement method used to find out the citizens' attitudes about political priorities and possible action to address societal issues. The objective of the method is to provide advice, tacit knowledge and inspiration for the political decision making process. A summit can provide indication about citizens' outlooks, and necessitates some degree of commitment to action by the policymakers. The format includes a public assembly, and combines discussions in groups with collective decision making through voting. More often than not communication technologies, such as electronic voting, or online surveys facilitate debates. It is important to get the best representative spread of gender, age, and employment status.	Irish Univerities Association (Campus Engage) and Irish Research Council. 2016. Engaged Research for Society and Higher Education: Addressing Grand Societial Challenges. Together. 104pp. https://research.ie/assets/uploads/2017/07/FINAL-JAN-16_ER-Report-2016-Jan-v2.pdf
Collaborative Inquiry	As the title would suggest, Collaborative Inquiry is a participatory, action-based form of research that aims to improve practice and add to knowledge. Adopting this approach requires that the traditional distinction between researchers and subjects be broken down, with the latter becoming co-investigators in the inquiry and the former a full participant in the activity that they are analysing, rather than an external observer. The team engages in a process of collaborative reflection with the goal of answering their project's overall research question.	Irish Universities Association (Campus Engage) and Irish Research Council. 2016. Engaged Research for Society and Higher Education: Addressing Grand Societial Challenges. Together. 104pp. https://research.ie/assets/uploads/2017/07/FINAL-JAN-16_ER-Report-2016-Jan-v2.pdf
Community Action Research	Community Action Research refers to collaborative knowledge creation, which is generally initiated with the intent of implementing significant organisational change. It is regularly applied to corporations' attempts to develop organisational learning, meaning the 'learning community' is often composed of corporate representatives, senior consultants, researchers and academic faculty. Despite utilising a different connotation of 'community', the 'learning community' concept put forward by Community Action Researchers is similar to the 'learning partnership' concept favoured by emancipatory researchers, who are more concerned with oppressed minorities.	Irish Univerities Association (Campus Engage) and Irish Research Council. 2016. Engaged Research for Society and Higher Education: Addressing Grand Societial Challenges. Together. 104pp. https://research.ie/assets/uploads/2017/07/FINAL-JAN-16_ER-Report-2016-Jan-v2.pdf
Community-Based Learning & Teaching	A credit-bearing educational experience in which students participate in an organised service activity that meets identified community needs and reflect on the service activity in such a way as to gain further understanding of course content, a broader appreciation of the discipline, and an enhanced sense of civic responsibility (Bringle and Hatcher, 1995, p. 112). Community-based learning is therefore a teaching methodology that combines classroom instruction, community service, student reflection and civic responsibility. A key element of community-based learning is mutual benefit for students, academics, the university and the community involved.	European Commission, Directorate-General for Education, Youth, Sport and Culture, Farnell, T., Community engagement in higher education : trends, practices and policies : analytical report, Publications Office, 2020, https://data.europa.eu/doi/10.2766/071482
Community-Based Research	Any research partnership of researchers and community members that is formed with the aim of solving a social problem or creating social change can be described as Community-Based Research (CBR). CBR projects can adopt multiple approaches and methods but share the common characteristic that the impetus for influence over the research comes from the community and not the external researcher. CBR has its origins in service learning projects in the United States in the 1980s, where academics who had grown up with the activism of the 1960s attempt to develop teaching programmes that would reinvigorate a sense of civic engagement in their students.	Irish Univerities Association (Campus Engage) and Irish Research Council. 2016. Engaged Research for Society and Higher Education: Addressing Grand Societial Challenges. Together. 104pp. https://research.ie/assets/uploads/2017/07/FINAL-JAN-16_ER-Report-2016-Jan-v2.pdf
Community engagement	Community engagement is a process whereby universities engage with external organisations to undertake joint activities that can be mutually beneficial, even if each side benefits in a different way (Benneworth, 2018, p.17). This definition reflects a point that is strongly emphasised in the literature: that the principle of mutual benefit is central to community engagement (Sandmann, 2008; Benneworth et al., 2009; Goddard et al., 2016; Brown University, n.d.; Benneworth et al., 2018; NCCPE, n.d.[b]).	European Commission, Directorate-General for Education, Youth, Sport and Culture, Farnell, T., Community engagement in higher education : trends, practices and policies : analytical report, Publications Office, 2020, https://data.europa.eu/doi/10.2766/071481
Community Empowerment Research	This is a kind of research that has, as one of its objectives, the empowerment of the community upon which it is wholly or partially focused. Community Empowerment can come in many forms, such as boosting employment in an area or improving access to education in a district.	Irish Univerities Association (Campus Engage) and Irish Research Council. 2016. Engaged Research for Society and Higher Education: Addressing Grand Societial Challenges. Together. 104pp. https://research.ie/assets/uploads/2017/07/FINAL-JAN-16_ER-Report-2016-Jan-v2.pdf
Community Service Learning	This is an educational approach that encompasses many different kinds of projects, assigned to students and set by a teacher, lecturer, tutor or agenda-setter in a school, college or university. These activities are informed by a combination of learning goals and community service-orientated objectives, and are a way for an educational institution to provide value to a community. Some examples of Community Service Learning projects include the channelling of student resources towards efforts to achieve social justice or to perform assessments of the needs of certain members of a community.	Irish Univerities Association (Campus Engage) and Irish Research Council. 2016. Engaged Research for Society and Higher Education: Addressing Grand Societial Challenges. Together. 104pp. https://research.ie/assets/uploads/2017/07/FINAL-JAN-16_ER-Report-2016-Jan-v2.pdf
Community Readiness Model	The Community Readiness Model is strategic in nature and sets out to assess a community's ability to respond to certain challenges. This model can also be extended to the creation and provision of strategies to help improve a community's readiness to deal with those challenges. Examples of issues for which a community's readiness can be tested include changes in a community's health requirements or behaviour.	Irish Univerities Association (Campus Engage) and Irish Research Council. 2016. Engaged Research for Society and Higher Education: Addressing Grand Societial Challenges. Together. 104pp. https://research.ie/assets/uploads/2017/07/FINAL-JAN-16_ER-Report-2016-Jan-v2.pdf
Community-University Partnerships	Community-University Partnerships emerge from engagement between a university and community representatives, such as residents organisations, social service workers or healthcare providers. The aim of these programmes is to contribute towards the development of the community in some way. The partnership consists of research programmes, which are conceived, designed and implemented by both the university and the community. Examples of such projects could include the development of strategies to tackle elder abuse or assessments of the healthcare needs of certain disadvantaged groups.	Irish Univerities Association (Campus Engage) and Irish Research Council. 2016. Engaged Research for Society and Higher Education: Addressing Grand Societial Challenges. Together. 104pp. https://research.ie/assets/uploads/2017/07/FINAL-JAN-16_ER-Report-2016-Jan-v2.pdf
Delphi Method	The Delphi Method is an iterative survey method that enables anonymous, systematic refinement of professional opinion to arrive at a consensual agreement. This generates discussion and enables a judgement on a specified topic so that policy decisions can be taken to represent a given group's wants and views.	Irish Univerities Association (Campus Engage) and Irish Research Council. 2016. Engaged Research for Society and Higher Education: Addressing Grand Societial Challenges. Together. 104pp. https://research.ie/assets/uploads/2017/07/FINAL-JAN-16_ER-Report-2016-Jan-v2.pdf
Emancipatory Disability Research	Emancipatory Disability Research emerged from efforts by disabled scholars to redefine traditional understandings of disability. In particular, they sought to challenge the conventional wisdom that an individual's impairment, whether it be physical, sensory or intellectual, is the primary cause of their 'disability' and therefore the root cause of any difficulties they might have in an economic, political or cultural sense. This field of research often employs the 'Social Model of Disability', which shifts the emphasis away from individual impairments and towards the way the environment can exclude or disadvantage people who are labelled 'disabled'.	Irish Univerities Association (Campus Engage) and Irish Research Council. 2016. Engaged Research for Society and Higher Education: Addressing Grand Societial Challenges. Together. 104pp. https://research.ie/assets/uploads/2017/07/FINAL-JAN-16_ER-Report-2016-Jan-v2.pdf
Emancipatory Research	Taking inspiration from Emancipatory Research, a small number of researchers have sought to mainstream some of its concepts, by developing a more generalized emancipatory research orientation. Emancipatory Research is concerned with the power relations involved in research; and is consciously aware of how these might affect the value placed upon some forms of knowledge over others. It focuses on: the lives and experiences of people historically marginalized; how and why inequities are reflected in asymmetrical power relations; and how results of social enquiry into inequities are linked to political and social action. The emancipatory research paradigm is based on three key fundamentals: reciprocity, gain and empowerment.	Irish Univerities Association (Campus Engage) and Irish Research Council. 2016. Engaged Research for Society and Higher Education: Addressing Grand Societial Challenges. Together. 104pp. https://research.ie/assets/uploads/2017/07/FINAL-JAN-16_ER-Report-2016-Jan-v2.pdf
Engaged research	Engaged research is an overarching term that describes a wide range of comprehensive research approaches and methodologies that share a common interest in collaborative engagement 'with' and 'within' society. Fundamentally committed to academic freedom and the public good, engaged research aims to improve, understand, or investigate issues of public interest where societal partners are active collaborative participants in the research process. It nurtures democratic competencies through participation—from defining research need, to the co-creation of knowledge and equitable and reciprocal knowledge translation to and with society. Committed to sustainability, and inherently transdisciplinary, it explicitly builds awareness of the interconnectedness of our social-ecological systems. Imbued with different knowledge traditions (expertise, practice, experience and wisdom), it is manifestly impactful research that has an emancipatory and transformative social justice orientation—consistently pursuing intersectional understanding towards greater social solidarity, diversity, inclusion and equity.	https://www.campusengage.ie/wp-content/uploads/2022/03/Updated-Final-PBS10581-IUA-Engaged-Research-Planning-for-Impact-Framework-2022-Update_V5.pdf
Joint collaborative intiatives	New partnerships between UNIC alliance members and beyond. The initiatives are recommended to touch upon a challenge defined by UNIC Cities, which were outlined in the Local Engaged Research Roadmaps and are related to e.g., Diversity & Inclusion, Green Cities & Sustainability, Urban Resilience & Transformation, Health & Well-being, Aging Population, Digital Transition through engaged research and aims to co-create knowledge through engaged research. The joint initiatives includes at least two UNIC universities and can include one or more institutions outside of the UNIC consortium. Sample collaborative engaged research initiatives are : Joint project proposals for external funding; Horizon Europe, AMIF, INTERREG, JPI Urban Europe Other external funding sources enabling international partnerships Summer Schools or similar formats Joint publications	
Engaged Scholarship	Engaged Scholarship promotes the interrelationship of learning, research and service by connecting educational institutions with communities through research projects that are mutually beneficial for both parties. The experience of collaborating on a community project is educational and transformative for researchers, while the community gains the advantage of having the resources of a university or college directed towards an identified community objective.	Irish Univerities Association (Campus Engage) and Irish Research Council. 2016. Engaged Research for Society and Higher Education: Addressing Grand Societial Challenges. Together. 104pp. https://research.ie/assets/uploads/2017/07/FINAL-JAN-16_ER-Report-2016-Jan-v2.pdf
Feminist Action Research	Similar to action research, as described earlier in the glossary, Feminist Action Research aims to generate knowledge that can address practical concerns of a community. Unlike action research, however, this approach specifically addresses women's multiple perspectives and attempts to change the conditions of their lives through the pursuit of social justice. Feminist action research scholars in sociology, psychology and family studies have used an array of methods to integrate knowledge and action to promote the political, social, and economic status of women and thus empower women.	Irish Univerities Association (Campus Engage) and Irish Research Council. 2016. Engaged Research for Society and Higher Education: Addressing Grand Societial Challenges. Together. 104pp. https://research.ie/assets/uploads/2017/07/FINAL-JAN-16_ER-Report-2016-Jan-v2.pdf
Indigenous Research Methodology	Indigenous Research Methodology involves analysing the epistemology of a defined indigenous community and then using that analysis to inform a project's research design. This means that instead of merely including the perspective of the subject community in a piece of research, their way of looking at the world actually guides how the research progresses.	Irish Univerities Association (Campus Engage) and Irish Research Council. 2016. Engaged Research for Society and Higher Education: Addressing Grand Societial Challenges. Together. 104pp. https://research.ie/assets/uploads/2017/07/FINAL-JAN-16_ER-Report-2016-Jan-v2.pdf
Knowledge Democracy	Knowledge Democracy can refer to any process of creating, sharing and accessing knowledge outside of the traditional academic routes. Striving for knowledge democracy means embracing multiple ways of knowing, acknowledging diverse, marginalised communities and the provision of accessible knowledge in a broad spectrum of formats. The term can also imply that knowledge should be used to further democratic values and work towards a fairer and more just world.	Irish Univerities Association (Campus Engage) and Irish Research Council. 2016. Engaged Research for Society and Higher Education: Addressing Grand Societial Challenges. Together. 104pp. https://research.ie/assets/uploads/2017/07/FINAL-JAN-16_ER-Report-2016-Jan-v2.pdf
Knowledge Mobilisation	Knowledge Mobilisation refers to the movement of available knowledge into active use, often for the benefit of certain communities or organisations. It involves knowledge sharing between research producers, such as academics or students, and research users, such as a member of a certain community or members of an organisation that represents a community. It has become more prevalent and sought after with the growing popularity of public policies that are based on empirical evidence.	Irish Univerities Association (Campus Engage) and Irish Research Council. 2016. Engaged Research for Society and Higher Education: Addressing Grand Societial Challenges. Together. 104pp. https://research.ie/assets/uploads/2017/07/FINAL-JAN-16_ER-Report-2016-Jan-v2.pdf
Knowledge Translation	Knowledge Translation is the exchange, synthesis and application of new knowledge between researchers and beneficiaries to implement improved and/or more effective services, products, or processes.	Irish Univerities Association (Campus Engage) and Irish Research Council. 2016. Engaged Research for Society and Higher Education: Addressing Grand Societial Challenges. Together. 104pp. https://research.ie/assets/uploads/2017/07/FINAL-JAN-16_ER-Report-2016-Jan-v2.pdf
Organisational Action Research	This is a form of research that places emphasis on understanding how an organisation operates in general, how planned organisational change occurs and what changes can be made to change how an organisation operates for the better. It can often require the researcher to work closely with, or actually participate in the work of, the organisation concerned. Organisational Action Research can become community-orientated when the work of the organisation impacts upon a community, as would be the case, for example, with community development associations, healthcare providers or schools.	Irish Univerities Association (Campus Engage) and Irish Research Council. 2016. Engaged Research for Society and Higher Education: Addressing Grand Societial Challenges. Together. 104pp. https://research.ie/assets/uploads/2017/07/FINAL-JAN-16_ER-Report-2016-Jan-v2.pdf
Participant Action Research (PAR)	Participant Action Research is a type of applied social research where, typically, people concerned with the organization under study team up with professional researchers to design projects, gather and analyse data, and utilise the findings in action projects. In essence, Participant Action Research requires community members to be active participants in the project design, data collection and analysis, and in the dissemination of findings.	Irish Univerities Association (Campus Engage) and Irish Research Council. 2016. Engaged Research for Society and Higher Education: Addressing Grand Societial Challenges. Together. 104pp. https://research.ie/assets/uploads/2017/07/FINAL-JAN-16_ER-Report-2016-Jan-v2.pdf
Participatory Backcasting	Participatory Backcasting is a process of working backwards from a desirable future goal. Rather than trying to predict what outcomes are likely to occur, this approach is orientated towards defining the actions or policy measures that need to be enacted, and the obstacles that need to be overcome, before a defined objective can be achieved. The use of the Participatory Backcasting approach implies that the process of defining and achieving that objective will involve engaging with the community that will be most affected by its successful attainment. The desired outcome is not necessarily identified in advance of the analysis but can emerge from engagement with organisations and communities. One example of an objective that could be established and aspired towards using Participatory Backcasting is the reduction of household consumption to sustainable levels in a particular area or community.	Irish Univerities Association (Campus Engage) and Irish Research Council. 2016. Engaged Research for Society and Higher Education: Addressing Grand Societial Challenges. Together. 104pp. https://research.ie/assets/uploads/2017/07/FINAL-JAN-16_ER-Report-2016-Jan-v2.pdf
Participatory Development	Development strategies, which incorporate the participation and organisation of the community at which the strategy is aimed, can be termed 'participatory'. The focus of Participatory Development is on local empowerment, with members of the target community being allowed a greater say on the allocation and use of resources than would generally be allowed in traditional top-down development programmes in which the government is the benefactor and the community the recipient.	Irish Univerities Association (Campus Engage) and Irish Research Council. 2016. Engaged Research for Society and Higher Education: Addressing Grand Societial Challenges. Together. 104pp. https://research.ie/assets/uploads/2017/07/FINAL-JAN-16_ER-Report-2016-Jan-v2.pdf
Participatory Evaluation	The Participatory Evaluation approach places those who are most affected by a policy or programme - such as stakeholders, beneficiaries or funders - in the role of assessors. In practice, this can mean that members of a community are centrally involved in designing a project evaluation, gathering and analysing data, drawing conclusions, disseminating results and making recommendations on how to achieve improvements.	Irish Univerities Association (Campus Engage) and Irish Research Council. 2016. Engaged Research for Society and Higher Education: Addressing Grand Societial Challenges. Together. 104pp. https://research.ie/assets/uploads/2017/07/FINAL-JAN-16_ER-Report-2016-Jan-v2.pdf
Participatory Research	Participatory Research is a process which combines three activities: research, education and action. It aims to facilitate those who would not normally look upon themselves as researchers to adopt that role and tackle the issues that matter to them in their everyday lives by gathering and assessing data. In assuming this role, minority or underrepresented communities can collaborate with more traditional researchers to bring about social change.	Irish Univerities Association (Campus Engage) and Irish Research Council. 2016. Engaged Research for Society and Higher Education: Addressing Grand Societial Challenges. Together. 104pp. https://research.ie/assets/uploads/2017/07/FINAL-JAN-16_ER-Report-2016-Jan-v2.pdf
Participatory Rural Appraisal (PRA)	Participatory Rural Appraisal is a collective term for a number of different approaches and methods that are utilised to empower communities to gather, share and use data about their everyday lives to help achieve development goals. Rather than exclusively relying upon analysis from outsiders, Participatory Rural Appraisal emphasises the cocreation of knowledge. It utilises methods such as mapping and modelling, seasonal calendars, trend and change analysis, well-being and wealth ranking, and analytical diagramming. Applications include natural resource management, agriculture, poverty and social programmes, and health and food security assessments.	Irish Univerities Association (Campus Engage) and Irish Research Council. 2016. Engaged Research for Society and Higher Education: Addressing Grand Societial Challenges. Together. 104pp. https://research.ie/assets/uploads/2017/07/FINAL-JAN-16_ER-Report-2016-Jan-v2.pdf
Science Shops	Science Shops are small organisations created as mediators between citizens groups, such as trade unions, community organisations, NGOs, or environmentalists, and research institutions, such as universities or think-tanks. They perform community-based research and aim to facilitate greater accessibility to science, knowledge and technology for social groups that would not normally have such access.	Irish Univerities Association (Campus Engage) and Irish Research Council. 2016. Engaged Research for Society and Higher Education: Addressing Grand Societial Challenges. Together. 104pp. https://research.ie/assets/uploads/2017/07/FINAL-JAN-16_ER-Report-2016-Jan-v2.pdf
Scholarship of Engagement	The notion of practicality, reality and serviceability being at the heart of the mission of higher education is central to the principle of Scholarship of Engagement. It challenges the idea that universities should exist separately from the world around them and holds instead that they should be utilised to promote economic and social progress. Examples of actions that are reflective of the Scholarship of Engagement were the passing of the GI Bill and the implementation of affirmative action programmes in the United States.	Irish Univerities Association (Campus Engage) and Irish Research Council. 2016. Engaged Research for Society and Higher Education: Addressing Grand Societial Challenges. Together. 104pp. https://research.ie/assets/uploads/2017/07/FINAL-JAN-16_ER-Report-2016-Jan-v2.pdf
Service-Learning	Service-learning in higher education is an experiential educational method in which students engage in community service, reflect critically on this experience, and learn from it personally, socially and academically. The activities address human, social and environmental needs from the perspective of social justice and sustainable development, and aim at enriching learning in higher education, fostering civic responsibility and strengthening communities. Service-learning in is always recognize with ECTS credits. It brings together students, academics and the community whereby all become teaching resources, problem solvers and partners. In addition to enhancing academic and real world learning, the overall purpose of is to instil in students a sense of civic engagement and responsibility and work towards positive social change within society.	https://www.eoslhe.eu/
World Café	World Café is a method for engaging groups, both within organisations and in the public sphere. This method is conducted in a workshop where anybody is able to talk about societal issues that matter to them. The process includes three or more twenty minute rounds of conversation within small groups seated around a table. After the first round each member moves to another table. One person will stay at the table to host for the next round and briefly fills them in on what happened in the previous round. Each round of a World Café is prefaced with a question designed for the specific context and desired purpose of the session. The participants are invited to share results from their conversations with the rest of the whole group. These results are reflected visually in a variety of ways, most often using graphic recorders in the front of the room.	Irish Univerities Association (Campus Engage) and Irish Research Council. 2016. Engaged Research for Society and Higher Education: Addressing Grand Societial Challenges. Together. 104pp. https://research.ie/assets/uploads/2017/07/FINAL-JAN-16_ER-Report-2016-Jan-v2.pdf+C15:C40

			Language
Campus Engage	https://www.campusengage.ie/	Campus Engage is dedicated to supporting Irish higher education institutions to embed, scale and promote civic and community engagement across staff and student teaching, learning and research.	English
Civic Engagement Toolkit	https://www.ucc.ie/en/cirtl/resources/cetoolkit/		English
Étudiants engagés	https://www.enseignement.uliege.be	A new concept at ULiège to promote engaged students and grant them a special status within the university community.	French
Liege Creative	https://www.liegecreative.be/qui-sommes-nous	An established local methodology that brings together research, business and the public sector	French
LiEU	https://reseaulieu.be	LiEU network for project support and university-society knowledge transfer	French
Maison des Sciences de l'Homme	https://www.msh.uliege.be	Maison des Sciences de l'Homme university spin-off to support the creation of university-society exchange platforms	French
Social Impact of Research	https://www.deusto.es/cs/Satellite/deustoresearch/en/home/dissemination-and-transfer?cambioidioma=si#gsc.tab=0	Within Deusto 2018 Strategic Plan, the Master Plan "Social Impact of Research" outlines key actions to promote and disseminate the social impact of Deusto's research.	English/Spanish
Réjouisciences	https://www.rejouisciences.uliege.be	service to promote scientific awareness among the general public, promote access to knowledge and encourage research careers	French

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Bochum: What will it be like in 2046?

Climate catastrophe or green oasis: students present future scenarios in an anthology.

Students at the Bochum Faculty of Economics have developed the anthology "Klimaresiliente Kommunalpolitik - Eine Szenarioanalyse für Bochum im Jahr 2046". The volume is the result of a teaching concept that was implemented in the summer and winter semesters of 2021 and 2022 at the Ruhr University Bochum. This was done in cooperation with the Office of Climate and Sustainability of the City of Bochum and the regional group of Scientists for Future. The editors are Prof. Dr. Michael Roos, Dr. Jan-Hendrik Kamlage and Elias-Johannes Schmitt.

In the seminars the students learned the methods of scenario planning using the example of the challenges of climate change for the city of Bochum. In the book, they present four scenarios of what Bochum will look like in 2046 and how the various consequences of climate change could be dealt with. Included are dystopian and utopian scenarios, covering a range from a collapse of the ecosystems to a successful ecological transformation.

Independent learning in focus

The group of students was responsible for all the essential tasks, starting from developing the scenarios systematically, to approaching the publisher, writing and editing the texts, to project management.

"In my opinion, it is particularly important to emphasize that a wide variety of creative approaches were also taught and encouraged in an economics course," says student Lea Eckert about her experience in the seminars.

"The project exemplifies what innovative university teaching should look like and what motivated students are capable of achieving. In future, teaching should be more action-oriented and, in the best case, make contributions to social challenges," says Michael Roos.

Cooperation with the City of Bochum

For the project, the students also cooperated with the Office of Climate and Sustainability of the City of Bochum. "The choice of qualitative scenario development as a scientific method represents a creative and courageous approach, which sometimes has a gamification character, in order to be able to derive necessary strategies for dealing with the existing uncertainties and the increasing complexity of our living environment," says Sonja Eisenmann, who heads the department.

The following illustrations show scenes from the four scenarios developed. Graphics/Sceneries: © Nico Soballa, The ARC

The picture shows the City Point in Bochum's city centre in the dystopian scenario "Waste Land 2046: Today we have had enough", which is characterised by shortages and inequality.

This image is used to show a scene from the scenario "Greentopia: Without green everything is nothing, but green is not everything", which points out the social polarisation between the diminishing fossil era and the developing ecologically sustainable future.

Here the two protagonists of the scenario "Economy First: Break what breaks you" face each other for the first time. The conflict titled here is between tech corporations that enable their employees to live sustainably and the rest of society which experience the socio-ecological impacts of climate change on a daily basis.

This cooling bunker under the city of Bochum illustrates the pragmatic adaptation strategy of the urban society in the scenario "Rotten Oasis - Elsewhere it is even more fucked up". The urban population takes on many tasks on its own initiative due to the lack of public services in the city defying the effects of climate change.

Further information/links:

- Center for Environmental Management, Resources
- Klimaresiliente Kommunalpolitik
- LinkedIn

White Paper

Citizen Science Strategy 2030 for Germany

IMPRINT

Bonn, A., Brink, W., Hecker, S., Herrmann, T. M.,Liedtke, C., Premke-Kraus, M., Voigt-Heucke S., von Gönner, J., Altmann, C., Bauhus, W., Bengtsson, L., Brandt, M., Bruckermann, T., Büermann, A., Dietrich, P., Dörler, D., Eich-Brod, R., Eichinger, M., Ferschinger, L., Freyberg, L., Grützner, A., Hammel, G., Heigl, F., Heyen, N. B., Hölker, F., Johannsen, C., Kiefer, S., Klan, F., Kluß, T., Kluttig, T., Knapp, V., Knobloch, J., Koop, M., Lorke, J., Munke, M., Mortega, K. G., Pathe, C., Richter, A., Schumann, A., Soßdorf, A., Stämpfli, T., Sturm, U., Thiel, C., Tönsmann, S., van den Bogaert, V., Valentin, A., Wagenknecht, K., Wegener, R., Woll, S. (2022). White Paper Citizen Science Strategy 2030 for Germany. Helmholtz Association, Leibniz Association, Fraunhofer Society, universities and non-academic institutions, Leipzig, Berlin. DOI: https://doi.org/10.5281/zenodo.7117771.

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This White Paper was made possible by the great commitment of all authors and contributors to the White Paper working group, the public dialogue forums, the strategy workshops and public consultation.

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Disclaimer

The views and opinions expressed in this White Paper do not necessarily reflect those of the participants or their organisations.

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CONTENT

KEY MESSAGES

The White Paper *Citizen Science Strategy 2030* presents a strategy with action recommendations for Germany to strengthen Citizen Science by 2030 in order to unleash its innovative potential for science, society and politics. This strategy can support the federal government in implementing the demands of the coalition agreement, which establishes Citizen Science as a strategic element of modern research,

"We will integrate Citizen Science and perspectives from civil society more strongly into research."

SPD coalition agreement, Bündnis 90/Die Grünen and FDP 2021 [26, pg. 24]

Citizen science describes the participation of people in scientific processes who are not institutionally bound in that field of science [1]. Participation can mean anything from short-term data collection to intensive use of free time and a high level of expertise. This White Paper identifies 15 key action areas for Citizen Science. Each action area names concrete goals and central starting points for how Citizen Science contributes to important goals in politics, society and science in Germany, and how these can be incorporated more intensively by 2030 (→ Fig. 1).

Determine ecological change using your smartphone thanks to the Flora Incognita app.
Photo: Jana Wäldchen/MPI-BGC

The contents of the White Paper were developed by the White Paper working group, a consortium of the Helmholtz Association, Leibniz Association and Fraunhofer Society along with university and non-academic partners based on the Green Paper "Citizen Science Strategy 2020 for Germany". 219 people participated in developing the paper, from 136 organisations, scientific institutions, professional societies, associations, foundations and individuals. The White Paper working group, with experts from around 40 organisations, and the Steering Committee, with members from five organisations, accompanied the White Paper development process with over 50 meetings, two public dialogue forums and four writing workshops from April 2020 to October 2021 (→ Fig. 13 "Development process of the White Paper"). In addition to the digital events, many people supported the White Paper development process. For example, the White Paper was supplemented by a nationwide public online consultation from August to October 2021 with a total of 1,343 submitted contributions (contributions, text annotations and votes) and 119 comments, as well as suggestions from five online panel discussions in September 2021 (→ Figs. 7, 10, 11, 12, 15) and by 31 position papers.

The process was supported by the commitment of the many authors and participants from various organisations without third-party

funding from May 2020 to October 2021. Funding for the online consultation, panel discussions, printing of the White Paper, production of the accompanying film and launch event was provided by the German Federal Environmental Foundation (DBU). The Federal Ministry of Education and Research (BMBF) funded the implementation of a dialogue forum. The Helmholtz Centre for Environmental Research – UFZ also supported the process by funding a part-time scientific coordination position and the Helmholtz Association funded the editing and layout of this White Paper.

Figure 1: The 15 action areas in the white paper

Key statements and mission statements for each action area

For each action area, a key statement summarises the most important findings and identifies strengths, needs, opportunities and challenges. A mission statement for each action area outlines the visions for 2030.

Networking and exchange

We are observing an increasing network of Citizen Science stakeholders and an intensifying exchange within the Citizen Science community. The exchange among Citizen Science actors and stakeholders within and between organisations is essential for knowledge transfer and experience with Citizen Science.

Mission statement: In 2030, Citizen Science lives through networking and exchange between science and society. Networking and regular exchange will be further promoted. Special attention will be paid to the exchange between Citizen Science actors, as well as to the synthesis and transfer of their expertise on initiating, coordinating and implementing Citizen Science projects and the associated experience and knowledge.

Funding instruments

The recognition of Citizen Science as a component in research and funding and the range of Citizen Science funding instruments has increased, but does not yet meet the demand. Funding needs for Citizen Science projects are great and are not even close to being met (e.g. the BMBF's temporary funding guideline for citizen research, with currently 15 funded projects, is only a start). An important role is also played by low-threshold funding, which is rarely offered, as well as specific offers such as start-up and final funding and offers in capacity building (coaching, training, and continued education). Structural support for coordination centres in civil society associations, public authorities and at universities and non-university research organisations is also important in order to transfer knowledge gained from experience in a qualified and open manner and to offer interested social stakeholders continuous points of contact.

Mission statement: In 2030, Citizen Science is supported by stakeholders in science, society, public authorities and practice through structural and financial measures (e.g. federal and state ministries and subordinate authorities and administrations, research and funding organisations, foundations, associations, networks, educational institutions). Funding organisations integrate Citizen Science into their funding portfolio for various corporate and research stakeholders. The prerequisite for funding Citizen Science projects should be quality-assured procedures and standards based on the rules of good scientific practice through regular evaluations. This facilitates greater social participation in science and increases its acceptance and relevance.

Citizen Science needs successful organisation and coordination for successfully engaging citizens. Citizen Science projects need sufficient personnel and financial capacities for volunteer management to inspire, guide and provide feedback. This volunteer management can be conducted by citizens, NGOs or research institutions participating in the project or in collaboration with established volunteer associations and initiatives.

Mission statement: In 2030, Citizen Science projects are characterised by professional volunteer management. Participants from all areas of society will be enabled to participate successfully and sustainably. Thus personnel resources and finances will be made available for the projects, along with connections to established volunteer structures. Local and regional stakeholders, associations and foundations in the field of volunteer management as well as local and regional media will work together specifically in volunteer recruitment and management. Together, they will carry out as needed and targeted training and continued education in Citizen Science projects.

Citizen Science is a research approach, not just a science communication format in the sense of additional public relations. Strategic and evidence-based science communication plays a crucial role in the success of a Citizen Science project by promoting and bringing awareness to the participatory potential of collaboration between researchers and citizens. Good communication can help to recruit participants for a project, for example, or to create common ground for the stakeholders involved and to communicate the results of the project internally and externally.

Mission statement: In 2030, strategic and evidence-based science communication is an integral and fundamental part of Citizen Science projects to enable a dialogue between society and science. A position paper on Citizen Science values and guidelines involving different stakeholders (e.g. practitioners, civil society and science) can strengthen the implementation of science communication. Established interfaces in science communication at the institutions, additional project funding and continued education support Citizen Science actors in achieving the desired communication and impact goals.

Volunteer management

Synergies with scientific communication

Recognition culture in and for Citizen Science

Recognition in and for Citizen Science is essential for the success and maintenance of participation in Citizen Science projects. In order to establish and expand recognition, respectful collaboration must be developed and applied in a targeted manner at the individual, political and formal levels. Already established and effective instruments of recognition must be continuously enhanced, both for citizen scientists and for project coordinators in the academic system (e.g. continuous communication and feedback culture). In addition, new instruments of recognition should be established, such as an expansion of the scientific reputation system to include a social impact indicator.

Mission statement: In 2030, targeted instruments of recognition in and for Citizen Science are applied in Citizen Science practice and evaluated with regard to their effectiveness. The previous instruments of individual recognition such as network meetings, continued education and an established, respectful feedback culture have been extended to the professional and social spheres of those involved, e.g. by testing pension points for Citizen Science. New structures and measures have been established, such as support units for Citizen Science activities at universities, training institutions and government agencies. Additionally, a review for the effectiveness of recognition tools and the introduction of a Citizen Science seal have also been instituted. This makes recognition a quality feature of Citizen Science and thus possible on an institutional and political level. The scientific reputation system integrates Citizen Science activities as valuable contributions to research.

Data quality and data management

Citizen Science data hold enormous potential for science and society. In order to fully exploit this potential, the accessibility, quality and reusability of Citizen Science data must be guaranteed for science and society alike. Sufficient resources should be available to implement quality assurance measures and data management and for research on these topics.

Mission statement: In 2030, reusable, flexible methods and tools exist to collect Citizen Science data, perform quality assurance and controls and analyse, archive and publish the data. Citizen Science data is sustainable, complies with FAIR principles and is described by generally accepted metadata standards.

Successful and fair collaboration in Citizen Science projects requires clear ethical and legal principles and guidelines. A common basic understanding of potential conflicts affords access and participation to all interested parties from science and civil society alike.

Mission statement: In 2030, Citizen Science projects follow clear legislative and ethical guidelines. These principles and framework legislation are, as in other disciplines, jointly agreed upon and adhered to from planning and implementing all the way to documenting Citizen Science projects. The ethics advisory boards have included Citizen Science as a component of research and are developing guidelines for topics such as data protection and personal rights, copyright and intellectual property, and insurance issues.

Legislation and ethics

Citizen Science enriches and holds great innovation potential for science and scientific culture, among other things through the integration of diverse knowledge domains, different perspectives of citizens and the development of new and large-scale data sets in space and time. Currently, engagement with Citizen Science is not a common practice in the scientific reputation system and corresponding strategies. Therefore it is often not exploited as an innovative research method.

Mission statement: In 2030, Citizen Science in all its facets is an expression of a modern scientific process that enables social participation in research through various formats. Citizen Science enriches scientific culture by helping to collectively identify and research social, ecological and economic challenges. The integration of Citizen Science in scientific processes sustainably and structurally strengthened through explicit incorporation into strategies of research orgaisations and designated staff positions. Good scientific practice is achieved by making targeted expansions of interdisciplinary training and continued education programmes in Citizen Science an integral part of university teaching.

Integration into scientific processes

Citizen Science introduces another format for educational concepts to develop competences regarding science in authentic learning contexts. The educational potential of Citizen Science can be achieved by adapting educational concepts to the interests and motivations of learners. Citizen Science should be integrated into curricula based on research for effective learning support. It should be embedded in guidelines and curricula through political support, and then be continuously evaluated. Collaboration between schools, extracurricular learning centres, universities and other research institutions should be promoted extensively and over the long term. This can help harness the potential of Citizen Science for the education sector.

Integration into educational processes

Mission statement: In 2030, implementing Citizen Science projects at educational institutions will be made possible through funding instruments that promote close cooperation with schools, university education and extracurricular learning centres. Teachers are important multipliers of Citizen Science. They have access to advanced training opportunities on integrating Citizen Science in educational concepts, along with teaching and learning materials for practical implementation. Activities are based on current research and are aligned with curricula and other frameworks.

Integration into decision-making processes

Citizen Science demonstrates its social added value as an often practical research approach to the full extent when relevant results are consistently considered in political and social decisions. This requires a common understanding among policymakers, administrators and the Citizen Science community on how Citizen Science can contribute to decision-making processes. Structural and procedural frameworks are also needed, e.g. Citizen Science strategies in government authorities and agencies, workflows for integrating quality-assured Citizen Science data into policy-making, management and monitoring. Furthermore, specific capacity-building offers should be provided, e.g. Citizen Science coordination centres in government authorities and agencies at local and state levels with practical advisory services for Citizen Science projects.

Mission statement: In 2030, Citizen Science provides practical knowledge on socially relevant issues and thus support political and social decision-making processes. Citizen Science contributes to evidence-based policy and management decisions through the collaboration of civil society, governmental, political and academic partners.

Medical and health research

Actively involving patients as citizen researchers in all stages of the research process has the potential to increase the relevance and usefulness of the results for healthcare. It also expands and strengthens the role of the patients.

Mission statement: In 2030, patients are frequently involved in all phases of medical and health research as citizen researchers. In medicine, the experience and expertise of patients and their families is recognised as significant. Their involvement in research through Citizen Science increases the relevance and usefulness of research results, facilitates their practical implementation and improves the situation of the patients. New frameworks and structures have emerged that enable joint research, the mutual respect of all participants, responsibly handling the health data of the contributors, adequate funding and recognition in science and medicine.

Sensor technology and artificial intelligence

The use of sensor technology and artificial intelligence (AI) in the context of Citizen Science improves the scope as well as the local and temporal availability of data sources. The use of AI allows the quality management of extensive Citizen Science datasets to be assessed, improved and made more efficient, and opens up new possibilities in data analysis.

Mission statement: In 2030, sensor technology and artificial intelligence are established tools for Citizen Science activities. In the projects, citizen scientists can take on different roles, operating the sensors, programming or analysing data. Cost-intensive tools are also provided by scientific institutions. Algorithms are an open and transparent foundation for decision-making processes.

Archives, libraries, museums and science shops

Archives, libraries, museums and science shops have a long tradition as links between research and civil society and therefore offer long-term physical and conceptual spaces for Citizen Science with great proximity to citizens. As an interface between science and society, they thus create innovative spaces and opportunities for shared experimentation and learning.

Mission statement: In 2030, archives, libraries, museums and science shops, along with other institutions at the interface of science and the public, identify as knowledge spaces and educational institutions tasked with institutional mediation, and thus as memory and transfer organisations. Citizen Science as a research and transfer approach is an integral part of the mission statements and image of the institutions at the interface of science and the public for active collaboration with citizens. They work as established contact points for professional societies and civic engagement to link science and society.

European perspective (D-A-CH)

The cooperation of the DACH countries (D-Germany, A-Austria, CH-Switzerland) in the field of Citizen Science is multifaceted and has developed into an important component of European integration for Citizen Science in Europe in recent years. Building capacity in certain countries, e.g. knowledge about and infrastructure for Citizen Science, supports the development of the national networks in cooperation with the European Citizen Science Association (ECSA) and other international partners. The closer collaboration and shared learning experiences of Citizen Science stakeholders at the scientific, organisational and political levels offer opportunities and possibilities for the targeted advancement of Citizen Science.

Mission statement: The DACH network is an established stakeholder in the European Citizen Science Network on a political and professional level. International measures and initiatives such as jointly developed capacities for the community, e.g. continued education and networking offers, as well as joint evaluations of various funding guidelines make Citizen Science an integral part of research and a central task of various organisations. The diverse cooperation at the political, scientific and network levels serves as best practice examples for European collaboration. This strengthens and promotes the national structures in Germany, Austria and Switzerland.

Accompanying Citizen Science research

The findings from the accompanying research enable increased professionalism based empirical data and advance the practical application of Citizen Science. Targeted funding of accompanying research should become an integral part of the funding strategy of Citizen Science projects.

Mission statement: In 2030, accompanying research is an integral part of Citizen Science projects and will already be considered at the project planning stage and supported by appropriate financial resources. Accompanying research is carried out by interdisciplinary teams and is oriented towards the scientific standards of empirical social research and evaluation research. Citizens are involved in order to clarify central points and questions.

Action recommendations

For the 15 action areas in this White Paper, there are a total of 94 political action recommendations with regard to promoting Citizen Science in Germany. The following stakeholders and responsible parties are target groups as addressees (→ Fig. 2):

- Practitioners in the Citizen Science community (volunteer citizen scientists, project coordinators)
- Civil society organisations (non-governmental organisations, associations, initiatives, networks)
- Science organisations (universities and colleges, non-university research organisations, German Rectors' Conference)
- Educational organisations (formal and non-formal education institutions)
- Policymakers (ministries, authorities, administration)
- Funding bodies (research funding agencies, foundations, selection committees)

Figure 2: Action recommendations in the white paper and their target groups

This White Paper addresses scientific policy with research organisations and funding agencies, educational institutions and the broader Citizen Science community with associations and private individuals. The transformative social and technical innovation potential of Citizen Science enables collaboration across sectors. Various federal and state ministries and local authorities can profitably promote the transformation potential of Citizen Science and civic engagement and incorporate them into their strategies and programmes (→ Introduction, → Box 2).

INTRODUCTION

What is Citizen Science?

Citizen Science describes the active participation of people in scientific processes who are not institutionally bound in that field of science [1] (→ Box 1).

This collaboration between researchers from the public and academia offers many innovation potentials for science: Citizen Science can help to generate innovative large-scale data sets that can often only be collected with the commitment of citizen scientists. Additionally, it promotes developing new scientific questions and helps public knowledge and impulses flow into research [2, 3, 4]. Citizen Science and citizen expectations regarding the research can trigger a stronger social orientation in science [5]. Moreover, Citizen Science plays a key role in enriching concepts such as open science, responsible research and innovation (RRI) and transformative science [6]. Citizen Science also offers many benefits to society. Citizens can expand their knowledge or contribute specific skills by actively participating. Through their own research, participants can also become better acquainted with scientific methods and ways of working, and understand the possibilities and limitations of them [7]. A strengthened understanding of science can then also promote public trust in science and a more positive attitude towards science [8, 9, 10]. Active participation in Citizen Science projects offers stakeholders the opportunity to develop relevant solutions to their own questions and enables them to use the skills they have acquired in other contexts [11, 12].

In the CS project PflanzeKlimaKultur!, citizen scientists observe and record the developmental stages of 11 selected herbaceous plants in their own gardens or in model beds in order to research the influence of climate change on the growth phases of plants. Photo: Pflanze-KlimaKultur/BO Berlin

Citizen Science today

The first of six goals of the vision of the Green Paper "Citizen Science Strategy 2020 for Germany" published in 2016 stated that by 2020 Citizen Science would be "an integral part of societal and scientific debates as well as an approach with multiple benefits for science, politics and society" [1, pg. 6]. This vision has not yet been fully realised.

The current Fridays for Future movement, the climate protection debates and the discussions on the Covid 19 pandemic demonstrate the social and political awareness of how important scientific findings and a general understanding of scientific processes are in dealing with the current challenges facing society as a whole. These events also show that effective solutions to urgent social questions require closer contact between science and the public, as well as the participation of civil society stakeholders and their different knowledge expertise. We know from the annual surveys of the German science barometer that

BOX 1 – The term ‘Citizen Science’

The term 'Citizen Science' arose in different contexts. For one, as concrete collaboration in environmental monitoring projects [8] and additionally, under the aspect of enabling people to participate in shaping science, as a contribution to a democratic society [13, 14]. Both ideas are reflected in the perception of Citizen Science today. There is a great diversity in CS with an already very long tradition in different disciplines as well as rapid developments in new areas and new possibilities through digitalisation, mobile technologies and social media. The following is a definition from the Green Paper “Citizen Science Strategy 2020 for Germany” [1]:

Citizen Science describes the engagement of people in scientific processes who are not tied to institutions in that field of science. Participation can range from the short-term collection of data to the intensive use of leisure time in order to delve deeper into a research topic with scientists and/or other volunteers. Although many volunteer scientists do have a university degree, this is not a prerequisite for participating in research projects. However, it is important that scientific standards are adhered to. This pertains especially to transparency with regard to the data collection methodology and the open discussion of the results.

The European Citizen Science Association (ECSA) has developed the “Ten Principles of Citizen Science” [15], which define the prerequisite for good practice in Citizen Science and a common self-concept. The range of Citizen Science activities is large and diverse and can include participatory projects as well as co-creative projects [16]. The concept of Citizen Science is a dynamic development process with a variety of stakeholders. Overall, Citizen Science means gaining new knowledge through concrete collaboration and by merging different perspectives in scientific projects, while at the same time releasing innovation potential on an individual and societal level.

30 to 50 per cent of all citizens are interested in science and research, and this figure went as high as 60 per cent during the first year of the Covid 19 pandemic [17, 18, 19, 20, 21]. One in two (49%) would also like to personally participate in a science project [19].

Citizen Science is now experiencing a steady rise in interest in Germany as well as in Europe and around the world. There are currently a large number of Citizen Science projects in Germany, 180 of which are listed on the “Bürger schaffen Wissen” platform (November 2021). The response to the Citizen Science 2020 survey and the information provided by participants in the dialogue forums indicates that the total number may be considerably higher. Volunteer citizens are actively involved in research work primarily in the natural and environmental sciences. However, research activities by volunteers also have a long tradition in the humanities, arts and cultural sciences, and new fields of research are developing in the areas of artificial intelligence and health research (→ action areas 11). The goal of all Citizen Science projects is the joint creation of new knowledge.

Political framework in the international arena

The scope of Citizen Science has developed in many different ways at the international and national level in recent years. Citizen Science is seen in Europe as an integral part of the Open Science agenda and the European Open Science Cloud. The European Green Deal and the EU Biodiversity Strategy 2030 stress the importance of the roles of social stakeholders and Citizen Science for a knowledge society. A European Green Paper on Citizen Science [22] was first produced back in 2013. Based on this paper, the White Paper on Citizen Science in the EU [23] was published in 2016, highlighting the potential of Citizen Science. Numerous initiatives and working papers from the EU Commission, such as the EU Pollinator Initiative and the working paper on *Citizen Science Best Practices* in Environmental Monitoring [24], contain concrete recommendations to expand Citizen Science across Europe.

International networks such as the *Citizen Science Alliance* founded in 2015, the *European Citizen Science Association* (ECSA), the United States *Citizen Science Association* (CSA), the *Australian Citizen Science Association* (ACSA) and *CitizenScience.Asia* promote global exchange to advance Citizen Science. The EU actively supports Citizen Science. Its international platforms, EU-Citizen.Science, SciStarter and Zooniverse, bundle current projects, resources and training offers internationally. The first European Citizen Science Conference took place in Germany in 2016 as a collaboration between the GEWISS project and ECSA, which was then continued by Switzerland in 2018 and Italy in 2020.

An active community of Citizen Science assets from civil society organisations, universities and other research institutions, professional societies, museums, libraries and other educational institutions has emerged in recent years in Germany, Switzerland and Austria. Several active Citizen Science centres and various Citizen Science platforms and networks have been established. In all three countries, Citizen Science conferences are organised annually by different host organisations (→ action area 14). There are also many regional and subject-based conferences and workshops. Furthermore, the funding landscape is changing.

Calibration setup as part of the CS project SMARAGD (sensors for measuring aerosols and reactive gases and analysing their impact on health). Photo: Jülich Research Centre/Natalie Kille

In Germany, Switzerland and Austria, several new funding programmes for Citizen Science have emerged in the last five years through various ministries and other funding organisations. The *League of European Research Universities* (LERU) first presented an *Advice Paper* [25] for its members in 2016. This paper contains important recommendations to structurally incorporate it at universities and recognise Citizen Science in research funding and evaluation processes (→ action area 8).

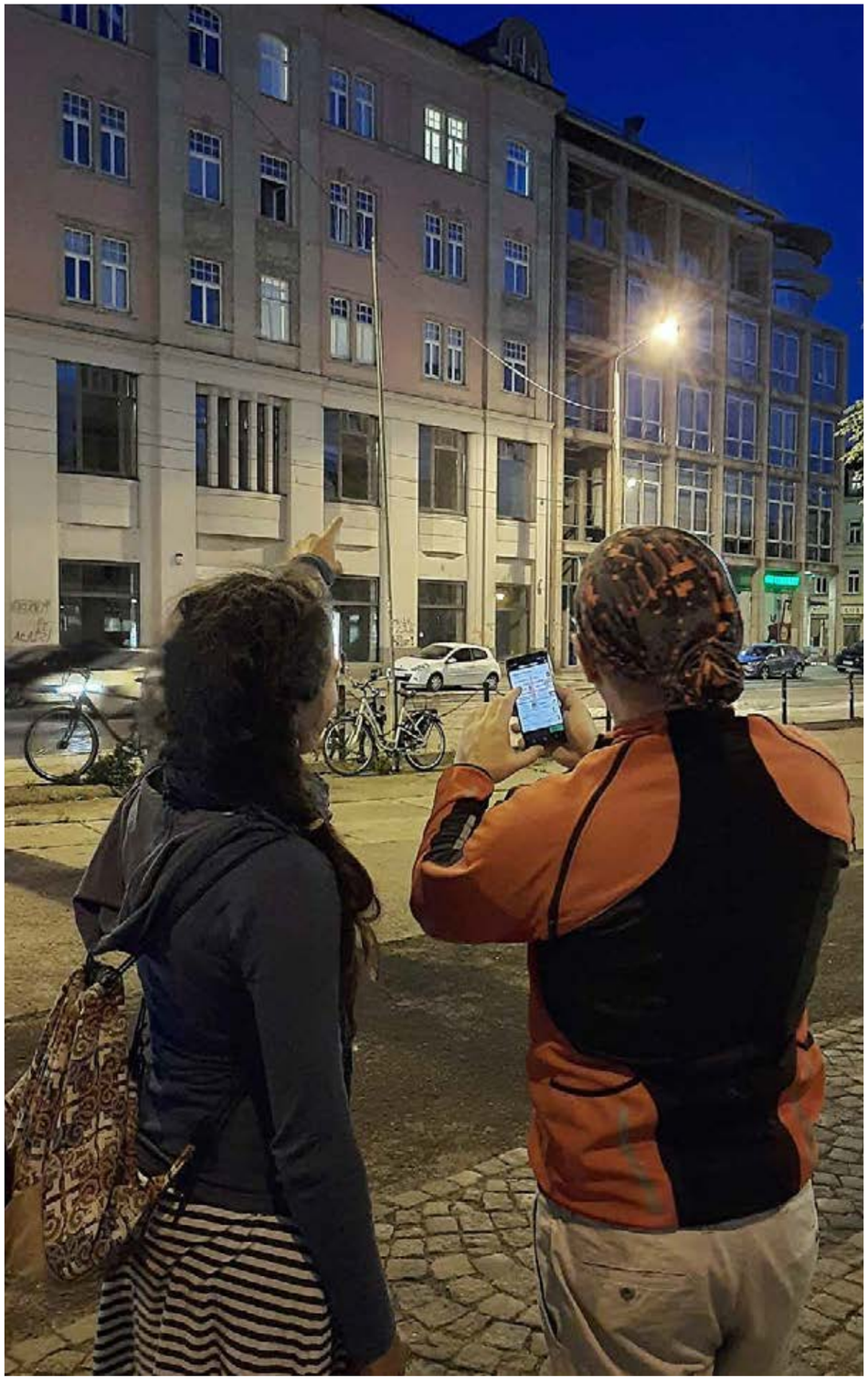
Many Citizen Science projects use a *bottom-up* structure and many are also not organised in networks. This is a very specific characteristic of Citizen Science, and local presence and individual formats are often important for success. Overall, Citizen Science thrives on the ideas and commitment of many, making it diverse and vibrant.

The development of the Citizen Science landscape in Germany

In Germany, Citizen Science is seen as an increasingly important instrument of participation and connects with the objectives and strategies of various ministries (→ Box 2). Citizen Science is prominently rooted in the coalition agreement of the German Federal Government as part of modern research to "more strongly incorporate perspectives from civil society into research" [26, pg 24].

After the publication of the Green Paper on the Citizen Science strategy, a new funding line from the Federal Ministry of Education and Research (BMBF) for Citizen Science was launched. Since 2021, 15 Citizen Science projects have now been funded in a second BMBF funding line, even though the current funding quota is still quite low. Citizen Science as a participatory format is mentioned several times as an important component in the BMBF's policy paper on scientific communication. Funding for Citizen Science also occurs in the biodiversity funding programme of the German Federal Ministry for the Environment and Nuclear Safety (BMU). The innovative potential of Citizen Science is also highlighted in the Federal Government's high-tech strategy ("new sources for new knowledge") [31]. In the Federal Government's data strategy, Citizen Science is ascribed an important role regarding data usability and promoting data literacy among citizens. Further links between individual departments and federal strategies can be found in Box 2.

Universities are positioning themselves with Citizen Science as active stakeholders in the region through the *Third Mission* and are in part developing their own funding lines and creating interfaces and instances to incorporate Citizen Science at the institutions. Among other things, the first Citizen Science professorship was established at the University of Jena and strategic networks or staff positions were set up at the universities of Düsseldorf, Münster and the Technical University of Berlin (→ Box 3 and → action area 8 for further examples of the implementation of strategic Citizen Science in scientific practice). A similar picture can be seen within the large non-university research organisations, which are developing internal funding lines and establishing networks for internal exchange and networking (e.g. CitizenScience@Helmholtz network with funding for the Citizen Science Programme 2019-2023, Leibniz Citizen Science Working Group and the Fraunhofer Citizen Science Network). A selection of important Citizen Science stakeholders is listed in Box 3 (→ action areas 1, 8, 9, 13).



Citizen scientists count and classify the artificial light sources on public streets and squares using the Nachtlicher app. Photo: Stefanie Partsch

Environmental associations and professional societies have also been performing Citizen Science projects, developing apps and organising networking events for decades, and are now increasingly using the possibilities of social media. Science shops, real labs and *FabLabs/Makerspaces* are also important contact points for Citizen Science. Other stakeholders include adult education centres and repair cafés, which are now involved in some projects.

Overall, Citizen Science is gaining in reputation and promoting and implementing Citizen Science as a research approach is becoming increasingly accepted. But at the same time, there is still a gap between the attributed potential at the strategic level and actual implementation at the concrete level. An example of this is BMBF's funding quota for Citizen Science projects (less than 5% of submitted project outlines in 2020), which is as a whole lower than comparable programmes, compared to Citizen Science project results actually being integrated into concrete political and social decision-making processes, which still hardly takes place.

BOX 2 – Citizen Science innovative potential – linked to the goals and strategies of various federal ministries

The examples listed below are only a sample and not an exhaustive list. There are various possible points of connection for several ministries.

Citizen Science enables …

- **Innovative research** with large-scale data sets in space and time. Generating and evaluating this much data is not possible in any other way (BMBF/DFG, Federal Government Data Strategy 2021 [27])
  Example: using the knowledge of many to monitor nature and the environment, climate or health on a large scale and over the long term

- **Participatory research, co-creation and integrating different knowledge domains** (BMBF/DFG)
  Example: research on topics of high relevance to society with active participation from the public and local stakeholders and their expertise (joint design, implementation and evaluation of research)

- **Scientific literacy, active lifelong learning and innovative communication in science** (BMBF/BMBF Science Communication Policy Paper 2019 [28])
  Example: research on topics in the domain of lifelong learning with the active participation of senior citizens.

- **Innovative potentials for digitisation** (Ministry of Transport, BMBF Digital Strategy 2019 [29], Federal Government Digitisation Strategy 2019 [30])
  Example: citizen researchers digitising archives

- **Technological development with new sensor technology and artificial intelligence** (Ministry of Transport, High-Tech Strategy 2025 of the Federal Government 2018 [31], BMWi Regulatory Sandbox Strategy 2019 [32])
  Example: citizen scientists using drones for earth exploration, using mobile sensors to measure air pollutants or performing automated image processing to identify plants

- **Environmental and biodiversity monitoring** (BMBF, BMU, BMEL and subordinate authorities and institutes)
  An example of how this can be applied is agricultural and forest monitoring by the Thünen Institute and Julius Kühn Institute or in the Biodiversity Monitoring Centre of the BfN and environmental monitoring by the UBA and research organisations

- **Social cohesion, social empowerment** (Ministry of Family Affairs, BMBF)
  Example: citizen researchers researching social cohesion by conducting their own interviews, storytelling or analysing documents

- **Health, life satisfaction and well-being** (Ministry of Health)
  Example: patient science to research diseases

BOX 3 – Citizen Science stakeholders in Germany, tools and capacities

The examples listed below represent a sample and do not claim to be exhaustive. For more detailed descriptions, see action areas 1, 8, 9, 13, among others.

- **Universities and research networks** (→ action areas 1, 8):
  Structural Citizen Science incorporation and networking examples
  - Citizen Science Chair at the Friedrich Schiller University Jena (**www.geographie.uni-jena.de/en/chairs**)
  - Citizens' University Office at Heinrich Heine University Düsseldorf (**www.buergeruni.hhu.de/en/citizens-university**)
  - Citizen Science Programme at TU Berlin/Berlin University Alliance (BUA) (**www.forschung.tu-berlin.de/servicebereich/menue/forschung_an_der_tu/citizen_science_projekte_2018**)
  - Citizen Science at the University of Münster (**www.uni-muenster.de/AFO/en/CS**)
  - Heidelberg University (z. B. **www.uni-heidelberg.de/en/research/research-profile/fields-of-focus/field-of-focus-iii/research-activities/cisar-citizen-science-in-archaeology**)
  - "Citizen Science" department at the Institute of Data Science at the German Aerospace Center (DLR) (DLR – Institut für Datenwissenschaften – Bürgerwissenschaften)

- **Non-university research organisations (→ action areas 1, 8):**
  - CitizenScience@Helmholtz Network (**www.helmholtz.de/en/transfer/citizen-science**)
  - Leibniz Citizen Science Working Group (**www.leibniz-gemeinschaft.de/en/forschung/citizen-science**)
  - Network of Fraunhofer Institutes using Citizen Science (u. a. Fraunhofer IMW, ISI, IRB, UMSICHT)

- **Science shops and houses** (→ action areas 1, 9, 13): Network of German-speaking science shops (**www.wissnet.de**), Science houses (such as in Braunschweig)

- **Associations** (→ action areas 1, 3): such as NABU, BUND, National Network for Civil Society (BBE), German Life Science Association (VBIO)

- **Professional societies** (→ action area 3): such asprofessional societies for natural history (e.g. DDA, GdO, AraGes, NetPhyd), history and genealogy (e.g. DGMPP, DGGN, GDUF), astronomy (AG)

- **Makerspaces/FabLabs/repair cafés/regulatory sandboxes** (→ action areas 8, 9): e.g. Netzwerk Reallabore (**www.reallabor-netzwerk.de**), Reallabor Schorndorf, Reallabor Potsdam-MaaS L.A.B.S, Erlebniswelt Mobilität Aachen, Reallabore Berlin (**https://stadtmanufaktur.info/en/living-labs**)

- **Museums, archives, libraries, botanical and zoological gardens** (→ action area 13): for example all major natural history museums such as the Natural History Museum Berlin (Citizen Science Competence Centre), Museum Koenig – Conference of Species, Senckenberg Nature Research Society (Museum in Frankfurt am Main/Museum in Görlitz), botanical gardens in Berlin and Leipzig, Saxon State and University Library Dresden, etc.

BOX 3 (continuing)

- **Citizen Science Online Platform** from MfN and WiD (→ action area 1): such as Bürger schaffen Wissen (www.buergerschaffenwissen.de/en)
- **Federal state academies** (→ action area 9): such as the Saxony State Foundation for Nature and the Environment/UmweltMobil
- **Adult education centres:** such as KVHS Anhalt-Bitterfeld, VHS Herford
- **Ministries & foundations with Citizen Science funding** (→ action area 2): BMBF, BMEL, BMU/BfN, DBU, Fritz Thyssen Foundation, Volkswagen Foundation, etc.
- **National authorities and downstream institutes, state offices and municipalities** (→ action area 13): such as the Federal Agency for Nature Conservation (BfN) (monitoring biodiversity), Thünen Institute Braunschweig (agricultural monitoring), the Deutscher Wetterdienst (DWD), the City of Leipzig Green Spaces Office
- **Diverse Citizen Science initiatives without Institutional affiliation**

Selected tools and capacities

- **Guides:** such as the Manual on legal questions in Citizen Science projects [33], Guide to good practices for co-creation projects [34], Guide to developing Citizen Science projects in protected areas [35]
- **Numerous networking events** from the different stakeholders: such as the Citizen Science Forum, Nature Observer Conference, Conference of Species, diverse events from Citizen Science projects and universities
- **Continued education & training:** such as training events by Citizen Science projects, "Bürger schaffen Wissen" training workshops, BfN seminars, iDiv/UFZ Citizen Science summer school
- **National online platforms for data collection, input or networking** (→ action areas 6, 12): such as www.naturgucker.de, DDA www.ornitho.de/index.php?m_id=1&langu=en, TU Ilmenau/MPI Jena www.floraincognita.com, Consortia from the National Research Data Infrastructure Germany www.nfdi.de/?lang=en

Green Paper "Citizen Science Strategy 2020 for Germany" (2016)

From 2014 to 2016, the consortium programme "BürGEr schaffen WISSen – Wissen schafft Bürger" (GEWISS) conducted a nationwide open dialogue with stakeholders from science, civil society and politics on the development of Citizen Science in Germany. The focus was on developing the Green Paper "Citizen Science Strategy 2020 for Germany" with visions for Citizen Science in Germany, promoting networking between stakeholders from science, civil society and politics, and providing practical resources to develop Citizen Science capacities. The joint project was coordinated and academically accompanied by institutions from the Helmholtz and Leibniz Associations with their university and non-university partners. More than 700 stakeholders from over 350 organisations and institutions contributed their perspectives regarding Citizen Science in Germany.

The Green Paper was published in March 2016. It presents the insight, requirements and potentials of Citizen Science in Germany, reflects on the added value that can emerge in the different areas of society and identifies untapped potential. Concrete proposals for courses of action and measures depicted how Citizen Science can be strengthened in Germany, which capacities are needed over the long term to successfully implement Citizen Science projects and also opportunities for connecting Citizen Science to political and social goals. The impact the GEWISS modular programme had by establishing Citizen Science in science, society and politics was manifold. The project initially enabled an open reciprocal approach between research, society and politics. It simultaneously provided a trigger for many of the stakeholders involved to develop and expand their involvement in Citizen Science. For example, by promoting Citizen Science projects in institutions or integrating Citizen Science into the strategy papers of individual institutions or universities. The development of a nationwide Citizen Science strategy received international attention.

Status and development of Citizen Science since the publication of the Green Paper

This White Paper is based on reviewing the implementation of the goals of the Green Paper "Citizen Science Strategy for Germany 2020" and the visions and courses of action for the Citizen Science community formulated therein. Which goals and options have been implemented? Which ones have been partially or not at all implemented? Which ones have not proved beneficial? And what new fields have been added in today's Citizen Science landscape?

An open "AG Weißbuch" (White Paper Working Group) with various public formats to engage interested stakeholders was conducted by the Citizen Science community based on these and other questions. It examined the courses of action from the Green Paper as well as the changes along the three core fields - strengthening, recreating and integrating Citizen Science in science, society and politics (→ Fig. 3).

Students prepare soil traps in the MikroSafari Citizen Science project. They are studying the composition of small animal communities along an urban heat gradient to understand how species communities are affected by environmental change and climate change. Photo: MikroSafari/UFZ/iDiv

What has changed since 2016?

When the Green Paper was published in 2016, Citizen Science was often seen as either an already long-established research approach or a completely new way of working. Citizen Science was also viewed with apprehension, especially from academic science [36]. This has changed considerably in the last five years (→ Box 2). There are now a large number of Citizen Science projects. Citizen Science is increasingly the subject of funding guidelines from various departments, research organisations, individual institutions and foundations. The amount of funding has increased and research funding programmes are slowly opening up to non-academic funding recipients such as associations and professional societies. Users are increasingly identifying with the format at the project level. This can be seen in the increasing number of projects also arising from other "related" participatory research areas (e.g. transdisciplinary research, action research) and in increased use of Citizen Science data for urgent research questions (e.g. for the global sustainability goals SDGs). In the last five years, a large number of resources have also emerged in Germany and abroad that provide very specific assistance for implementing projects in a practical way (guides, workshops, networking formats) and formulate measures for implementing and strengthening individual disciplines at the strategic level (e.g. Thünen Institute working paper on Citizen Science [37], UFZ position paper on action areas in environmental education and environmental communication [38]).

Citizens design the Tracing Jewish Life in Münsterland exhibition along with scientists and craftsmen from the University of Münster. Photo: WWU Münster/Bauhus

What are new developments since 2016?

Several new developments have been identified since the publication of the green paper (→ Box 2, → Fig. 3). The project landscape is expanding and increasingly more projects are being launched from a wide range of disciplines. New domains for Citizen Science are cropping up – with new questions and challenges – especially in the fields of social Citizen Science, artificial intelligence and sensor technology, as well as in medicine and health sciences. Libraries and archives are also emerging as new participants, especially in the social sciences and humanities. Universities are integrating Citizen Science at the strategic level into outreach activities in their local regions. Points of contact are being established at the various organisations for targeted dialogue and knowledge exchange. It has become apparent that there is considerable potential for sustainable structures, especially in establishing and expanding local networks and points of contact at larger organisations and in regional networks.

Meanwhile, technical infrastructure for data management with various data platforms are also increasingly evolving, but they are often fragmented. They do not tend to be standardised or sustainably incorporated or interoperable with other databases and still need to be significantly strengthened. Citizen Science is expanding further as a result of new mobile sensors and artificial intelligence techniques, as well as new projects in medicine and health sciences.

As a result of the GEWISS programme and the first European Citizen Science conference, the innovation potential of Citizen Science for open science, society and politics was presented in an anthology and various courses of action for stakeholders from politics, business, education and research organisations along with a research agenda were outlined [4]. Overall, the expansion of research through Citizen Science can be classified as part of an increasing professionalisation of the field. This is not only reflected in the emerging interfaces and structures, but also in corresponding offers for continued education and training on the subject of Citizen Science (e.g. web platforms, summer schools, training workshops and think camps).

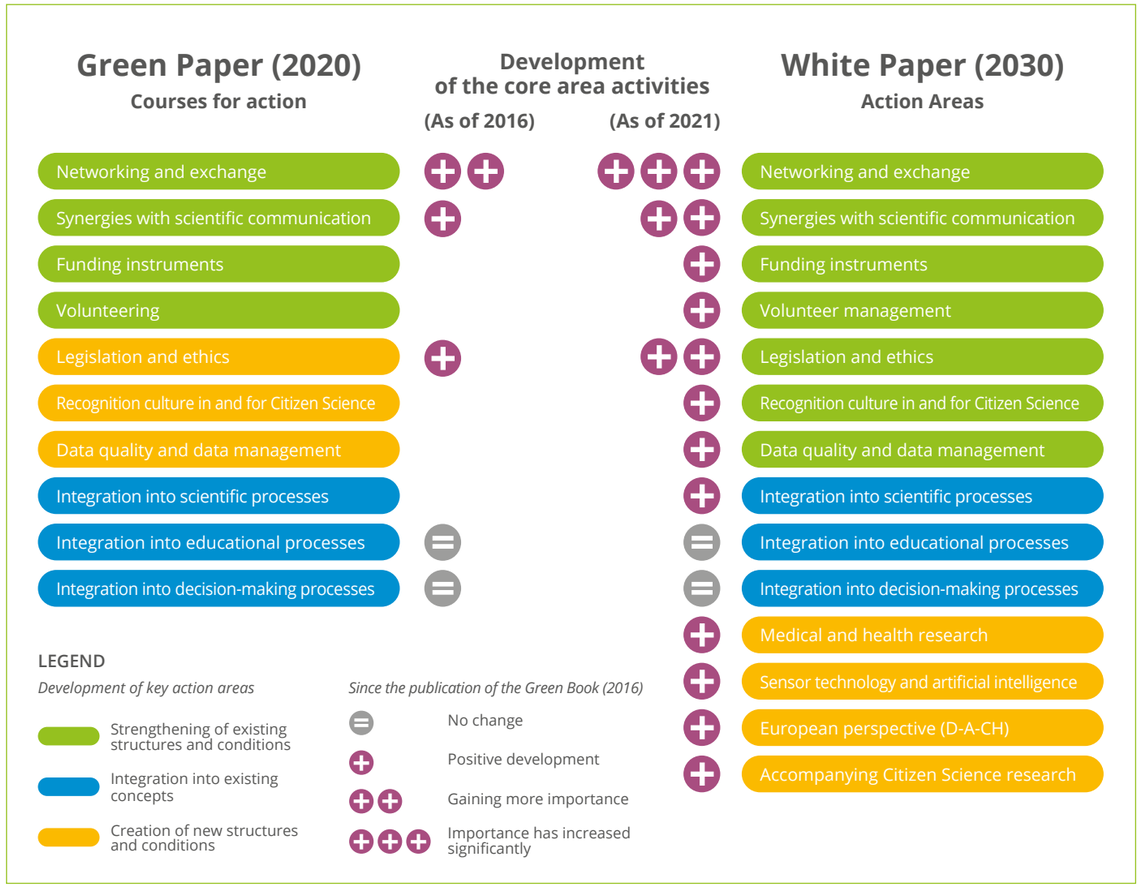


Figure 3: Development of the core area activities from the 2020 green paper to the 2030 white paper

What are remaining challenges?

Despite the diverse developments of Citizen Science in different subjects and spaces, there are still major challenges, potential for development and action areas. Citizen Science activities and the knowledge gained through Citizen Science still do not enjoy the same recognition as classical research processes. There are reservations regarding certain aspects such as data quality, although it has been proven in several scientific studies that Citizen Science produces valid data [36, 39]. Nevertheless, precisely this quality assurance is an important topic for the future, as is sustainable data management. The extent to which Citizen Science can promote trust in science and scientific understanding or scientific literacy on a broad scale must be analysed if the participants currently come primarily from the academically educated middle class with an affinity for science. This is where it is necessary to address social diversity, inclusivity and exclusionary factors (such as language and accessibility) as well as the fit accuracy and active involvement of desired target groups. Simultaneously, Citizen Science needs an even broader public in order to gain more recognition. It is also essential to increase acceptance among researchers in university and non-university research institutions as well as among institutions that provide funding.

In order to permanently and firmly ingrain Citizen Science in Germany, the visions, strategies and framework conditions of the green paper must be implemented (→ Box 2). This can facilitate a diverse community in the field of Citizen Science, working with distributed expertise, connecting with existing networks and initiatives and living through new things. Citizen Science can contribute as a component to the sustainable development of our democratic knowledge society.

Citizen scientists identify animals and plants using automatic image recognition in the Naturblick app and thus learn more about nature in their neighbourhood. The app can also record bird calls and recognise which bird is singing through automatic sound recognition. Photo: Sophie Bengelsdorf

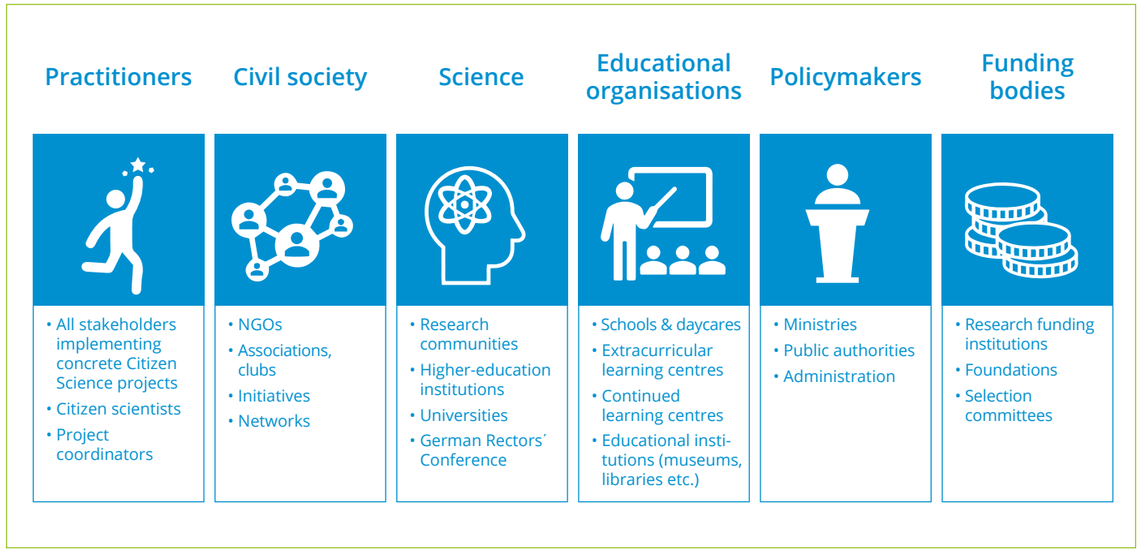


Figure 4: Target groups for the recommended actions

The White Paper Citizen Science Strategy 2030 for Germany

The *White Paper Citizen Science Strategy 2030* builds on the Green Paper and addresses the most important challenges, requirements and potentials of Citizen Science over the next ten years. The recommended actions show what needs to be done in the future to strengthen and better secure Citizen Science in Germany. The process of developing the White Paper is described in the chapter "Development process of the White Paper".

The White Paper aims to strengthen Citizen Science in society and science in order to be able to expand its innovative potential and clarifies the central tasks we are facing. How can we improve conditions in the German research landscape to allow more people outside institutional science to participate in research? How do we make Citizen Science engagement part of the scientific discourse? How can we support existing initiatives, projects and associations in their work? What needs to be considered in terms of data quality, data management and legal and ethical aspects? These and other possibilities and challenges were discussed in the white paper process in digital strategy workshops and dialogue forums with stakeholders from academia and the public.

In order to analyse the current status of Citizen Science in the 15 action areas of the White Paper, the White Paper working group conducted an online survey of the German-speaking Citizen Science community in September/October 2020 (hereinafter referred to as: CS Survey 2020). Quantitative and qualitative indicators were thus derived from the recommended actions in the Citizen Science Green Paper and an online questionnaire was developed based on them (available at: https://doi.org/10.5281/zenodo.5776150). The results of this survey are integrated into the individual White Paper chapters and cited with the reference "CS Survey 2020". The White Paper designates specific recommendations for 15 action areas on how Citizen Science can contribute to important goals from politics, society and science and how these can be anchored more in-depth. Six groups of addressees were selected to implement the recommended actions and are illustrated with symbols (→ Fig. 4). The White Paper also summarises each action area in a key message. A mission statement has been formulated to define a vision for the role of Citizen Science in the respective action areas in 2030, complementing the recommended actions (→ key messages).

Citizen Science provides new insights into science and scientific processes. Photo: Ralf Rebmann/Science in dialogue

Forecast

The White Paper illustrates ways to continually advance and anchor the Citizen Science landscape in Germany. In order to implement the strategy, the target groups from science, society and politics must realise the following measures:

- Establishing and implementing concrete action plans for the individual recommended actions from the white paper for the target groups to implement the required measures.
- Creating a more dynamic scientific process by breaking up outdated structures surrounding genuine open science and responsible research and innovation, enabling true participation as a scientific identity for innovation through transformative change in the scientific landscape.
- Expanding recommendations and solutions through an active, diverse Citizen Science community that is diversely anchored, permitting it to develop more of its own appropriate solutions.
- Active Citizen Science contributions in scientific journals and at professional conferences to further expand the scientific field.

German and international policymakers, the scientific community and society as a whole emphasise that the goals established in the Sustainable Development Goals (SDGs) – such as food security, health and well-being, securing clean energy supply, resource scarcity, climate and biodiversity protection, sustainable cities and communities – can be achieved most effectively through open communication and the involvement of stakeholders in science and civil society [40, line 1484 et seq., 41, 42].

This is where Citizen Science comes in to achieve the Millennium Development Goals. Our common intention and the targeted promotion and support from all stakeholders – citizens, associations and professional societies, research and educational institutions, museums, public authorities, the media and the corporate world – are important to enable profitable collaboration and to sustainably anchor Citizen Science in society and science in Germany.

CITIZEN SCIENCE – ACTION AREAS

In full gear: participants in the campaign prepare to test the river for microplastics. To ensure that the data collected is comparable, the standardised special net is provided by the campaign. Photo: BMBF/Gesine Born

Christine Ahrend
Head of the department of "Integrated Transport Planning"
at Technische Universität Berlin

Photo: David Ausserhofer

"I support the Citizen Science Strategy 2030 for Germany because we can only address societal challenges in a sustainable way through consistent collaboration between society and science."

Mission statement 1:

In 2030, Citizen Science will live through networking and exchange between science and society.

Networking and regular exchange will be further promoted. Special attention will be paid to the exchange between Citizen Science assets, as well as the synthesis and transfer of their expertise on initiating, coordinating and implementing Citizen Science projects and the associated empirical knowledge.

1 Citizen Science – networking and exchange

1.1 Situation analysis: Where do we stand since the Green Paper?

We have observed increased networking and more in-depth exchange within the Citizen Science community. By networking, we mean creating and maintaining connections with people or institutions involved in Citizen Science. Those interested in this reach out to Citizen Science points of contact or Citizen Science projects. We see networking both within the scientific community and with civil society. Networks at all levels facilitate exchange and collaboration between researchers and citizen scientists, and even among researchers themselves.

The fact that more and more platforms/networks/working groups/projects have been initiated, expanded and extended at various levels indicates increased networking within the past five years. The CS Survey 2020 shows that personal interaction with colleagues at their own organisations and other organisations, as well as local and regional networks (in whatever form - formal, informal, organised or loose, → Fig. 5) are important for half of all respondents to stimulate exchange and thus establish and expand Citizen Science competences. These include such competences as knowledge of project processes, communication, citizen researcher involvement, data collection, quality assurance, dissemination of results and organisational and administrative tasks, among others. 41% of the respondents are already members of a network, 9% are definitely planning to do so.

The existing **contact and coordination centres** organise exchange and networking within the scientific community (→ Box 4). They serve as a networking centre and workplace for all types of Citizen Science activities. Advisory and coordination centres help to find suitable partners, write successful funding applications, teach Citizen Science skills, ensure high-quality Citizen Science projects and recruit citizens for projects.

To build their own competence in Citizen Science and networking, most respondents in the CS Survey 2020 advocate for a support network of competent people from different organisations and points of contact in their own organisation. Just under a quarter to one-fifth of the respondents (24%) would like to see regional advisory centres or a central, cross-institutional advisory centre (22%) (→ Fig. 5).

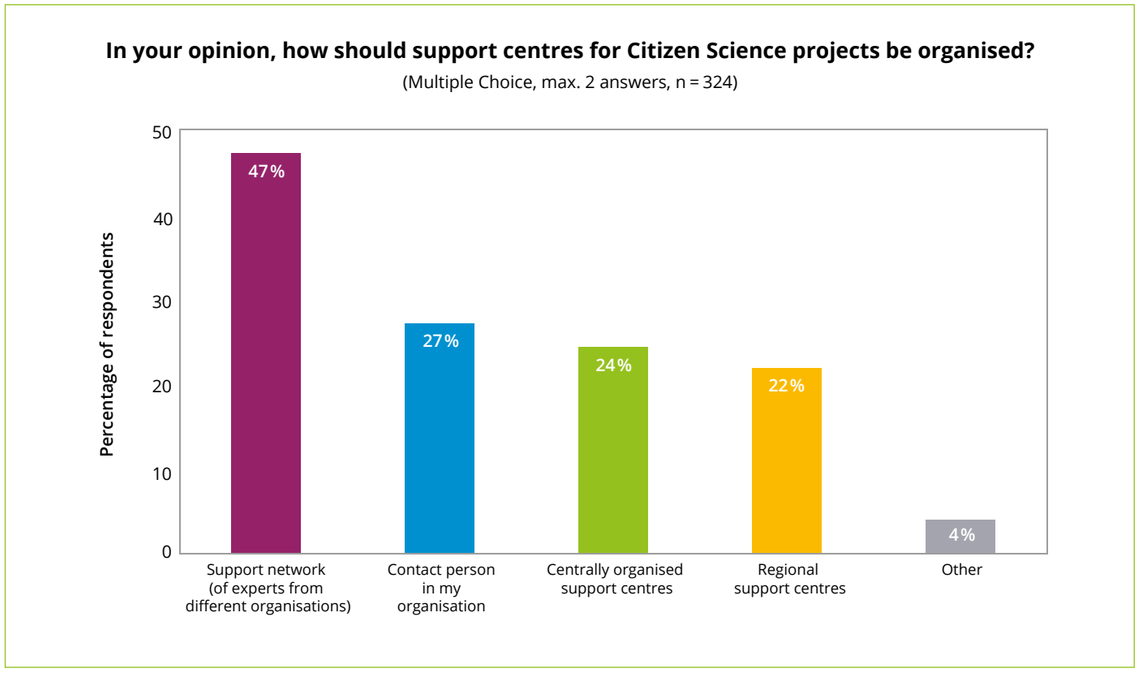


Figure 5: Participant assessment of the design of advisory centres (Citizen Science Survey 2020)

The various web-based platforms on which projects are listed and presented serve as important points of contact and information networks. There are various national platforms in German-speaking countries (→ action area 14 – European perspective). In Germany, the platform "Bürger schaffen Wissen" (BsW) (**www.buergerschaffenwissen.de/en**) has brought many Citizen Science projects together since 2013. The platforms in Austria, "Österreich forscht" (**www.Citizen-Science.at/en**, since 2014), and in Switzerland, "Schweiz forscht" (**www.schweiz-forscht.ch/de**, since 2015), represent network hubs in the countries mentioned. They present, connect and support Citizen Science projects and promote exchange within the community, especially through numerous offers such as annual Citizen Science conferences, training courses, workshops, etc. They are an important point of contact for scientists, citizen researchers, media representatives, political representatives and interested citizens. The project databases can be used to find Citizen Science projects and contact scientists for joint research projects. The number of projects listed on the BsW platform has increased from ten in 2014 to over 180, including completed projects in 2021. 60 projects are listed on the Austrian platform as of 2021. "Schweiz forscht" currently lists 63 projects as of 2021. Increased exchange and networking within the community gives rise to increased identification with the Citizen Science research approach and an increased number of Citizen Science projects. The slow but steady growth also leads to greater visibility and acceptance of Citizen Science within and outside of the scientific community. However, the Citizen Science Survey 2020 also showed that many citizen researchers network in their own forums or in other ways.

In addition to the national platforms, various **working groups** (WGs) on specific topics and Citizen Science **networks** have been founded in the past five years, for example at the Helmholtz Association, the Leibniz Association, the Fraunhofer Society and universities. These are also a sign of a growing community whose concerns and challenges are increasing and require sustainable solutions. Working groups on certain topics and many regional networks are signs of the diverse and decentralised commitment to Citizen Science. Networks make the diversity of Citizen Science visible to researchers and the public. They have the potential to make existing knowledge more efficiently usable for the community and to take regional and subject-related specificities into account. New ideas are also developed together and duplication of work can be avoided, e.g. in the compilation of materials and resources. Networks identify and develop new content and contribute significantly to establishing and steadily expanding the Citizen Science community. In addition to research institutions, technical schools and universities are the first points of contact for questions about Citizen Science. They contribute in many ways and thus strengthen the research approach. Some universities have institutionalised science shops or promote and support regional science shops or regulatory sandboxes, for example.

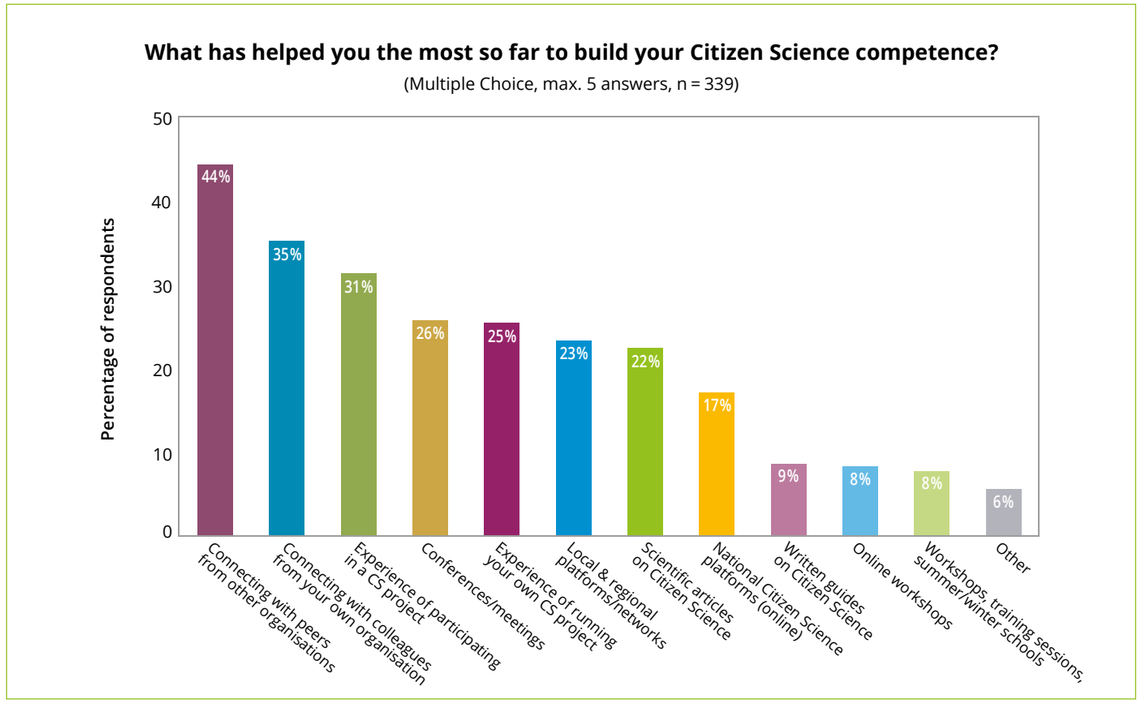


Figure 6: Participant assessment of Citizen Science capacity building (CS Survey 2020)

There are also active networks and platforms that do not have Citizen Science in their title but are committed to the idea of Citizen Science (→ action area 13 and → Box 4).

The visibility of projects contributes to the Citizen Science approach being perceived more strongly overall and being valued as "real" science. This fundamental gain in reputation within the scientific community (→ action areas 5 and 8) is the foundation for an exchange between researchers who are already active in the field of Citizen Science. New Citizen Science research designs are developed in open exchange between the participants. The results of the CS Survey 2020 (→ Fig. 6) show that exchange greatly contribute to building competences. For example, 44% of the respondents said that direct exchange with colleagues from other organisations had helped them build their Citizen Science competences. The second most important option for 35% of the respondents was exchange with colleagues from their own organisation. According to the CS Survey 2020, direct exchange with colleagues within an organisation and from other organisations contributes most to competence building. 30% of respondents (n = 324) would also like more advice on planning, implementing and running Citizen Science projects.

BOX 4 – Networking & exchange

The listed examples are only a selection. We are aware that there are many more currently active participants than those mentioned.

Points of contact/coordination centres

- Citizen Science laboratory at the German Aerospace Center DLR Jena (www.dlr.de/dw/en/desktopdefault.aspx/tabid-12910/22556_read-52206)
- Citizen's University at the Heinrich Heine University Düsseldorf, including advisory and funding structures for Citizen Science (www.buergeruni.hhu.de/en)
- Institutionalised Citizen Science working group at the University of Münster (www.uni-muenster.de/AFO/en/CS)
- Senckenberg Natural Science Society (www.senckenberg.de/en/get-involved/citizen-science)
- Centre for Citizen Science Austria – focus on cooperation with schools (www.zentrumfuercitizenscience.at/en)
- Participatory Science Academy of ETH and University of Zurich (www.pwa.uzh.ch/en)

Networks

- Helmholtz Association competence network "CitizenScience@Helmholtz" (www.helmholtz.de/en/transfer/citizen-science) and associated funding programme
- Leibniz research network "Citizen Science" (www.leibniz-gemeinschaft.de/en/research/citizen-science)
- Network of wildlife researchers in Berlin (https://berlin.stadtwildtiere.de/projekt)

– **Continuation Box 4** –

Working groups

- AG D-A-CH (www.buergerschaffenwissen.de/netzwerk/ag-dach)
- AG Citizen Science Berliner Raum (www.buergerschaffenwissen.de/netzwerk/ag-berlin)
- AG Region West (www.buergerschaffenwissen.de/netzwerk/ag-netzwerk-region-west)
- AG Science of Citizen Science (www.buergerschaffenwissen.de/netzwerk/ag-scienceofcitizenscience)
- AG Citizen Science in Schools (www.buergerschaffenwissen.de/netzwerk/ag-citizen-science-in-schulen)
- AG Citizen Science & Law (www.buergerschaffenwissen.de/netzwerk/ag-cs-recht)

Active networks and platforms without Citizen Science in their name

- Network of German-speaking science shops – Wissnet (www.wissnet.de)
- Living knowledge (https://livingknowledge.org/lk9)
- Federal Working Group on University Continuing and Distance Education (https://dgwf.net/bag-wiwa.html)
- Science Shop Kubus Cooperation and Advisory Centre for Environmental Issues at TU Berlin (www.zewk.tu-berlin.de/v_menue/kubus_nachhaltigkeit_umwelt/parameter/en)
- Social Science Shop of the Catholic University NRW in Cologne and the Protestant University R-W-L in Bochum (www.sozial-wissenschaftsladen.net)
- UNIAKTIV at the University of Duisburg (www.uni-due.de/diversity/service_learning.php)
- Science Shop Vechta/Cloppenburg, Wissenschaftsladen der Universität Vechta (www.wissen-teilen.eu/en)
- Regulatory sandbox (space for joint and mutual learning between the sciences and civil society)
- Netzwerk Reallabore der Nachhaltigkeit (www.reallabor-netzwerk.de)
- Reallabor at TU Berlin (www.oekohydro.tu-berlin.de/menue/labor/reallabor_wassersensible_stadt)
- Reallabor at the University of Wuppertal (www.idpf.eu/das-partizipative-reallabor)
- Reallabor at KIT (www.itas.kit.edu/english)
- BUND – various Citizen Science projects (www.bund.net/mitmachen/mitmachseite)
- Nature and Biodiversity Conservation Union NABU (e.g. annual bird count) (https://en.nabu.de)
- naturgucker.de as a social network for nature observers (www.naturgucker.de)
- Pollichia – Association for Nature Research, Nature Conservation and Environmental Education (www.pollichia.de)
- Volunteer exchanges (www.bmi.bund.de/EN/topics/community-and-integration/socia-cohesion-volunteering/socia-cohesion-volunteering-node.html, with links to individual volunteer portals)
- Volunteer agencies (https://bagfa.de/english)
- Science houses (www.hausderwissenschaft.de/english, www.hausderwissenschaft.org)

1.2 What are the requirements, opportunities and challenges?

The exchange goes beyond the scientific community. Networking between scientists and citizens offers enormous potential. It can help to reduce mutual threshold fears, promote understanding of scientific processes and anchor science more firmly in society. However, more resources and the intensified strategic partnerships (e.g. with voluntary agencies, professional societies or professional networks in science) are needed to reach the public with Citizen Science issues beyond the usual information channels.

What are the barriers/challenges?

Approximately 50% of all respondents in the CS Survey 2020 had never participated in Citizen Science events. This result is certainly a sign of a strong, independent and diverse Citizen Science community that exists through many bottom-up initiatives and perhaps exchanges ideas in other communities, e.g. in professional societies, associations or science shops. These structures are valuable and need to be recognised, valued and further supported.

Some demographics have not been reached yet and therefore no exchange can take place. This is partly due to the fact that the number of local and regional or even organisation-specific Citizen Science coordination centres (and staff) is only slowly increasing and open laboratories for Citizen Science initiatives are still more of an abstract model than reality. These challenges can be mitigated by utilising opportunities and implementing recommended actions.

Communication is central to networking. Some communication channels are listed in action area 4 “Synergies with scientific communication”. Networking projects related by subject can represent high added value within the projects and project participants can exchange information about conditions for success, but also possible obstacles, and learn from each other. Willingness for joint exchange is a prerequisite.

Events enable easy and personal contact for exchange and are also an expression of recognition and appreciation (→ action area 5). When designing event formats, it is important to consider who they are aimed at in order to ensure that they are appropriate for the target group. Project-related solutions adapted to the relevant groups of participants are needed. Regular meetings during existing local or regional networks (in person or virtual) are also a good opportunity for personal exchange. Some stakeholders already offer a wide range of events, such as the Naturgucker Congress, the Selbstgewusst Conference, the Conference of Species or events organised by the BBE network or the science shops.

Fishing in the Panke in Schönhausen Palace Park as part of the WissensFluss participatory project, organised by the Museum für Naturkunde Berlin. Photo: Maryam Mumladze

Where are there new opportunities?

Digitalisation offers good opportunities for networking independent of location. The resulting possibilities not only facilitate communication and, for example, data collection by the participants in Citizen Science projects, but also address people/groups that have not been reached so far and motivate them to participate. For one thing, higher project participation figures can be achieved by reaching potential citizen scientists. And digital training workshops or summer/winter schools are offered to build capacity for interested project initiators and multipliers, e.g. by “Bürger schaffen Wissen”, UFZ/iDiv and the Participatory Science Academy Zurich. Conversely, scientists can also be made more aware of Citizen Science through customised online formats, as these formats are much more time-saving to implement than participating in conferences, for example. Modules on specific topics could be considered for this (natural sciences/humanities and social sciences).

Short modular contributions could be used not only at online conferences and workshops, but also at particular specialist conferences.

In addition to digital exchange possibilities, the importance of personal communication should not be underestimated. For example, mentoring programmes can be set up to bring scientists with Citizen Science experience together with those interested in Citizen Science. In the future, even more attention should be paid to low-threshold ways of reaching potentially interested citizens.

Science shops and other stakeholders (e.g. voluntary agencies, civic associations, initiatives and extracurricular learning centres) have many years of experience in this area, which should be shared more in the future. These institutions often have a network of committed citizens who can be won over to Citizen Science. Potential is also offered at universities through studies such as gerontology, which could be used even more in the future. Citizen Science projects are already being performed in “research-based learning”. This could be extended to other universities in the future. If platforms, working groups, networks and relevant offers are strengthened, this will result in more exchange, which is useful for the research approach.

There is still plenty of room in the jar with the “yes” balls – networking and exchange can help put Citizen Science on an even broader footing. Photo: Ralf Rebmann/Science in dialogue

1.3 Recommended actions for area networking and exchange

1.1
Networks and working groups should be strengthened. Financial and non-material support should be provided for networking in organisations and funding programmes, e.g. through **network meetings for funded projects within a programme** or with **regional networking workshops** for Citizen Science projects.

1.2
Exchange opportunities for project coordinators should be anchored within the structure of the projects, since new project coordinators learn most from experienced colleagues.

1.3
Funding bodies and institutions from science and society (such as science shops, science houses, museums, libraries, archives, etc.) should consolidate and guarantee the extensive range of **local, regional and national exchange platforms.** This requires not only willingness but also financial resources.

1.4
Universities and research organisations should set up their own Citizen Science **contact, advice and coordination centres** combined with science shops, science houses and regulatory sandboxes. Specific contacts (existing or new advisors) should identify participatory, transdisciplinary research projects within the university or research institution, connect the participants, intensify Citizen Science, raise awareness among researchers, make ongoing Citizen Science projects visible and provide advice (e.g. on research design, funding opportunities, volunteer management, communication, etc.).

1.5
Research institutions should anchor support and networking structures for Citizen Science into the structure of **strategies and personnel planning.**

1.6
Research institutions and cities/municipalities should collectively **establish** transdisciplinary **city labs and regulatory sandboxes** and/or **science houses.** These should be low-threshold offers to create exposure to science and could also be role models and hosts for Citizen Science networks.

1.7
Research institutions and the Citizen Science community should make better use of the potential that has thus far not been exploited of networking with gerontology, at technical schools, voluntary agencies, neighbourhood offices, city libraries, science shops, etc.

1.8
Civil society organisations, research institutions and funding agencies should establish networking methods and formats for exchange and networking, such as the annual National Citizen Science Conferences (with different sponsors/organisers, e.g. through associations, science shops, volunteer agencies, etc.).

1.9
The Citizen Science community should draw up a map of networks, points of contact and coordination centres relevant to Citizen Science as well as physical spaces for knowledge transfer and dialogue with civil society (such as science houses, regulatory sandboxes, science shops, etc.). Municipalities and local multipliers should be seen and used as interfaces to accomplish this.

Addressees

Practitioners · Civil society · Science · Educational organisations · Policymakers · Funding bodies

Katrin Böhning-Gaese
Director of the Senckenberg Biodiversity and Climate Research Centre and Vice President of the Leibniz Association, Professor at Johann Wolfgang Goethe University Frankfurt am Main

Photo: private

"Citizen Science in Germany has added value for the society as a whole – and it is more relevant than ever for achieving an understanding of nature and a sustainable approach to it. And Citizen Science is indeed the cornerstone of the Senckenberg Society, founded in 1817 by citizens interested in nature."

Mission statement 2:

In 2030, Citizen Science will be supported by stakeholders in science, society, public authorities and practice through structural and financial measures (e.g. federal and state ministries and subordinate authorities and administrations, research and funding organisations, foundations, associations, networks, educational institutions).

Funding organisations integrate Citizen Science into their funding portfolio for various corporate and research stakeholders. The prerequisite for funding Citizen Science projects should be quality-assured procedures and standards based on the rules of good scientific practice through regular evaluations. This creates greater social participation in science and increases its acceptance and relevance.

2 Citizen Science – funding instruments

2.1 Situation analysis: Where do we stand since the Green Paper?

Since 2016, there has been an **increase in funding opportunities** for Citizen Science projects in German-speaking countries. In Germany, this is primarily reflected in specific Citizen Science calls for proposals. This can be seen particularly in state research funding from various federal ministries (especially BMBF calls for proposals in 2016 and 2019), as well as in the integration of Citizen Science into existing funding programmes (e.g. BMU - Federal Programme on Biological Diversity) and funding offers by foundations (e.g. DBU), universities and non-university research institutions. According to the BMBF, the two calls for proposals in 2016 and 2019 alone comprise a funding volume of around €13.5 million. The call for proposals for Citizen Science projects by the federal ministries is now part of an overall strategy to bring science and society more closely into dialogue and to increase participation and transparency of science (e.g. the Federal Government's High-Tech Strategy 2025 [31, 43]). Project funding from private funding organisations and by the research organisations themselves are becoming increasingly important. The German Research Foundation (DFG) funds Citizen Science formats mainly only for communication measures, events or European partnerships (e.g. BiodivERsA), but not through a specific funding programme.

Citizen Science is seen as an **integral part of open science** in the European context [44]. The EU promotes Citizen Science using the EU Research Framework Programme (e.g. networking activities, knowledge platforms through the "Science with and for Society" programme). In Austria, the Austrian Science Fund (FWF) launched the "Top Citizen Science" (TCS) [45] funding initiative for the fifth time in 2020. And the Austrian Ministry of Research (BMBWF) has been promoting cooperation between research and schools for over ten years with the "Sparkling Science Programme" [46]. From 2007 to 2009, a total of 299 research projects were funded through this programme with a total amount of approx. 35 million euros. The renewed call for proposals for "Sparkling Science 2.0" started in September 2021 and goes beyond collaboration between research and schools. In Switzerland, Citizen Science projects are funded by the Agora Programme from the Swiss National Science Foundation as part of science communication [47].

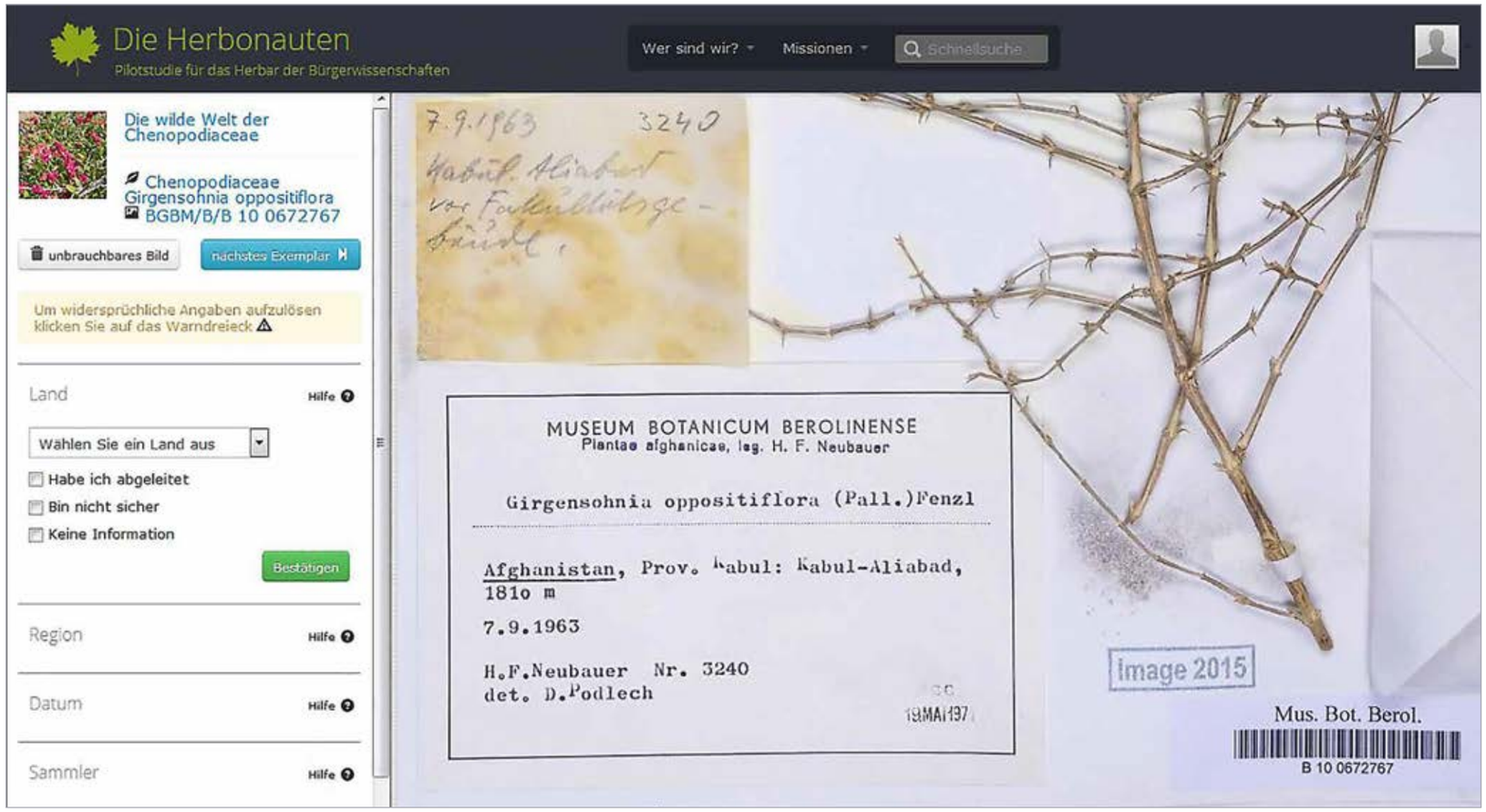
However, beyond project funding and funding as a pure communication measure, Citizen Science funding instruments are still the exception and grant recipients are predominantly scientific institutions. Moreover, the range of funding for Citizen Science projects outside traditionally strong natural history research is still quite limited.

The CS Survey 2020 pointed out that only a subset of Citizen Science projects receive research funding and many initiatives do not receive funding. This great diversity is a characteristic feature of the Citizen Science landscape.

2.2 What are the requirements, opportunities and challenges?

The results of the CS Survey 2020 generally show a high level of expectation from the Citizen Science community towards research funding organisations for **more funding opportunities in the field of Citizen Science:** Almost 70% (n = 287) state that the opening of existing funding programmes to Citizen Science projects has increased. However overall, only around 4% believe that sufficient instruments are currently available to fund Citizen Science projects. The discrepancy between demand and funding quota is evident, for example, in the BMBF call for proposals in 2019. According to the BMBF, around 450 project outlines were submitted during the first stage of the process. From this amount, only 15 projects received a funding recommendation [48]. This corresponds to a funding rate of less than 5%, which is significantly below the funding average of other funding guidelines. However, this was an open call for proposals with no restrictions regarding subject or discipline. Action must be taken particularly in the following subareas:

- Notably, 19 of the 78 coordinators (n = 78) do not currently receive project funding for **coordination services.**
- In addition to expanding project-related funding, **structural measures** should be implemented to **build capacity** over the long term (e.g. by funding permanent positions for coordination, education and continuing education, training, communication, volunteer management, counselling).
- **Low-threshold funding offers** such as "seed money" projects play an important role. The results of the CS Survey 2020 show that the majority of funding volumes for Citizen Science projects are in the five-digit range according to the funders. And according to the results of the survey, the median is just under €200,000. In exceptional cases, Citizen Science projects are also funded with six-figure amounts. Only a very small proportion of respondents (< 6 %) state that there are sufficient opportunities for such low-threshold funding (**microfinancing**). Such offers enable **start-up and supplementary funding**, which can close funding gaps in the context of the specific research process of Citizen Science projects (keyword: co-design, co-production). These are often accompanied by extended project phases [11]. This includes such things are measures and activities to recruit and train citizen researchers or measures to communicate the results in a way that is appropriate for the target group. Examples of this are various contributions in kind for event organisers, websites and the use of social media, information brochures and handouts for training, flyers and various equipment.
- Project-related funding should also extend to the area of **evaluation, accompanying research and research on the impact of Citizen Science** on the various stakeholder groups (→ action area 15).



Can you name the country this specimen comes from? Then the Herbonauts is the right place for you. The Herbonauts project: deciphering herbarium labels in the Botanical Garden Berlin with citizen support. Screenshot: Herbarium record in the Herbonauts portal.

With regard to the development of **information platforms for pooling, advising and networking**, the "Bürger schaffen Wissen" project (funded by the BMBF since 2013) and various other European platforms (e.g. EU-CITIZEN.SCIENCE) have made a significant contribution to making the existing knowledge on ongoing activities and projects available. Since 2019, a long-term perspective has been created at the University of Vienna with the Österreich forscht platform. In Switzerland, a comparable approach exists with the Schweiz forscht platform (→ action area 1).

The results of the CS Survey 2020 illustrate that almost 70% (n = 273) of the respondents are not aware of any advisory services for submitting applications and only about 30% would like more advice on planning, implementing and/or evaluating their Citizen Science project. The survey also highlighted the need to promote offers, especially in the field of data management (→ action area 6) and to create additional regional counselling services (→ action area 1). When asked about the potential organisation of counselling centres, respondents predominantly wanted a support network of competent personnel from different organisations. The second most important source of advice and support was points of contact in their own organisations. 20–25% of the respondents wanted regionally or nationally organised counselling centres or networks. This highlights the character of diversity and distributed knowledge in different organisations and the desire for strong local or intra-organisational consultation as well as expert contacts in different organisations. Geographical proximity and strengthening networks of different organisations seem to play significant roles.

The AgriSens project in cooperation with farmers – here the use of the FieldMApp software in the field. Photo: Christian Thiel

With regard to project funding by the federal government (especially the BMBF), the **administrative and funding-related challenges** for applicants (in the case of the BMBF three-stage call for proposals in 2019) are cited as barriers, especially among citizen researchers and NGOs. The complicated award guidelines and the electronic application portals as well as the extensive project management sometimes pose greater challenges for the funding recipients. Finally, the **long review phase** (sometimes more than a year) makes the funding format less attractive, especially for participants who do not receive institutional funding but finance themselves primarily through third-party funds, donations or membership fees.

2.3 Recommended actions for area funding instruments

2.1
Funding institutions and other stakeholders should expand specific **funding instruments for projects** and further open up existing funding programmes to Citizen Science as a research and communication method. In addition to international and national funding, the federal states and municipalities should also feel involved. The amount of **low-threshold funding (microfinancing)** should be expanded. Funding for **accompanying research and research on the impact of Citizen Science** should be supported (e.g. as part of project funding). In addition to expanding project-related funding, **structural measures** (e.g. new staff positions) should be implemented to **build long-term capacity**.

2.2
Funders and participants should support the **expansion of advisory services** for different target groups at the national and regional level.

2.3
Funders should remove administrative and technical barriers to funding so that in particular civil society groups can participate more easily in funding programmes. **Long evaluation phases** should be avoided and **flexible offers** should be created.

2.4
Business, administration and educational institutions (e.g. continuing education centres) should also exploit opportunities to specifically promote Citizen Science projects.

2.5
Scientific institutions, organisations, administrations, educational institutions, associations and professional societies should support Citizen Science **coordinators and communicators** through third-party funding or permanent positions.

2.6
Create "**tech pools**" for citizen scientists: Citizen Science projects often require a basic supply of relevant literature and technical equipment, especially in natural history, archaeology and astronomy. One example is the recording programmes of the Dachverband Deutscher Avifaunisten (Federation of German Avifaunists, DDA) for breeding birds and waterbirds or the reporting of chance observations on the reporting portal ornitho.de. A prerequisite for taking part is – in addition to specialist knowledge – a whole range of identification literature and optical equipment (binoculars, spotting scope with quiver and tripod, sometimes tablets or smartphones for digital recording, etc.). The cost of procuring all this is very high for volunteers (depending on the brand, between 500 to over 1500 euros) and is an obstacle not only for young people who are interested in joining in. Therefore, it would help significantly if the project funding would also cover the price of purchasing the necessary basic equipment, e.g. rental equipment. Borrowing could be organised through the coordinators or through libraries over the long term (for specialist literature) and continuing education centres (→ action area 13).

2.7
Participants from civil society should be given greater consideration when selecting members for various selection committees and selection processes for Citizen Science funding. They bring an important perspective to the selection and review processes for Citizen Science projects (e.g. relevance, degree of feasibility, applicability, innovative potential). In addition to selection committees, this could be extended to awarding prizes, implementing strategy processes and evaluations.

Addressees
Practitioners · Civil society · Science · Educational organisations · Policymakers · Funding bodies

Alexander Bonde
Secretary-General of the German Federal Environmental Foundation – DBU

Photo: DBU

"Citizen Science is a particularly effective format because it facilitates concrete collaboration between science and society. The goal: evidence-based solutions for key challenges of sustainable development. For the German Federal Environmental Foundation (DBU), Citizen Science is a particular interesting method because it can play a role in a variety of our applied funding topics."

Mission statement 3:

In 2030, Citizen Science projects will be characterised by professional volunteer management.

Participants from all areas of society will be enabled to participate successfully and sustainably. Thus personnel resources and finances will be made available for the projects, along with connections to established volunteer structures. Local and regional stakeholders, associations and foundations in the field of volunteer management as well as local and regional media will work together specifically in volunteer recruitment and management. Together, they will carry out as needed and targeted training and continued education in Citizen Science projects.

3 Citizen Science – volunteer management

3.1 Situation analysis: Where do we stand since the Green Paper?

According to the Enquete Commission, the central characteristics of civic involvement are *voluntary action, an orientation towards the common good and acting in the public sphere*. According to the fourth German Survey on Volunteering by the Federal Government [49], an important motive for citizens to volunteer is *to shape society on a small scale*.

In the context of Citizen Science, the aspect of involvement as a learning opportunity is particularly relevant. Interest in certain topics or research areas motivates volunteers to acquire expert knowledge. In addition to planning, organising and coordinating Citizen Science projects, volunteer management also includes the training and continued education of volunteers [1].

Citizens often commit to a Citizen Science research project for a certain period of time. The commitment is characterised by the specific project commitment and the recruitment based on the topic. The collaboration between scientists and volunteers strives for a high level of self-efficacy and active participation in different phases of the research process.

Since the publication of the 2016 Citizen Science green paper, policymakers have become increasingly interested in the involvement of civil society in scientific processes, especially in the field of environmental protection [50]. Furthermore, the range of educational and continuing education opportunities for both coordinators and researchers in volunteer management has expanded (→ Box 5, → action area 4 on scientific communication). Training and advanced training for volunteers on different aspects of participating in Citizen Science projects have been established and differentiated according to subject (e.g. wildlife monitoring, water monitoring, butterfly monitoring, → Box 5).

The CS Survey 2020 shows that the green paper courses of action in Citizen Science volunteer management have been partially implemented since 2016, but that there are also still many requirements and action gaps. Many experienced Citizen Science practitioners are able to successfully cope with the complex demands of everyday project work by combining knowledge and skills and to generate approaches to solutions for situational problems.

For almost half (approx. 45%) of the respondents, personal exchange with external and internal colleagues with Citizen Science experience is an essential factor for building this Citizen Science competence (n = 339). Building competence in the domain of Citizen Science is also promoted through exchange in workshops and conferences and through local and regional platforms and networks. However, only less than 10% of respondents mention structured workshops & training

as an important aspect of their Citizen Science training and education (→ action area 1). Overall, only one third of the respondents (35 %) would like more advice on planning, implementing and evaluating their Citizen Science projects (n = 324). Of those who would like more advice, two-thirds of the respondents (69 %, n = 87) mention volunteer management as advisory or event content – in addition to advice on data management.

The majority of the volunteers that participated in the CS Survey 2020 were male, on average over 50 years old and mostly from an academic background (48% university degree, 21% PhD). Other studies also show that the diversity of volunteers in environment-related Citizen Science projects is not yet balanced in terms of age, gender and level of education [51, 52]. Accordingly, the surveyed Citizen Science community would like to see a significant increase in volunteer diversity. Only 18% of the respondents agree that current Citizen Science activities are already succeeding in getting people from different backgrounds to participate in research.

The volunteers rate the impact of their Citizen Science activities on their personal development very positively (→ Fig. 7, → action area 9): Most notably, the aspects of collective and individual effectiveness through Citizen Science are frequently mentioned ("I feel I can make a difference as a group or individually", 91% and 83% of respondents respectively), the acquisition of knowledge about the project content (92%) and the motivation for long-term commitment to the project (82%) (n = 113). Also, 81% of the volunteers state that they feel "part of a Citizen Science community" and 73% express that their contributions to the Citizen Science projects gain recognition (n = 113).

The perspective of the surveyed Citizen Science project coordinators clearly points to challenges and gaps in volunteer management. In the projects represented in the survey, little data is collected on the socio-demographic background of the volunteers. About 60% of the n = 79 coordinators stated that they do not collect any data at all on volunteers. This can be attributed to a lack of human resources for systematic project evaluation, but also to a lack of awareness of the importance of project evaluation in Citizen Science projects. Thus, there is a lack of knowledge about the motivation, needs and education level of the volunteers. However, this data is an important foundation for project design, application and communication tailored to target groups (→ action area 4) as well as for targeted implementation of educational interventions (→ action areas 8, 9) and recognition mechanisms (→ action area 5). Systematic evaluation of Citizen Science projects (→ action area 15 accompanying research), including volunteer management, still needs improvement (n = 79). Only about 36% of the projects surveyed are systematically evaluated internally (i.e. with the help of standardised questionnaires or structured interviews), and about 23% are systematically evaluated by external experts (→ action area 15). 29% of the surveyed Citizen Science coordinators (n = 79) state that their project is not evaluated at all.

Citizen researchers ecologically monitoring small watercourses and streams. Photo: FLOW/BUND/UFZ

BOX 5 – Guidelines and points of contact for volunteer management

The examples given are only a selection

- „What does volunteer management mean?" (from Stiftung Mitarbeit): **www.buergergesellschaft.de/praxishilfen/kampagnen-und-aktionen/engagement-in-aktion/wie-funktioniert-freiwilligenkoordination-und-management/was-bedeutet-freiwilligenmanagement**
- Reifenhäuser, O. & Reifenhäuser, C. (2013). *Praxishandbuch Freiwilligenmanagement* (Practical Handbook on Volunteer Management). Beltz
- Training course on strategic volunteer management: **www.ehrenamt.de/1599_Ausbildungsgang_Strategisches_Freiwilligenmanagement_2021_S1.htm#**
- Training course on volunteer management: **www.fes.de/akademie-management-und-politik/ausbildungsgaenge/freiwilligen-management**
- Federal Association of Volunteer Agencies with "Agency Atlas": **www.bagfa.de/english**
- Overview of continuing education institutions throughout Germany: **https://dgwf.net/mitglieder-107.html**
- English review on volunteer management: West, S. & Pateman, R. (2016). *Recruiting and retaining participants in Citizen Science: What can be learned from the volunteering literature?* **DOI: 10.5334/cstp.8**
- Examples of volunteer training:
  - Wildlife monitoring: **www.wald.sachsen.de/saechsisches-wildmonitoring-4513.html**
  - Water monitoring: **www.idiv.de/de/web/flow.html**
  - Specialist seminars on knowledge of species from state academies or e.g. **https://foertax.de/** and **www.artenkenntnis.de**
  - Butterfly monitoring: **www.ufz.de/tagfalter-monitoring** and **www.vielfaltergarten.de**

3.2 What are the requirements, opportunities and challenges?

Successful volunteer management is characterised by approaches tailored to specific target groups of citizens and based on their needs, attractive training opportunities that promote better understanding of scientific working methods and lead to the collection of high-quality data, in addition to relevant expertise. Continuous peer exchange and regular feedback on research activities and project progress motivate volunteers to commit to the project over the long term. Such volunteer management is socially transformative by mobilising interested people from different social strata and thus enabling broad social participation in science and decision-making processes. Many of these potentials in volunteer recruitment and volunteer training and education have not yet been exhausted.

What do we still need?

The basic prerequisites for successful volunteer management are the qualifications and time resources of the Citizen Science project coordinators and staff. Project coordinators are responsible for many other

tasks besides volunteer management. They are usually mainly responsible for project conception and development and mediate between the goals and demands of science and social conditions and requirements. They often organise (in cooperation with institutes and associations) the project application and public relations work as well as volunteer recruitment and support and are therefore the point of contact for volunteers, researchers, media, authorities and other stakeholders. Therefore, project coordinators should be supported in their work by establishing and promoting training formats for personal exchange with experienced colleagues and Citizen Science projects that have already been established (e.g. in-person workshops/mentoring, network exchange). This can generate unity and permit more resources to be invested in volunteer management, which typically takes up a lot of time, especially in the start-up phase and during the Citizen Science promotion periods (e.g. "field season"). In order to ensure that volunteers can be contacted on a continuous basis and to build a sustainable relationship of trust with volunteers and other stakeholders, volunteer coordinators in Citizen Science projects should be employed on a long-term basis and should receive adequately pay.

In the CS project MikroSafari, pupils carry out the Ant Picnic experiment: ants are attracted with bait on small cardboard discs, observed and captured in order to understand which ant communities exist and how ants search for food under different environmental conditions. Photo: MikroSafari/UFZ/iDiv

In order to strengthen the evaluation and thus systematically improve volunteer management, structured, indicator-based guidelines or frameworks for internal evaluation should be increasingly distributed to Citizen Science coordinators. The identification of Citizen Science experts could be facilitated by a "forum for external project evaluation", which would establish contacts for evaluators.

Successful Citizen Science projects show that recruiting new volunteers can be achieved by developing specific target group concepts, appropriate communication channels and "messages" for the respective project as well as by identifying key multipliers.

In order to diversify the traditional target groups for Citizen Science projects, it is important to broaden the spectrum of cooperation partners in Citizen Science projects and to involve socially established infrastructural institutions for engagement and participation. Examples of these include local associations and nature conservation groups, science shops and regional or national associations or NGOs, foundations, continuing education centres and volunteer agencies. Their main task is to advise people who want to get involved and then to refer them to suitable agencies. Voluntary agencies also support voluntary work by offering a wide range of training courses for citizens and project organisers (e.g. on "volunteer management"). In academia, institutions for continuing education can provide contacts for older individuals with a strong interest in education and meaningful voluntary involvement. In order to attract people from non-academic backgrounds, professionals or senior citizens to participate in Citizen Science projects, it is necessary to cooperate with competent, networked local institutions (e.g. neighbourhood shops, multi-generation houses, senior citizen centres, senior citizen study institutions).

The advantages and opportunities of participating in Citizen Science projects must be clearly communicated to potential target groups. Structural barriers to Citizen Science involvement, such as long working hours or lack of time due to childcare, could be reduced through incentives such as paid time off from work, expense allowances or integrating child-friendly offerings in Citizen Science projects.

In order to enable stable and continuous project implementation, volunteers who are temporarily active in the project should collaborate with volunteers who are committed on a long-term basis (e.g. through mentoring to transfer expertise, → recommended actions for the continuation of projects in action area 2 "funding instruments"). The responsible Citizen Science project promoters (science institutions and associations) need financial resources to implement innovative formats to engage volunteers in projects.

Both Citizen Science funding institutions and citizens want close cooperation between researchers and volunteers in the form of co-creative projects. Appropriate approaches for this are joint development of questions, Citizen Science agenda setting and the assessment of project applications (funding). Project goals, methods and implementation can better correspond to the concerns and motivations of the volunteers if citizens are actively involved in project planning and structuring from the beginning. Volunteers thus engage intensively with the scientific knowledge process and identify more strongly with "their" project over the long term.

Where are there new opportunities?

The possibilities presented by online volunteering are becoming more and more popular and, due to its flexible offers in terms of time and location (micro-volunteering), it is attractive for many participants, especially during the COVID-19 pandemic.

Online platforms and workshops provide diverse access to Citizen Science projects and training opportunities (see the webinars on various projects). Some projects offer networking platforms for volunteers, which are widely used for exchange and mutual support. Many volunteer agencies use online databases to inform citizens about opportunities for local involvement. Establishing interfaces with central volunteer agency databases is an example of how to increase exposure for engaged citizens in the Citizen Science landscape.

Creative solutions, such as project apps with playful offers (gamification) for volunteers, can make valuable contributions to the continued training or motivation of volunteers as well as to project evaluation. For example, increased knowledge among volunteers can be tested in a digital quiz format. Timely individual feedback to volunteers on their research activities (e.g. via digital data collection tools or project apps) has been shown to contribute to knowledge and skill acquisition [53, 54]). Citizen Science projects can also draw experience from applications of the citizens' councils model (outcome of the BBE Network Meeting 2020, [55]).

The corporate volunteering movement, in which companies organise and/or support their employees performing voluntary work, should be taken into account in order to motivate middle-aged individuals who spend a great deal of time in their professional lives to participate in Citizen Science projects. Competent intermediary structures already exist for this purpose at voluntary agencies and other institutions.

Training and continuing education for students and scientists in Citizen Science and volunteer management are not yet available (apart from exceptions such as the "Citizen Science" associate chair at FSU Jena). However, this is a very attractive option for study modules in the realms of teaching and scientific journalism, environmental education and sustainability management (→ action area 8).

As part of the Love & Kisses – Digital Letters CS project, love letters from and to citizens are collected, researched and archived in order to preserve this disappearing everyday culture for posterity. Photo: CC-BY-SA Stephanie Werner

Also, some voluntary agencies have already established cooperation with universities regarding service learning.

What are the barriers?

In many Citizen Science projects, the following factors have a limiting effect on the implementation and success of volunteer management.

1) Lack of capacity and inadequate training for project coordinators in volunteer management (→ Chapter 2 Funding instruments and the BBE's demand for full-time positions in civil society infrastructure institutions).
2) Lack of structured project evaluation to improve and advance volunteer management based on evidence and geared towards its target groups (or educational materials and communication channels/ products, → action areas 4, 9).
3) Limited networking of Citizen Science projects with established volunteer management institutions.
4) Lack of co-creative offers and institutionalised opportunities for citizens to have a say in funding decisions (result of the BBE network conference).
5) Lack of outreach among potentially interested volunteers due to one-sided advertising of projects and one-track volunteer recruitment.

3.3 Recommended actions for area volunteer management

3.1
Citizen Science networks, associations and experienced project coordinators should design and implement **specialised training courses and structured networking opportunities** for project coordinators on the topic of volunteer management. Cooperation with established civil society institutions of engagement management is a good way to do this: National Network for Civil Society (BBE), Federal Association of Volunteer Agencies (BAGFA), community foundations (CFs).
Citizen Science funding formats should include the training and continued education of project coordinators. Existing training materials should thus be revised, translated, made accessible and better distributed and promoted, ideally through collaboration with voluntary agencies. In-person training formats should be used more often. Tutorials and instructional videos can also buffer project coordinators from many questions and thus spare their limited time capacities.

3.2
Project coordinators and educational organisations should expand and advance **training, coaching and mentoring opportunities for volunteers** that are tailored to their **needs and target groups**, and plan **"train the trainer" multiplier workshops from the beginning of project development to pass on expertise** from experienced volunteers and coordinators as well as from established Citizen Science projects. Collaboration with established stakeholders such as socio-cultural centres, WiLAs and BBE/volunteer agencies is recommended to achieve this. A platform with training materials (e.g. standardised courses to acquire knowledge of species) and workshops for coordinators and researchers could be created. Funding applications should already include resources for personal exchange between Citizen Science experts and newcomers, or for one-to-one mentoring or shadowing in another Citizen Science project.

3.3
Project coordinators should **increase the diversity of participants and Citizen Science project initiators** in order to take the Citizen Science approach beyond academic circles into mainstream society. This can be done through targeted cooperation with associations and voluntary agencies, neighbourhood shops, senior citizen offices and continuing education institutions, through project communication geared towards certain target groups, best practice examples or champions.

3.4
Funding agencies and academia should design and implement internal and external tools to **systematically evaluate volunteer management** (e.g. through volunteer satisfaction surveys) in Citizen Science projects. This should be a prerequisite and part of funding mechanisms. A systematic evaluation of Citizen Science projects in terms of how, what, when, why and who is reached and motivated is a starting point on the way to integrating Citizen Science into mainstream society.

Addressees
Practitioners · Civil society · Science · Educational organisations · Policymakers · Funding bodies

Christiane Grefe
Journalist for *Die Zeit*, book author

Photo: Die ZEIT

"I support the Citizen Science Strategy 2030 for Germany because – as we have seen, for example, with the Krefeld insect study – citizens that actively engage in research bring additional, and also critical perspectives to scientific and political debates, thereby broadening tunnel vision (including their own), bringing communities together and, last but not least: because it can all be fun."

4 Synergies with science communication

4.1 Situation analysis: Where do we stand since the Green Paper?

The 2016 Green Paper already identified the first key development areas with regard to potential synergies between science communication and Citizen Science. In this context, the need to focus on building capacity and developing skills was particularly noted. We thus broke down courses of action referring to creating clear structures and responsibilities in project communication, conceptualising guidelines, expanding qualifications, supporting communication departments and media, and increasing the use of digital and traditional media.

Including Citizen Science in the repertoire of science communication goes hand in hand with the generally increased attention and importance attributed to it at the present moment [28]. Science communication informs, educates and raises awareness of scientific issues. It takes on a mediating role between science and the public and creates spaces to initiate and maintain a dialogue about questions, findings and methods of research. The development of science communication from the deficit model (more information = better understanding) to communicative and participatory formats runs almost parallel in time to the Citizen Science scene, which is growing primarily through digitisation[KB1]. Genuine participation and collaboration in research processes can fulfil many overarching goals of science communication, such as understanding methods and processes according to theory. This is why Citizen Science and other participatory formats are increasingly taking on an important role in the discourse of science communication (→ Strategy process #FactoryWisskomm on the future of science communication, organised by BMBF 2021 [56]). In practice however, communication still often needs to be professionalised. This is often assigned as an additional task to project coordination.

Based on current data from the CS Survey 2020, it can be seen that some of the courses of action addressed in the Green Paper have already been implemented in practice. However, improvements and specific proposals still need to be made in other areas. Many guides and manuals pertaining to science communication [57, 58] and Citizen Science [7, 59, 60] have been written in English as resources on individual topics or tools. However, a synthesising discussion on the connection between science communication and Citizen Science still needs to be strengthened.

The data from the CS Survey 2020 indicate a need for such definite and structured guidelines. This is because only less than half (43%) of the respondents state that they have a definite strategy for science communication for Citizen Science projects. Similarly, more training and guides for science communication are needed in Citizen Science projects. According to this survey, only 37% of the respondents have attended a workshop on "Citizen Science and science communication", while 68% of the respondents confirmed a need for such advisory support structures as well as workshops (→ CS Survey 2020).

Mission statement 4:

In 2030, strategic and evidence-based scientific communication will be an integral and fundamental part of Citizen Science projects to enable a dialogue between society and science.

A position paper on Citizen Science values and guidelines involving different stakeholders (e.g. practitioners, civil society and science) can strengthen the implementation of science communication. Established interfaces in scientific communication at the institutions, additional project funding and continued education support Citizen Science assets in achieving the desired communication and impact goals.

4.2 Citizen Science in the discourse of science communication

Citizen Science combines central criteria and goals of good practice in science communication [57, 28]. Communication in active cooperation on specific and socially relevant issues not only focuses on the results of research, but above all makes methods and processes comprehensible and new knowledge emerges through exchange. The connection between Citizen Science and science communication is accompanied by high expectations in the discourse. These relate primarily to promote scientific literacy – this means the acquisition of various competencies that support the classification and reflection of scientific findings, such as factual competence, learning competence, ethical and moral competence – as well as the social relevance of the topics addressed [61, 62]. At the institutional level, Citizen Science is often rooted in concepts such as transfer or the Third Mission of universities, which stand for promoting not only research and teaching (first and second mission) but also exchange with the region and transfer to society through science communication. In this context, Citizen Science can contribute most decisively to more participatory and inclusive science and science communication. However, Citizen Science must remain first and foremost a research approach (i.e. not used purely as a public relations tool). Citizen Science can thus have a democratising effect resulting in greater transparency, better accessibility and more participation, and establish a new culture of collaboration.

4.3 What are the requirements, opportunities and challenges?

Successful communication invites people to participate in research and motivates them to continue. It also informs about project goals, methods and processes. It opens up spaces for discussion, feedback, incentive and exchange, and shares project results and findings. Formats, channels and specific content are derived from the direction and purpose of communication and exchange (additional references to the topic of exchange and networking → action area 1). This requires strategic planning of communication and, depending on the format, also requires competences and capacities to be able to fill the roles that arise: as moderator, tutor, networker, facilitator, etc. Many projects also aim to raise the awareness of individuals and society as a whole on issues and processes to spark changes such as changes in behaviour, for example.

With the idea-mining format of the AFO of the WWU, citizens in Burgsteinfurt develop concepts for the use of former Jewish buildings. Photo: WWU Münster/Bauhus

In this context, the still relatively emerging fields of the science of science communication and the science of Citizen Science play a special role. In each field, evidence-based knowledge is created and theoretical classification of and critical reflection on the subject area are implemented. The focus is on what impacts the science communication or Citizen Science formats

have on which dimension and with which instruments (→ action area 15). Stronger dovetailing of the research fields and transferring them into the respective communication practice is therefore expedient. This perspective is still not embraced enough when evaluating science communication in Citizen Science projects. For example, only one third of the respondents state that the dialogue between citizens, researchers and decision-makers is systematically evaluated (→ CS Survey 2020).

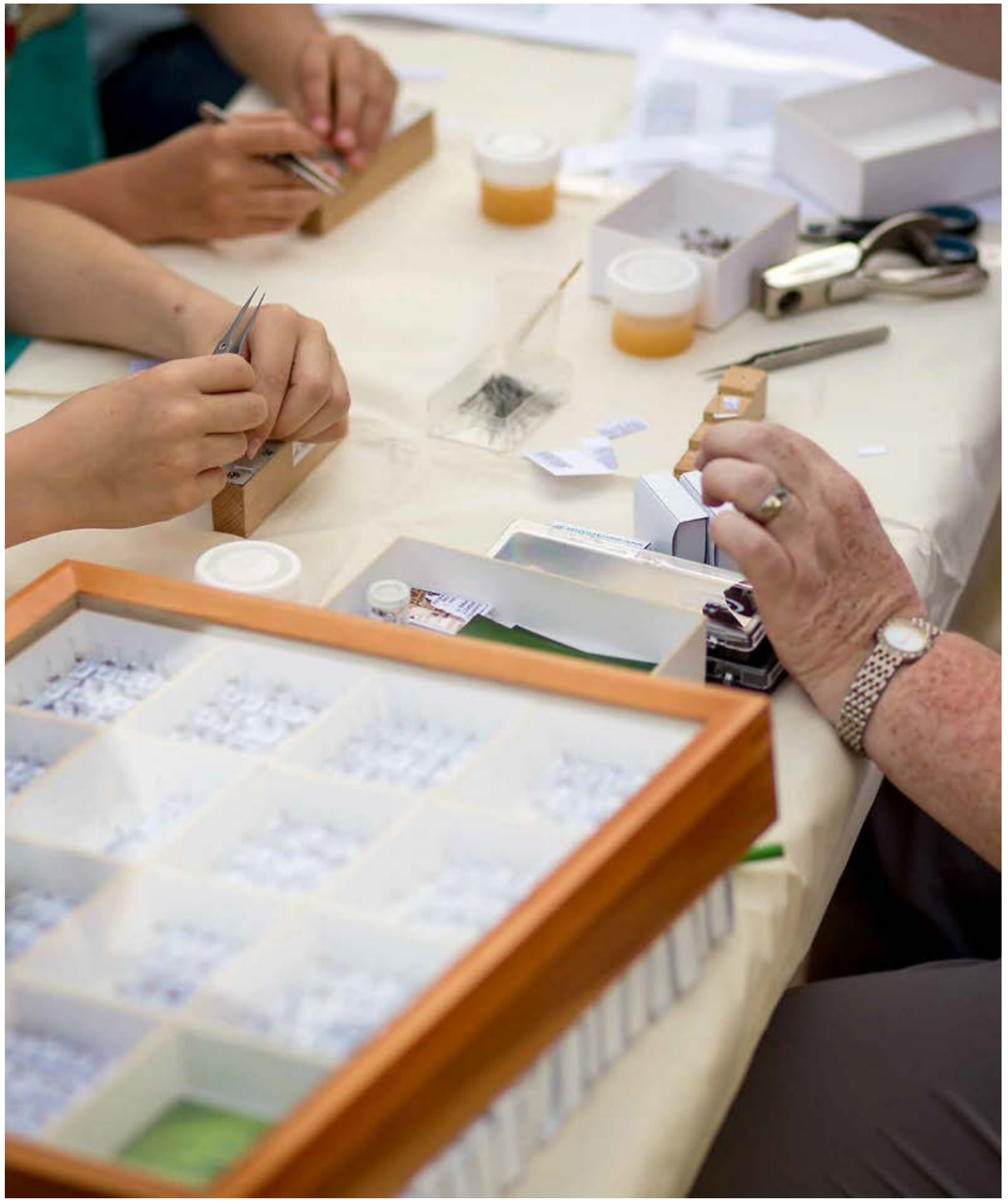
Since the project landscape in Citizen Science is very diverse in terms of the type and duration of projects, topics, disciplines and levels/types of participation, a general recommendation for successful communication strategies does not seem to make sense. However, the following points are helpful as a starting point for fundamental discussions and to develop corresponding positions:

1. First, it is advisable to define values to provide guidance and to play a part in or accompany communication. For example, transparency, openness, flexibility in the process and recognition have proven to be helpful and fundamentally important. This can draw from the knowledge, experience and resources in the areas of participation or citizen participation as well as from participatory research projects [15, 63].

2. Building on a discussion of values, it is crucial to develop a guideline for science communication in Citizen Science projects that brings together these findings of the discussion of values and, above all, also breaks down the different levels of communication and the respective goals. The Framework on Citizen Science Interaction and Communication [64] could be used as a basis for this, supplemented by tangible advice on possible formats, tools and methods of implementation.

3. For this, it is necessary to incorporate communication in the projects through people, structures and competences as well as collaboration with corresponding partners. It is only in this way that the achievements of Citizen Science projects can be made visible and receive recognition and a stable communication culture can be established (→ action area 5 “Recognition culture”).

4. All of these requirements also need the implementation of continuous training and exchange opportunities so that the people involved can exchange information on the research status and best practices. Project coordinators should have meta-competencies, e.g. in the basics of strategic communication or participation. They should be in a position to acquire any lacking expertise, such as web design, writing skills or press relations, by involving third parties (→ action area 3).



Sharp instincts are needed here – identifying mosquitoes for the mosquito atlas at the Citizen Science Festival in the Park at Gleisdreieck 2016. Photo: Karo Krämer/ Science in Dialogue

4.4 Recommended actions

The paths taken in the Green Paper to utilise synergies between science communication and Citizen Science as well as the proposals explained in this white paper are to be implemented in practice by 2030 if possible. To do so, existing structures must be strengthened and expanded and new forms must be developed (see the following list). The ultimate goal is to integrate these proposals into the processes in science, politics and practical application. The implementation proposals are presented in the following and specified by assigning the measures to target groups and describing the specific timelines.

4.4 Recommended actions for area synergies with science communication

4.1
Science communication should be included as an elementary and mandatory component in Citizen Science project proposals, taking into account the necessary competence and human resources.
Involvement of the project participants in training/education measures should be made possible.
Formulation, implementation and review of specific communication and impact objectives (self-evaluation and accompanying research) should be ensured, taking into account the current state of research and the guideline still to be developed (→ action area 15 “Accompanying research”).

4.2
Financial resources and structures are needed to expand and promote exchange between project participants and training opportunities for project participants. The same applies to transferring findings from the research field into practice, which should be strengthened.
There should be a substantive discussion on which values are essential for science communication in Citizen Science projects. Building on this discussion on values, the community should strive to generate guidelines and produce guides for science communication in Citizen Science projects.

4.3
University and programme leaders should embrace society’s shift towards greater focus on science and enable the opportunity for change towards greater participation of the community in science.
Students, graduate students and young scientists should already be familiarised with the potential of Citizen Science and be able to establish the link to science communication. Science communication seminars should be included when training young academics.

4.4
As a central element in Citizen Science projects, science communication should be appropriately equipped with material and human resources.
The existing offers for relevant qualifications should be expanded. To do so, the persons that are responsible for projects must be able to include the budget and time for training when applying for Citizen Science projects.
The funding organisations should be correspondingly open and flexible in their design; criteria catalogues and calls for proposals should be designed accordingly.

4.5
Institutions should create structures (qualified permanent points of contact) for networking communication from individual projects with institutional communication, focusing on methods and processes as well as openness for exchange with civil society.
Existing structures (press office, transfer officers, etc.) should offer more support for Citizen Science project initiators. If necessary, additional competencies should be strengthened for this purpose.

Addressees

Practitioners · Civil society · Science · Educational organisations · Policymakers · Funding bodies

Jana Holz
Board member and spokesperson netzwerk n

Photo: Alexa Gothe

“We support the Citizen Science Strategy 2030 for Germany because science does not belong in the ivory tower! A sustainable and good life for all needs many voices and a joint outlook made up of research, transformation and a willingness to change – that's why Citizen Science offers just an excellent approach.”

5 Recognition culture within and for Citizen Science

5.1 Situation analysis: Where do we stand since the Green Paper?

Participants in Citizen Science attach great importance to receiving recognition. Recognition is understood as an attitude towards an achievement that expresses appreciation through gestures and actions such as praise. Recognition also often motivates people to initiate and/or participate in a project, and is an important factor confirming the successful progress of a given Citizen Science project. In 2020, it was clear that those successfully practicing recognition within and for Citizen Science were offset by deficits at the political and formal levels (→ action area 8).

Recognition within and for Citizen Science projects is often already used on individual and community levels (→ Box 6). For example, activities in research as well as in communication, exchange and networking have been developed and implemented together on an equal footing (→ action area 4). Additionally, Citizen Science project results, such as the Red Lists for endangered species, are used in research and politics as a basis for decision-making. Networking and communication amongst each other and the structures and funding for Citizen Science have improved and contributed to recognitizing the Citizen Science approach (→ action area 1 and 2). Experiences of volunteer management (→ action area 3) are also used. Founding the Deutsche Stiftung für Engagement und Ehrenamt (German Foundation for Engagement and Volunteering, DSEE) in 2020 as a central nationwide contact point to promote volunteering is a clear sign of strengthening engagement in Germany.

Despite positive developments and trends in recognition for Citizen Science, (such as the Third Mission of universities, which aims to interlink science and society), a reputation system for Citizen Science is lacking in science and in recognition from politicians, e.g. through extensive funding (→ action area 2). Most citizen scientists and researchers point out inadequacies in the recognition instruments, such as naming participants in specialist publications or acknowledging projects in the media and in society (→ CS Survey 2020). Clearly, the choice of recognition instruments hardly take into account the different needs of citizen scientists and project coordinators.

5.2 What are the recognition needs within and for Citizen Science?

Strengthening existing mechanisms for recognition

The results of the CS Survey 2020 and evaluations of expert interviews show perceived appreciation for recognition instruments already applied, such as praise, network meetings, learning opportunities for citizen scientists and project coordinators, as well as an intensive feedback culture. Other such positive effects are participation in free qualification and training courses, sharing scientific use of data and information and jointly developing practical applications for project results with politicians. Small gestures of appreciation and gratitude also have a high level of acceptance. Recognition instruments already used successfully should be further strengthened and expanded.

Identifying needs of specific target groups

Choosing appropriate recognition requires identifying citizen scientists' and project coordinators' needs. For citizen scientists, these can include needing social contact or experiencing something new, exploring one's personal environment, or the desire to learn. Project coordinators must expand the scientific reputation system to implement Citizen Science activities, perhaps using a social impact indicator. Specific needs for recognition are best determined with help from the project participants. Furthermore, a distinction should be made between recognition for Citizen Science project participation and recognition for implementing Citizen Science on a formal level, as the needs of citizen scientists and project coordinators may differ. Also, recognition between participants may change during a project, requiring the instruments to be adapted. Recognition measures should then be based on the particular target group and formulated according to individual, community, political and formal requirements. The importance of recognition in Citi-

Mission statement 5:

In 2030, targeted instruments of recognition in and for Citizen Science will be applied in Citizen Science practice and evaluated with regard to their effectiveness.

The previous instruments of individual recognition such as network meetings, continued education and an established, respectful feedback culture have been extended to the professional and social spheres of those involved, e.g. by testing pension points for Citizen Science. New structures and measures have been established, such as support units for Citizen Science activities at universities, training institutions and government agencies. Additionally, a review for the effectiveness of recognition tools and the introduction of a Citizen Science seal have also been instituted. This makes recognition a quality feature of Citizen Science and thus possible on an institutional and political level. The scientific reputation system integrates Citizen Science activities as valuable contributions to research.

Identifying and herbarising aquatic plants at Haussee in Feldberg. CS project Diving for Nature Conservation. Photo: Silke Oldorff/NABU BFA Living Lakes

zen Science, using current as well as new instruments, should be scientifically investigated and supported (→ action area 15).

Determining the impact of recognition instruments
The effectiveness of recognition measures and forms established thus far should be recorded and evaluated by 2030 (→ action area 15). This requires developing indicators to measure the instruments' effectiveness. Based on the determined effectiveness of recognition instruments, we must also consider participants' motivations. Instruments must then be adapted or realigned accordingly.

Expanding infrastructure
The CS Survey 2020 currently shows high demand for citizen scientists to get involved early in research processes and to continue their involvement. This requires institutional structures (e.g. citizen universities) and human resources (e.g. Citizen Science advisors), which should be included when planning and implementing Citizen Science activities.

Strengthening visibility
To improve recognition for citizen scientists in Citizen Science projects, their participation should be recognised in reports, lectures and newsletters; contributors' names should also be mentioned in specialist publications as much as possible. The survey showed that these recognition instruments are appreciated by citizen scientists and should therefore be applied more widely. Recognition is likewise essential for Citizen Science project coordinators. This occurs by adding a social impact indicator to the scientific reputation system where Citizen Science activities are initiated, implemented and communicated by the research participants.

BOX 6 – Further information on recognition

Building on the extensive experience of recognition from the work of associations, such as the BUND and NABU environmental associations, numerous manuals and recommendations should be used for Citizen Science on the environment:

- www.bund.net/fileadmin/user_upload_bund/bundintern/KnowHow/Handbuecher/Handbuch_Freiwillige_gewinnen.pdf,
- https://sachsen.nabu.de/imperia/md/content/sachsen/150702-nabu-ehrenamt-zukunftschance-fuer-den-naturschutz.pdf.

A practical guide on recognition instruments going beyond environmental and nature conservation work is available from the Landesfreiwilligenagentur Berlin. The instruments presented here should be reviewed and applied to Citizen Science where appropriate:
https://landesfreiwilligenagentur.berlin/files/2015/10/InstrumenteAnerkennung_Katalog.pdf.

Recognition also depends on financial support. A diverse range of funding adapted to needs is presented in the policy paper "Vorschläge für die Förderung von Citizen Science in der Umweltbildung und Umweltkommunikation" (Proposals for funding Citizen Science in environmental education and environmental communication). These are pioneering methods for developing funding instruments and for recognition within and for Citizen Science (→ action area 2):
www.ufz.de/export/data/global/203484_DP_2018_2_Richteretal.pdf

5.3 Recommended actions for area recognition culture within and for CS

5.1
Citizen Science participants should **increase use of and apply** already established and successful **recognition instruments** (such as feedback culture, adapted language clear communication about the project and clear distribution of tasks) to achieve improved recognition of Citizen Science activities in society, politics and science. Resources for applying these instruments, such as time resources, must be considered accordingly in planning Citizen Science projects.

5.2
Project coordinators should define and apply **recognition tools** with citizen scientists, political stakeholders and NGOs when planning and implementing a Citizen Science project. They should **evaluate and develop tools regarding their impact when necessary**. Results of the **accompanying research** on recognition will be used to optimise Citizen Science processes.

5.3
Project coordinators or participants should make citizen scientist participation in research processes **more visible** in presentations, media reports and professional publications. Formal recognition can be implemented, for example, by introducing a **Citizen Science seal, logos, acknowledgements** or **publications** naming the data collectors.

5.4
Research institutions should establish a **social impact indicator** for research based on Citizen Science as a **reputation factor** similar to the publication indicator. The indicator should be based on existing proposals for social impact, e.g. that of the EU, which present and recognise collaborations between participants from the academic and non-academic worlds [65]. Thus, practical experience of project coordinators and participants should also be recognised for profile-building and criteria when deciding on chair positions.

5.5
Participants, research institutions and civil society should develop **guidelines and quality criteria** to be used for reference when applying recognition instruments in Citizen Science projects. Applying these tools is taught in continuing education and training courses and is designated by a **Citizen Science qualification certificate**.

5.6
University and non-university research institutions and authorities should **establish or expand formal and political structures, such as departments and strategies**, at institutional scientific and non-scientific levels for **services and advice regarding Citizen Science**. This can establish a recognition culture for Citizen Science.

5.7
Ministries, authorities, Citizen Science participants and research institutions should collaborate to create and test new recognition instruments. One could create a **"Citizen Science Day"**, for example, which might also involve **employers** within the professional environment and create **time quotas** for Citizen Science, or **introduce pension points for involvement in Citizen Science** or for researchers or policy makers involved in Citizen Science projects.

5.8
Research funding sponsors should provide permanent **financial and human resources** to implement recognition instruments and measures. This could take the form of **micro-financing for events, training and permanent staff** to implement recognition instruments. Furthermore, it is important to establish **opportunities for qualification for Citizen Science participants to establish a recognition culture**.

Addressees
Practitioners · Civil society · Science · Educational organisations · Policymakers · Funding bodies

Ansgar Klein
CEO of the Federal Network for Civic Engagement

Photo: Henrik Andree

"Citizen Science in Germany has added value for all people who take engagement seriously as a place of learning and who want to strengthen learning as well as research in shared local and regional educational landscapes of civil society."

Mission statement 6:

In 2030, reusable, flexible methods and tools will exist to collect Citizen Science data, perform quality assurance and controls and analyse, archive and publish the data.

Citizen Science data is sustainable, complies with FAIR principles and is described by generally accepted metadata standards.

6 Data quality and data management

6.1 Situation analysis: Where do we stand since the Green Paper?

Citizens contribute to scientific projects with extraordinary commitment and often enormous expertise. This contribution manifests itself particularly in the data that citizens collect during projects. Citizen Science data is therefore an especially valuable result of Citizen Science projects. Data being collected by engaged citizens offers opportunities with considerable potential, especially for science. This is clear from the CS Survey 2020. Around three-quarters of the researchers surveyed (n = 75) said that scientific data can be collected on a larger spatial and temporal scale through contributions from Citizen Science than would be possible in traditional scientific projects. About half of the researchers interviewed recognise that citizen participation saves on time and costs in data collection and analysis. About one-third of the researchers state that Citizen Science data help supplement scientific data. This is especially true when certain data cannot be collected without volunteer participation due to the scope and broad expertise required for collection. An example of this is data on the occurrence of animal and plant species essential for biodiversity research (e.g. the extensive data sets from the GBIF). Numerous scientific publications in recent years have proven the basic usability and usefulness of Citizen Science data as an additional source of data for scientific research in a wide range of disciplines, including ecology and medicine [66, 67, 68, 69, 70].

An essential prerequisite for the scientific usability of Citizen Science data is data quality. Comprehensive and transparent quality assurance and control concepts for Citizen Science data can also help to remove existing barriers and reservations regarding Citizen Science on the part of the scientific community. This is required in order to establish Citizen Science as a recognised research approach. Quality assurance and control measures are already very important in Citizen Science projects. Quality assurance measures are taken before, during and after data collection. These measures include developing guidelines on data quality, establishing standardised procedures for data collection, training and supporting participants, collecting evidence (e.g. through photos) and experts assessing the collected data. This was the finding of the CS Survey 2020. Numerous scientific papers also deal with questions of quality assurance and examine the cause-effect relationship between data quality and the quality of the scientific results derived from it [71, 72, 73, 74, 75].

6.2 What are the requirements, opportunities and challenges?

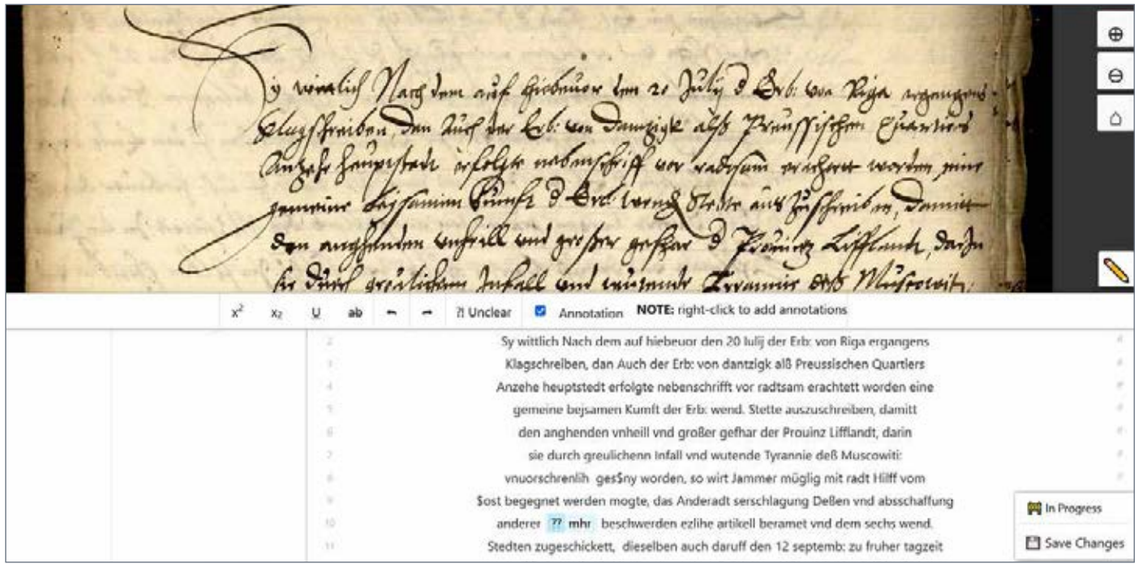
Ensuring data quality

Quality assurance and control is largely performed manually in Citizen Science projects. This requires a considerable amount of time and effort. Automatic quality assurance procedures have the potential to considerably reduce this effort (→ action area 12). This applies particularly to procedures for automatic plausibility and completeness checks right at data entry, machine learning procedures for image and text recognition, detection of conspicuous data points and statistical procedures to normalise data. However, these still need to be advanced in regards to their effectiveness and expanded into usable tools in order to be applicable in practice [76]. Less than 10% of the respondents in the CS Survey 2020 (n = 309) stated that automatic procedures are used for quality assurance in their Citizen Science project. Ultimately, both manual and automatic quality assurance procedures must be used in a complementary manner [76].

Sustainable usability of Citizen Science data

Citizen Science data should be sustainable and usable by large parts of science and society to ensure the long-term impact, visibility and acceptance of Citizen Science. The principles of findability, accessibility, interoperability and re-usability for research data formulated in the FAIR data principles [77] (**www.go-fair.org/fair-principles**) set the standard for sustainable usability. Descriptive data about the data (metadata) play an important role. They ensure that the data can later be interpreted and is interoperable. They also make the origin and process of creating the data as well as quality assurance and control measures taken transparent.

Open science ensures that scientific findings are transparent and accessible and enables them to be disseminated and developed further [78]. Citizen Science data and methods should therefore also be freely accessible and usable where justifiable from a moral, ethical and legal standpoint (→ action area 7). This goal has not yet been achieved. Only around 65% of the respondents to the CS Survey 2020 (n = 309) stated that the data collected in their projects had been published or would be published in the future. Data are mainly released on project websites (58%) and in specialist publications (44%). Data archiving is done on institute



In the Hanse.Quellen.Lesen! CS project, citizen scientists transcribe manuscripts from the Hanseatic period with the help of the Transkribus web interface. Here is an example of the web transcription of the recess of the assembly of Wendish towns from September 1575 (AHL – Hanseatica 174). Photo: Vivien Popken/Hanse.Quellen.Lesen

René Smolarski, former co-leader of the project, and Marcus Plaul, research assistant, sift through a small part of the holdings of the Research Centre for Historical Media (IFhM) at the University of Erfurt. Photo: Martin Schlobach

servers and in media that are relevant to citizen scientists. Scientific archives and repositories are hardly used. This is problematic, especially regarding data findability and sustainable access to the data. There are hardly any established publication channels for Citizen Science data [79] considering data access options for scientists, citizen scientists and the interested public.

The majority of the respondents in charge of data management in Citizen Science projects (n = 98) do not use metadata standards for the description of Citizen Science data or are completely unaware of them. This is problematic especially regarding data interoperability and re-usability, but also with regard to quality control. There have been some first initiatives to standardise and improve the interoperability of Citizen Science data, such as Working Group 5 from COST Action CA15212 Citizen Science and the Data and Metadata Working Group of the CSA, which is developing the metadata vocabulary PPSR (Public Participation in Scientific Research) Common Conceptual Model (**https://core.citizenscience.org**). There are a wide range of metadata standards specific to certain domains of research data. These standards can also be used for Citizen Science. Aspects specific to Citizen Science data and projects must be represented. This includes characterising project participants (e.g. with regard to their expertise and skills). It also pertains to the description of the data collection strategies typically used in Citizen Science projects, which in some cases differ fundamentally from those used in traditional scientific projects [80].

Citizen Science data management

Effective data management is the foundation for data sustainability and re-usability. The constant increase in data in science and research makes managing such data through all stages of the data life cycle a complex task. This poses particular challenges for scientists and citizen scientists. Data management is also becoming increasingly important in Citizen Science, although its significance has often times not yet been

reflected in calls for proposals and funding from third-party donors. This fact was also emphasised by the majority of the participants in the CS Survey 2020. The participants would also like to see suitable guidelines and tutorials as well as support in data archiving. More advice on the topics of data quality and archiving is greatly needed and less so on planning and implementing data collection. In addition to general advice from central offices, participants would like to see a strengthened exchange network with data science experts. Implementation measures should, where possible, build on existing structures and guidelines for research data management.

Respondents to the Citizen Science survey also expressed a need for freely available and user-friendly data collection tools. Research is currently being conducted on identifying important basic principles to develop such tools [81] as well as on developing basic methods for data collection by laypeople. Important points for these tools are user-friendliness and re-usability, so as to enable scientific laypeople to collect high-quality data and motivate them to participate [81]. It is crucial that methodological developments can be used directly in Citizen Science projects later on. This is generally not yet the case. Freely available tools can often only be used with the help of IT experts [82], commercial software is an alternative, but represents a major cost factor in Citizen Science projects and also prevents the advancement of tools by the Citizen Science community.

Citizen scientists are provided with the appropriate equipment for data collection, as here in the Berlin NO2 Atlas project – but often their own smartphone is enough. Photo: Ralf Rebmann/Science in dialogue

6.3 Recommended actions for area data quality and data management

6.1
Scientists and participants should work specifically on **advancing automatic methods and tools for quality assurance and control. Funding must be made available** for the necessary methodological research, implementation of the tools, maintenance and user support.

6.2
Funding institutions should **promote the sustainability of project results, including the data collected**. At the same time, it should be **mandatory to publish data generated in Citizen Science projects, as per the FAIR principles**.

6.3
Scientists and practitioners should create **standards for Citizen Science data documentation**. To do so, appropriate metadata standards for Citizen Science data must be developed. These should build on existing metadata standards for scientific data, such as domain-specific standards, and extend them to include aspects specific to Citizen Science if necessary. Scientists and practitioners should also develop guidelines and tools facilitating the selection of suitable metadata standards and the standardised description of Citizen Science data.

6.4
In order to achieve sustainable usability of Citizen Science data, sponsors, scientists and practitioners must **create structures for data archiving, data publication and access to Citizen Science data**.
This requires advancing methods, tools and guidelines to anonymise Citizen Science data with personal references as a prerequisite to publish the data. Scientific institutions should offer uniform possibilities for archiving Citizen Science data by opening existing or emerging structures (e.g. long-term scientific repositories such as the NFDIs) or by creating new structures. Access opportunities to Citizen Science data (e.g. data portals) must also be created or expanded for citizen scientists.

6.5
Scientists and practitioners should **advance methods and tools for citizen scientists to visualise and explore Citizen Science data**.

6.6
Scientists and participants should **establish effective Citizen Science data management** to ensure data quality. This can be achieved by opening established support and advisory structures for data archiving, data management and quality assurance, such as points of contact for research data management, to citizen science projects (including projects that are not linked to an institution). This can also be done by establishing and strengthening an exchange network on data-related issues in Citizen Science projects, and by creating guidelines and tutorials on data management and quality assurance for Citizen Science written in easily understandable language and suitable for the target group. Additionally, re-usable and configurable tools should be created to support the collection and provision of Citizen Science data.

6.7
Funding agencies should provide **financial resources for data management and quality assurance when funding Citizen Science projects**.

Addressees

Practitioners · Civil society · Science · Educational organisations · Policymakers · Funding bodies

Thekla Kluttig
Saxon State Archive, State Archive Leipzig

Photo: Saxon State Archive/Regine Bartholdt

"I support the Citizen Science Strategy 2030 for Germany because the infrastructure organisations of archives, libraries, museums and science shops can have an important function as interfaces to institutional science and free citizen research – if they accept the challenge!"

Mission statement 7:

In 2030, Citizen Science projects will follow clear legislative and ethical guidelines. These principles and framework legislation are, as in other disciplines, jointly agreed upon and adhered to from planning and implementing all the way to documenting Citizen Science projects.

The ethics advisory boards have included Citizen Science as a component of research and are developing guidelines for topics such as data protection and personal rights, copyright and intellectual property, and insurance issues.

7 Legislation and ethics

7.1 Situation analysis: Where do we stand since the Green Paper?

The Green Paper outlined two demands regarding law and ethics. In the case of legal conflicts, guidelines on "data openness", "intellectual property" and "data protection" should be developed for Citizen Science project initiators and participants [1, pg. 28]. With regard to ethical conflicts, ethical questions on and about Citizen Science need to be further clarified and reviewed. So far, there have been vastly different reactions to the demands, which is why we have to consider the current status of law and ethics separately.

7.1.1 Legislation

With regard to legal issues, two recommended actions from the Green Paper have already been implemented:

1) **Survey on legal conflicts, conflict identification and courses of action:** A survey was conducted in June 2020 among project leaders in the German Citizen Science community. It included questions regarding insurance protection, data protection and copyright, as well as advisory needs. The responses of the 69 participants revealed a great deal of uncertainty and very high consulting needs, especially with regard to image rights, licences and data handling in general [83]. A series of questions on legal issues was also included in the CS Survey 2020. An example of the high need for consulting are the answers about the official regulations for handling data (data management plan), which 38% answered affirmatively, 22% negatively and the majority (41%) answered with "I don't know".
2) **Developing a guideline, finalising the guideline: consultations, formulations, distribution, communication of its use:** The legal guideline was drawn up and deals intensively with the issues relevant to Citizen Science projects, namely insurance protection, data protection, personal rights and copyright [33].

7.1.2 Ethics

In contrast to the progress made on legal issues, a less positive result can be seen of the demands regarding ethics. In fact, virtually no progress can be identified. At least we see based on the CS Survey 2020 that there are also solutions for ethical conflicts when integrated into formalised rules. Thus 48% answered yes in response to the question about whether there are rules concerning intellectual property, 9% answered no and 43% said they did not know (n = 289). When asked about whether there are ethical guidelines for conflict in the project, only 6% answered yes, 41% answered no and the majority of 53% actually said they did not know (n = 287). Finally, there

were 16 responses to the open question about existing regulations to resolve ethical conflicts. The approaches mentioned in the responses can be compared to those from academia and other organisations. For example, the participants stated that they observe the following regulations in their projects, among others: Code of conduct, dispute resolution, structured measures, code according to the quality criteria from "Österreich forscht", regulations from ethics committee applications, online etiquette and association statutes.

7.2 What are the requirements, opportunities and challenges?

Firstly, the requirements, opportunities and challenges in the area of **law** are recognised as having a high need for consulting on legal issues. Furthermore, there is a great deal of uncertainty about how to deal with data (data protection), suitable licensing models (copyright) and image rights. This is demonstrated both by the survey on legal issues [83] and the CS Survey 2020. Citizen Science is also generally committed to open access, but there is a desire for concrete advice on feasibility.

The guideline [33] can show sample solutions based on the current legal situation and define the legal framework, but it cannot replace individual legal advice. Additionally, the legal situation is changing due to new court rulings and amendments to European law. This can be seen especially with copyright law, which was reformed in June 2021.

There is a great desire for exchange on these topics, which was addressed with the creation of the "Citizen Science & Recht" working group. More local workshops and advisory services represent an additional approach.

Requirements, opportunities and challenges regarding **ethics** can only be deduced from the CS Survey 2020. To do so, we have summarised the open question about experiences according to the conflicts contained therein into known ethical problems, even if they are not directly named. The questions were: "Which legal or ethical issues in Citizen Science have you already dealt with? What problems have you encountered in this area during your project so far? Please tell us about your experiences here." There were 108 responses, some of which we illustratively summarised into four challenges comprising ethical conflict:

Recording bat calls with a detector. Photo: Christof Häberle

- **Information problems:** This conflict results from the participants lacking knowledge on certain norms pertaining to joint research. This is shown in the following statements, "When do we have to file an ethics application?" or, "Is 'collection' of input from co-researchers considered data collection, meaning we need to submit an ethics application?". The same applies to the statement good "scientific practice", which may not be understood the same way by everyone. Ethical conflicts can result from lack of information about the rules followed by the joint research practice: "The researchers get the credit, not the citizens, right?". The following experience also illustrates this: "Associations and initiatives are not aware of their scientific potential and are not able to engage in a scientific work process."

- **Recognition:** A series of statements deal with the necessary recognition of non-academic project researchers. For example, the following question was expressed in the survey on law: "To what extent are participants who contribute soil samples considered 'co-inventors'?". This question asks if participants are recognised as equal researchers or if "Citizen Science is recognised within cutting-edge research". The problem of recognition also seems to be an important issue when publishing papers: "naming citizen scientists in publications". However, issues with recognition go beyond publications, as the following statement illustrates: "The question of wages or other means of recognition for volunteer service was a topic at one of our network meetings. [...] Respect for the participants is essential in all cases." The same statement can be observed in the following experience: "Citizen scientists participate in their free time. They often want both a small financial contribution for their work and, above all, professional and personal recognition for their performance and knowledge. [...] Disregarding this can lead to disgruntled volunteers and thus produce a negative impact on the project." A final point is the sustainable recognition of Citizen Science, which is an increasingly difficult problem due to its project-based organisational

form: “short-term project duration → building a community → after project end → leaving the community (ethically justifiable?)”. Even though tangible recognition should always be discussed individually in the context of the different project forms, it can be identified as a general action area.

- **Misconduct:** Probably the most dramatic area of ethical conflict is the danger of misusing Citizen Science. This refers to, for one, the voluntary nature of citizen scientists, as one of the participants identifies: “The need to reduce research costs (outsourcing data acquisition)”. The misuse of Citizen Science as low-cost alternatives to paid workers is also evident here: “‘Exploitation of participants”. However, current science policy to instrumentalise Citizen Science can also have an abusive character, as the following statement from the survey examines: “It may appear that ‘Citizen Science’ does not fulfil its original purpose of facilitating independent research. It seems that the doctrine from academic bureaucracy has spilled over into free voluntary research. This may ruin the run of research.”

- **Conventionalising new practices:** A fourth challenge is the necessary negotiation of new rules for Citizen Science, the successful establishment and subsequent professionalisation of which is urgently required. Central to this is the question of which rules to adopt and who formulates them. Ethical conflicts regarding this arise when certain groups assert themselves over others and basically hijack Citizen Science with their rules. An example of the sensitivity to this challenge is evident in the following: “The segregation of women was totally ignored because of local circumstances”. The participants also expressed a certain expectation towards this process and its possible problems: “Citizen Science and scientific integrity is an aspect that the academies and Science et Cité will probably take up”.

How high is the nitrogen dioxide concentration in my city? Visitors to the Mitforschen Festival in autumn 2020 will find out during a guided tour of the Berlin NO2 Atlas project. Photo: Ralf Rebmann/Science in dialogue

7.3 Recommended actions for area legislation and ethics

7.1
Sponsors should fund the development and operation of a legal advisory service through additional staff positions or projects to develop open training materials.

7.2
Research and educational institutions should offer local points of contact for legal consultation in the Citizen Science environment, including one-to-one consultations and workshops for interested parties. Furthermore, a national network for the exchange of legal use cases would help steadily increase knowledge.

7.3
Project participants and scientists should work together to draft standards and guidelines on what correct Citizen Science practice should look like and explain them in their environment and network (→ action area 9 “Educational concepts”, as the topics of ethics and law should also be part of further training). Editable and adaptable documents are helpful to involve the community in this.

7.4
Funding agencies should anchor Citizen Science in the “Guideline for Ensuring Good Scientific Practice” code.

7.5
The work of existing science ethics councils and committees should be expanded to include Citizen Science concerns and conflicts.

7.6
Initiators from politics, project teams and science should agree on common rules for Citizen Science projects that are accepted by all. All participants should be equally and fairly included when formulating these rules.

Addressees

Practitioners · Civil society · Science · Educational organisations · Policymakers · Funding bodies

Dirk Messner
President of the German Environment Agency

Photo: Susanne Kambor

"The environment, climate and sustainability are currently presenting us with major challenges, more than ever before. We can only find answers to these challenges with comprehensive research and broad social participation: environmental and climate protection concerns us all. Citizen Science is a very important part of this."

Mission statement 8:

In 2030, Citizen Science in all its facets will be an expression of a modern scientific process that enables social participation in research through various formats.

Citizen Science enriches scientific culture by helping to collectively identify and research social, ecological and economic challenges. The integration of Citizen Science in scientific processes is strengthened in a sustainable and structural way by explicitly incorporating research organisations' strategies and staff positions. Good scientific practice is achieved by making targeted expansions of interdisciplinary training and continued education programmes in Citizen Science an integral part of university teaching.

8 Integration into scientific processes

8.1 Situation analysis: Where do we stand since the Green Paper?

The action area "Citizen Science in scientific processes" represents a holistic view of the science system with branches leading into the topics of project funding (→ action area 2), data quality (→ action area 6) and recognition culture (→ action area 5). Citizen Science can be applied in different ways based on the phases of the research process – from formulating research questions and choosing methods, data collection design, data collection, analysis and interpretation to communicating research results. Shirk et al. [14] name the following levels of participation in a research project according to the degree of intensity of citizen interaction: "contract" (citizens commission scientists), "contribute" (participation in data collection), "collaborate" (participation in research design, data collection and analysis), "co-create" (joint work with scientists on a research problem) and "colleagues" (independent generation of new knowledge in a research field by citizens). The different forms of citizen participation along the research cycle are also confirmed in the CS Survey 2020 with 64% of the respondents (n = 79) as an added value in the visibility and social acceptance of research. Unfortunately, the contributory approach is insufficiently incorporated into the Citizen Science project landscape in numerous areas. An example of this is agricultural research; a first positive trend here is the contributory approach in monitoring the agricultural landscape [84]. The co-creative approach of citizen participation on topics relevant to society [85] is still under-represented [4]. The predominant form of citizen involvement in science is through generating comprehensive data sets (citizen observers, counters, data collectors). This is also confirmed by the CS Survey 2020: 54% of the researchers surveyed (n = 75) confirmed time savings and 58% (n = 75) confirmed cost savings when involving citizens in data collection.

It does not require considerable additional effort and working time to involve citizens in the research process. From the perspective of research, more recognition is needed from the scientific community for this commitment to increase motivation to apply Citizen Science as a methodology in science. This can be in the form of a social impact indicator as an extension of the current scientific reputation system (→ action area 5). There still needs to be an increase in the visibility of best practice approaches, as reflected in the sentiment from the CS Survey 2020 on rewarding and distributing Citizen Science activities in the areas of expertise of the participants (→ action area 5): 54% (n = 280) of the respondents state that researchers are not rewarded for their commitment to Citizen Science.

Another essential premise to successfully integrate Citizen Science activities into the research process is the acceptance of the data collected in Citizen Science projects. There is also scepticism about the

data quality from Citizen Science projects (→ action area 6). The CS Survey 2020 showed that data and results from Citizen Science projects are mainly published on project websites. Citizen Science project results thus do not go through the scientific peer review process and are also difficult to find and reuse. Earlier surveys showed that some Citizen Science projects did not even intend to produce scientific publications [86]. At this point, the Citizen Science community urgently needs to become more professional and gain scientific reputation by publishing Citizen Science research results in internationally recognised journals. The exponential increase in Citizen Science publications and Citizen Science Special Issues in renowned journals indicates a change in this (→ Box 7).

Accompanying research and evaluation research for Citizen Science projects are seen as central instruments that enable empirical findings on the impact of Citizen Science. They make the added value and potential of Citizen Science projects more tangible for the scientific community. For this reason, this topic was expanded into its own action area during the transition from the Green Paper to the White Paper (→ action area 15 "Accompanying research").

In the 2016 Green Paper, central prerequisites to apply Citizen Science in two courses for action were identified to be **further training and empowerment of scientists**. Initiatives have emerged directly in the Citizen Science communities since then, which compile training materials and measures on online platforms. The European Citizen Science Platform [87] offers an aggregated overview of worldwide training opportunities. In Germany, the German Centre for Integrative Biodiversity Research (iDiv) and the Helmholtz Centre for Environmental Research – UFZ organised a summer school, and the national Citizen Science

In the CS project FLOW, citizen scientists measure chemical water parameters, record the habitat structure of water bodies and identify aquatic invertebrates and insects. Photo: FLOW/BUND/UFZ

BOX 7 – Citizen Science in the scientific publication landscape

The examples given are only a selection. The authors are aware that there are many more examples than those listed.

Citizen Science Special Issues in Scientific Journals

- Citizen Science: Theory and Practice: an open-access, peer-reviewed Journal https://theoryandpractice.citizenscienceassociation.org
- https://journals.plos.org/plosone/browse/citizen_science
- www.mdpi.com/journal/ijgi/special_issues/Citizen_Science_Geospatial_Capacity_Building – ISPRS International Journal of Geo-Information (Special Issue „Citizen Science and Geospatial Capacity Building")
- www.mdpi.com/journal/sustainability/special_issues/citizen_sci_sus – Sustainability (Special Issue „Citizen Science and the Role in Sustainable Development")
- www.mdpi.com/journal/diversity/special_issues/citizen_science_diversity – Diversity (Special Issue „Citizen Science for Biodiversity Conservation: Harnessing the Power of the Public to Address Wicked Conservation Problems")
- https://jcom.sissa.it/archive/15/03 – Journal of Science Communication (Issue 03, Special Issue: Citizen Science, Part II, 2016)
- www.britishecologicalsociety.org/introducing-the-citizen-science-special-feature-and-hub – Special Feature in 6 Journals (Journal of Applied Ecology, Journal of Animal Ecology, Journal of Ecology, Methods in Ecology and Evolution, People and Nature, und Ecological Solutions and Evidence) from the British Ecological Society (February 2021)
- https://cdnsciencepub.com/toc/as/6/3 – Arctic Sciences Journal (Vol. 6, Issue 3, Special Issue: Knowledge Mobilization on Co-Management, Co-Production of Knowledge, and Community-Based Monitoring to Support Effective Wildlife Resource Decision Making and Inuit Self-Determination, September 2020)

Citizen Science reference books

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platform “Bürger schaffen Wissen” has been offering training workshops [88] on the topic since 2020. The academic system is slowly but noticeably shifting to the new requirements. For example, the first Citizen Science chair was filled at the University of Jena in early 2020. Other universities and science organisations are also implementing Citizen Science at their institutions with funding programmes, such as the Helmholtz Innovation Fund, and in their strategies, such as the Berlin University Alliance of Berlin Universities and Charité, University of Potsdam - Gesellschaftscampus, University of Münster - WWU Citizen Science Competition 2020, University of Düsseldorf - Citizens’ University, Citizen Science@Helmholtz, Leibniz Working Group Citizen Science. Nevertheless, Citizen Science competencies are scarcely systematically integrating into university teaching. Around 60% (n = 75) of the researchers surveyed said that Citizen Science is not part of curricula/study plans. 69% (n = 75) of the researchers stated that there were no training courses on Citizen Science for researchers at their scientific institutions. Regarding this, the CS Survey 2020 results also show an urgent need for specific advisory services on Citizen Science at scientific institutions. The courses of action will therefore remain in place in 2020. An extension of the courses of action from the Green Paper would be to integrate Citizen Science methods not only into university teaching, but also to introduce children to them at an early age through schools and to integrate senior citizens through continuing education [89].

Since the preparation of the Green Paper, additional action areas have been identified for Citizen Science to be better integrated into scientific processes. **Citizen Science projects and their results need to become more visible in the German science system**. Extensive documentation of Citizen Science projects improves comprehension and transparency. The description of the applications of Citizen Science as a research method has the potential to attract participants in the established sciences who are not yet active or to inspire new research disciplines. However, the current focus remains on life and natural sciences [4]. But Citizen Science projects are also seen as an opportunity to address societal issues in the humanities and social sciences. These are summarised under the term ‘social Citizen Science’ or ‘interdisciplinary research’ [90, 91]. The different terminologies must be defined further.

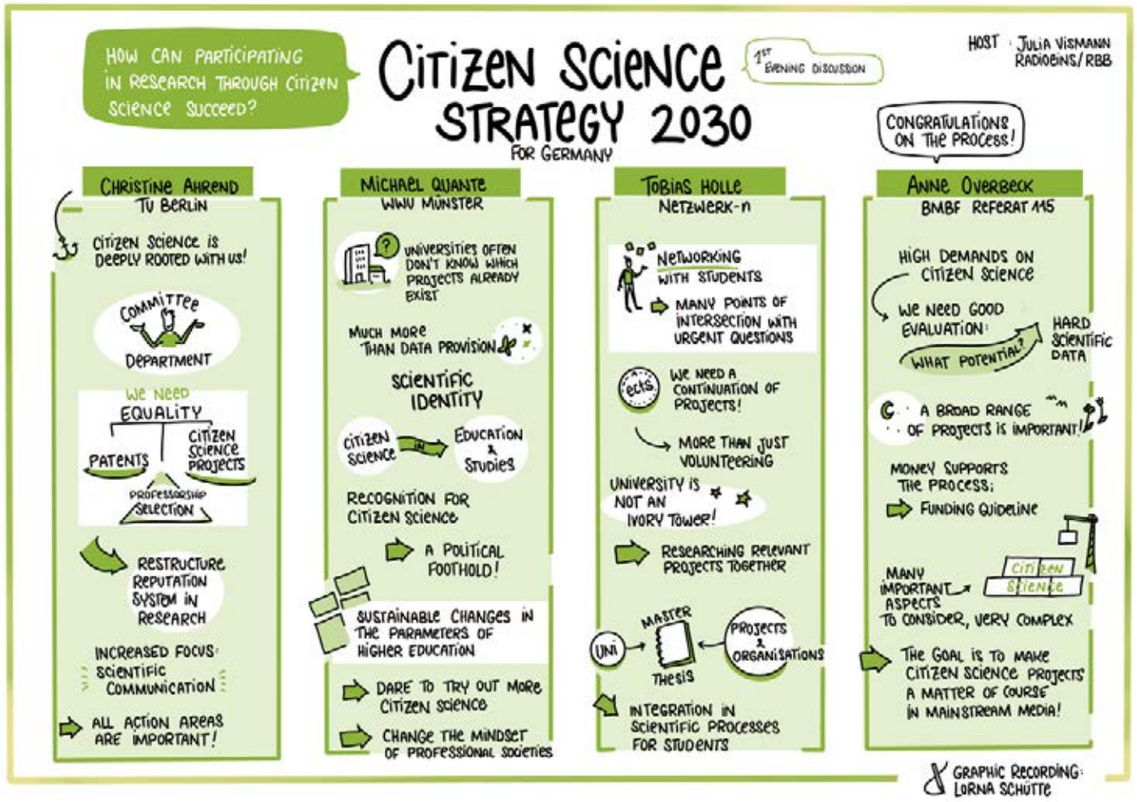


Figure 7: Results of the digital panel discussion “Citizen Science in Science and Research – Quo vadis?” on 8 September 2021

As part of the VielFalterGarten CS project, citizens of the city of Leipzig observe and count butterflies and develop solutions for insect-friendly design of urban green spaces in collaborative work with BUND Leipzig, the city of Leipzig and scientists from the UFZ and iDiv. Photo: Peter Barczewski/3d-artstudio

8.2 What are the requirements, opportunities and challenges?

Integrative collaborations between citizen researchers and science institutions are currently still not realised enough due to the scepticism from “classic” science towards citizen research that still exists in some disciplines despite the rise in interest in Citizen Science from established science since 2016 (→ Box 7). 24% of the n = 75 researchers surveyed in the German-speaking Citizen Science community stated that Citizen Science does not currently bring any added value to the individual research field. Increasing the number of these collaborations requires appropriate support, such as more visibility, more networking and exchange formats in museums, WILAs, libraries, recognition, etc., from specialist researchers, management and interested citizens (→ action area 13). There also needs to be constant communication between science, society and business in order to use existing competences and communicate research results. Furthermore, collaboration between citizens and scientists is important for both building trust in Citizen Science and for orienting research topics towards societal interests. Citizen Science should be considered part of good academic and scientific practice.

We have observed in recent years that Citizen Science projects are taking on very diverse questions and pursuing very different conceptual approaches and participation formats. New transformative research approaches such as those pursued by the LivingLabs, WILAs and the regulatory sandbox strategy (Wuppertal Institute, KIT, TU Berlin, Thünen Institute, etc.), in which solutions to societal problems are developed, tested and implemented in research processes, enable new-value design possibilities for citizen participation and new forms of collaboration between scientists and participants (→ action area 12 “Sensor

technology and artificial intelligence" as a new research area in Citizen Science). Equal inclusion of different forms of knowledge paves the way to a new knowledge economy.

The German Citizen Science community sees an urgent need to increase the intensity of citizen scientist participation in Citizen Science research projects. Involving citizen scientists at an early stage in determining research questions (scope phase or co-creation) is a particular challenge. Maintaining direct contact with citizen scientists is sometimes very time-consuming. As there are not enough financial resources available, it is currently not always possible to give sufficient space to the scope phase in Citizen Science projects. However, this is very important, especially in Citizen Science projects, for the early involvement of citizens and the progression of the project. The same applies to the follow-up for Citizen Science projects. The survey and the expert interviews underline an urgent need for explicit scheduling and more research funding instruments for Citizen Science activities in academic research projects. A large proportion (64%) of the researchers surveyed (n = 75) stated that there were no specific funding instruments for Citizen Science at scientific institutions (e.g. competitions). 38% of all respondents (n = 276) stated that there are currently not enough instruments for Citizen Science project start-up funding, and 43.5% of the respondents (n = 276) noted not enough instruments for Citizen Science project follow-up funding.

Attaching a wildlife camera for the WTimpact CS project. Photo: Christof Häberle

The scientific process must be extended to a greater extent to citizen researchers at applied universities, universities and research institutions. Opportunities to sensitise "non-citizen scientists" to Citizen Science methods can be created through highlighting citizen scientist participation with published acknowledgements in research reports or on project websites. This can also be done by listing citizen scientists as co-authors in scientific publications and their participation in scientific conferences (e.g. in online events increasingly organised as a result of the Covid pandemic) to report on their experiences (→ action areas 5 and 1).

The initiative to use Citizen Science as a method in research projects usually comes from individual scientists and is not always welcomed by department heads or institute directors. Therefore, we must continue to raise awareness of the use and recognition of Citizen Science as a research method at universities and science organisations. A first step towards making Citizen Science more visible would be to establish a central Citizen Science office as a point of contact for questions, such as an institutional Citizen Science contact person (e.g. University of Düsseldorf) (→ Fig. 7).

8.3 Recommended actions for area integration into scientific processes

8.1
Interaction with civil society must be within the scope of researchers. Research communities and universities should improve recognition of Citizen Science as a research method, e.g. by including Citizen Science experiences in the scientific evaluation system through a point system for Citizen Science engagement and by including Citizen Science as a criterion when performing a general evaluation of research projects. Citizen Science could be further strengthened by mutual exchange between Citizen Science projects in different research fields and the promotion of interdisciplinary Citizen Science projects.

8.2
Scientific institutions and funding agencies should incorporate Citizen Science participation more firmly in academic research **by systematically examining future research projects in relevant disciplines for effectiveness and influence of Citizen Science**, among other things.

8.3
Scientific educational institutions should produce training and further education materials, expand available training workshops and open educational resources in order to make Citizen Science a more well-known method in academic research. An example of how this can be achieved is by integrating Citizen Science skills, open science and participatory methods into university curricula. At the same time, open science training courses at universities (e.g. introductory courses in scientific work) should be developed and made accessible to citizen researchers.

8.4
Universities and scientific institutions should create advisory structures on Citizen Science that can be used by their own academic researchers and students. In support of institutional structures, we should promote developing a national network for the exchange of experience between Citizen Science advisory centres (→ action area 1, → course of action 1.10).

8.5
Research communities and universities should present the existence of their own Citizen Science activities more concisely on their websites and at the same time build digital platforms that present, network and support Citizen Science projects in order to increase visibility for Citizen Science as an innovative potential for science. Events and initiatives should be organised regularly at scientific institutions to promote rapport between science and citizens, such as "science night", "science shops", "book a scientist" or "open door day".

8.6
In Citizen Science projects, scientists should systematically highlight the citizen researcher participation, for example by publishing acknowledgements in research reports and on the project website or by listing citizen researchers as co-authors in scientific publications (→ action area 5).

8.7
Scientific publishers/journals should increasingly extend the scientific publication processes to Citizen Science.

8.8
Citizen researchers should be increasingly involved in scientific congresses and conferences, for example to report on their experiences and thus act as a trigger for "non-Citizen Science scientists" and the specialist community. Therefore, funding agencies should finance these activities in research projects and openly communicate this funding opportunity so that the Citizen Science community can actively perceive it.

8.9
Research funding institutions should plan a larger timeline and monetary volume for Citizen Science research project funding in order to make discovery processes with citizens more attractive and feasible for scientists. This can be made possible by providing sufficient funding for the initial phase of Citizen Science projects and for the follow-up of citizen participation in research projects, and by appointing citizen researchers as jury members for the distribution of research funds in selection procedures for Citizen Science research project funding (e.g. from federal ministries, foundations). Citizen Science should be a significant part of the portfolio of research funding organisations (e.g. DFG).

Addressees

Practitioners · Civil society · Science · Educational organisations · Policymakers · Funding bodies

Michael Quante
Vice Rector for International Affairs and Transfer at the University of Münster

Photo: WWU/Peter Wattendorf

"Citizen Science is at the core of any scientific strategy development to address major societal challenges."

Mission statement 9:

In 2030, implementing Citizen Science projects at educational institutions will be made possible through funding instruments that promote close cooperation with schools, university education and extracurricular learning centres.

Teachers are important multipliers of Citizen Science. They have access to advanced training opportunities on integrating Citizen Science in educational concepts, along with teaching and learning materials for practical implementation. Activities are based on current research and are aligned with curricula and other frameworks.

9 Integration into educational concepts

9.1 Situation analysis: Where do we stand since the Green Paper?

The courses of action on educational concepts and Citizen Science in the Green Paper can be sensibly divided into four areas: school, extracurricular learning centres, university teaching, lifelong learning.

9.1.1 School

The Green Paper outlined the following courses of action: 1) integrate Citizen Science as an approach in school curricula, 2) expand and adapt Citizen Science curricula, 3) get students involved.

There are some practical examples that prove successful involvement of pupils in Citizen Science activities. However, this is not based on institutionalised structures. No mention of Citizen Science could be found during an exemplary analysis of the gymnasium/gesamtschule (grammar school/comprehensive school) curricula for the subjects of biology and geography for NRW (2019) and for the subjects of natural science and technology, astronomy, computer science, human-natural technology, biology, chemistry, geography, social sciences, art, mathematics, music, physics, economics and law for Thuringia (2012-2018).

Very few teachers (n = 18, out of over 750,000 teachers in Germany in 2019/20) participated in the CS Survey 2020. 80% of the participating teachers were from a gymnasium (grammar school) and, according to their own information, only six had already participated in Citizen Science activities with learning groups, while eight said they were planning to do so. The learning groups with which Citizen Science projects have been performed or are planned are mainly learners in grades 10-12. The implementation is usually part of the subject lessons and rarely takes place outside of school.

9.1.2 Extracurricular learning centres

The Green Paper identified establishing and supporting Citizen Science structures by expanding Citizen Science as a learning opportunity in extracurricular learning centres (such as environmental education centres, museums or libraries) as a course of action.

Extracurricular learning centres are among the initiators of Citizen Science activities, some of which have been integrated into school education. Additionally, archives and science shops should also be mentioned as important extracurricular learning centres in Citizen Science. The results of the CS Survey 2020 (n = 53 coordinators) show that there are frequent collaborations with educational institutions (43%), with associations and NGOs (34%) and with museums (30%). Coordinators cooperate less frequently with school laboratories (19%), libraries and archives (15% each), botanical gardens (11%), cultural centres (9%) and zoos (8%). The main target group in this instance is

adults. Some extracurricular learning centres are involved in several Citizen Science projects.

9.1.3 University teaching

Integrating Citizen Science into scientific research in university teaching and into the curricula of study courses were indicated in the Green Paper as courses of action.

Citizen Science as a scientific method has hardly been addressed in teaching so far, despite selective measures such as summer/winter schools and training workshops being offered in isolated cases. Hardly any theses are written using Citizen Science methods. Despite its potential, Citizen Science has not yet been introduced in all subject areas. A number of positive examples show profitable collaboration between schools and universities based on Citizen Science. The same applies to collaboration between research institutions (where Citizen Science is researched) and academic educational institutions.

9.1.4 Lifelong learning

The Green Paper identified the following recommendation for action: Enabling lifelong learning through Citizen Science for all educational groups. This recommendation for action is divided into the aspects of learning effects and educational opportunities. The CS Survey 2020 suggests that the majority of Citizen Science has learning effects, for instance that knowledge has been acquired, when asked about the achievement of educational goals. Participants and project coordinators differ in their assessment of these effects (→ Fig. 8). Participants believe that Citizen Science has more of an effect on their knowledge ($n_{Knowledge}$ = 94) than on their interest ($n_{Interest}$ = 93), skills (n_{Skills} = 94) or attitudes ($n_{Attitudes}$ = 93). Project coordinators consistently rank the effects of Citizen Science on participants' knowledge ($n_{Knowledge}$ = 26), skills (n_{Skills} = 20), interest ($n_{Interest}$ = 18) and attitudes ($n_{Attitudes}$ = 16) more accurately than the participants themselves. However, the majority of project coordinators have not yet evaluated the impact on participants. Their assessment of the impact on participants is largely based on the experiences of the project coordinators. Funded Citizen Science projects more often use structured interviews and/or standardised questionnaires for evaluation.

Some learning opportunities are not included as often in the projects (e.g. systematic

In after-work expeditions, EMU brings regional research projects to life, as here on the Bever River. Photo: WWU Münster/Bauhus

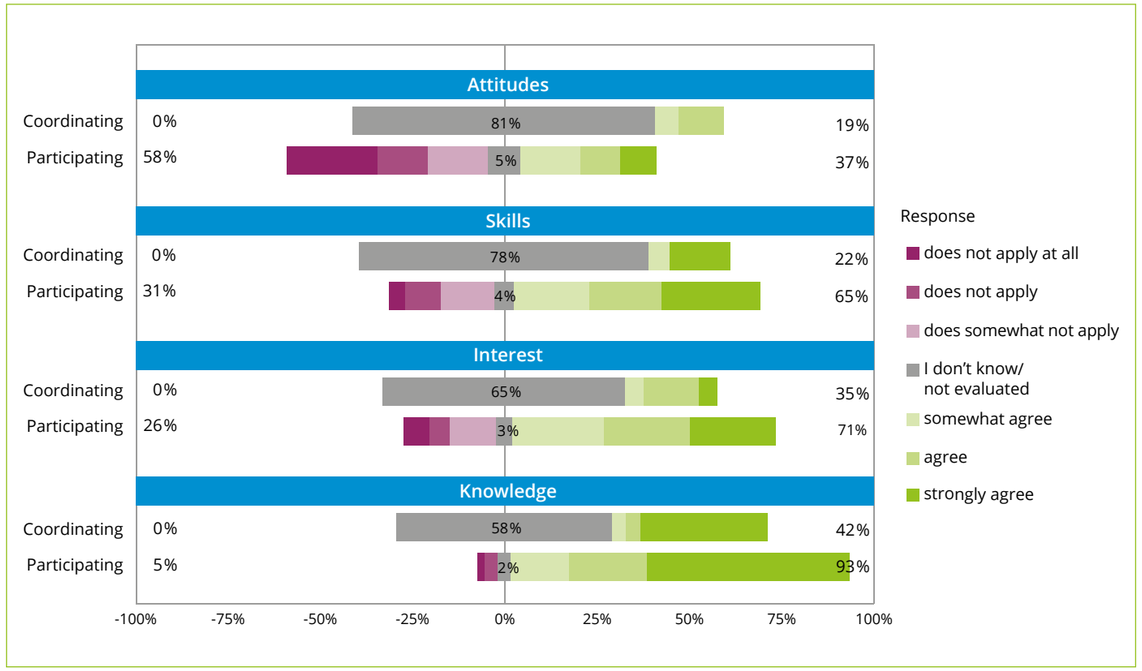


Figure 8: Comparison assessments from project coordinators and participants on the extent to which educational goals were achieved; from left to right, percentages refer to cumulative negative responses (brown colour scheme), undecided responses (grey colour scheme) and cumulative positive responses (green colour scheme)

feedback, expertise platform), although they are used at a similar frequency by participants. An example: While seven out of ten projects (n = 79 coordinators interviewed) offer information materials, only five out of ten participants (n = 113 participants interviewed) use these materials. Five out of ten participants also report using systematic feedback during the projects (→ Fig. 9a). Although systematic feedback to participants has a positive effect on the assessment of their knowledge and skills, only four out of ten projects provide it to participants. Participants who received systematic feedback on their activities in the project rate their knowledge and skills more positively than participants who did not receive feedback (knowledge: $n_{feedback}$ = 51, $n_{no\ feedback}$ = 59; skills: $n_{feedback}$ = 51, $n_{no\ feedback}$ = 56).

These differences in the assessment of the acquired knowledge and skills depending on the educational service of systematic feedback cannot be found for the educational service of information materials: Little difference can be discerned between participants that have used or not used information materials when self-assessing their knowledge and skills (→ Fig. 9b). Information materials seem to play a lesser role than systematic feedback for the knowledge and skills of the participants (knowledge: $n_{information\ material}$ = 54, $n_{no\ information\ material}$ = 56; skills: $n_{information\ material}$ = 53, $n_{no\ information\ material}$ = 54).

9.2 What are the requirements, opportunities and challenges?

9.2.1 School

Citizen Science was not mentioned in the curricula studied. However potential connections could be found, such as a requirement to cultivate competency acquisition in scientific thinking and working methods and to use questions from research practice as a context in lessons. These points of contact confirm the potential of inserting Citizen Science in curricula. However, a collaboration is required for actual implementation

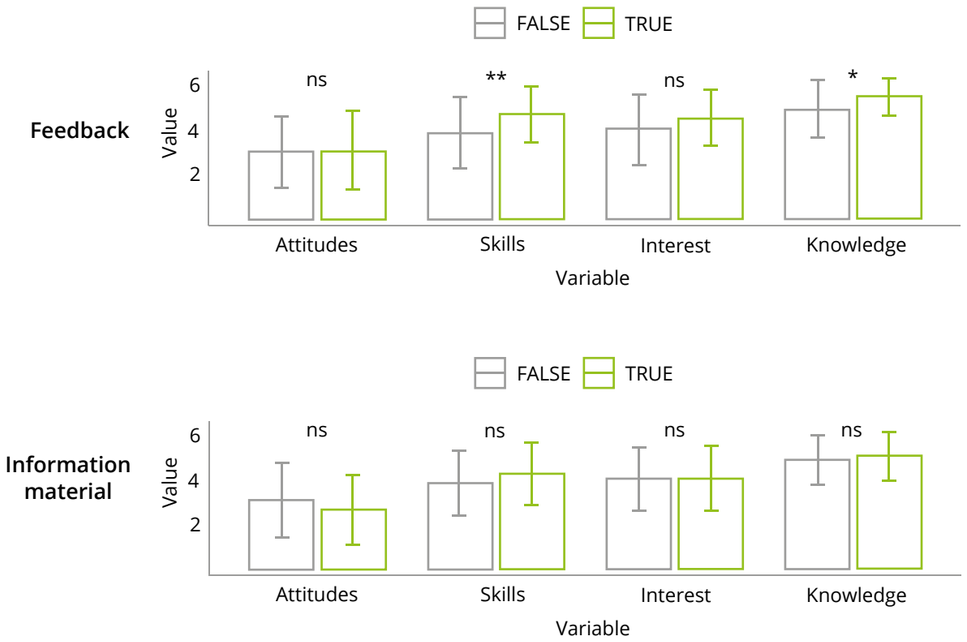


Figure 9a, b: Comparison between participants who (a) collect systematic feedback or not and (b) who have used information material or not (*p < .05; **p < .01; ns = not significant)

between the Standing Conference of the Ministers of Education and Cultural Affairs of the Länder in the Federal Republic of Germany, responsible institutions in the individual federal states and the Citizen Science community. Additionally, it is necessary to integrate the topic of Citizen Science into teacher training and professional development.

The very low participation of teachers in the CS Survey 2020 is evidence of the lack of networking between teachers and Citizen Science so far. Teachers seem either to have not been reached or to have not considered the topic relevant.

9.2.2 Extracurricular learning centres

The repeated participation of extracurricular educational facilities might indicate that Citizen Science is becoming established as an approach in these institutions. However, school laboratories that are often directly linked to research institutions are rarely cooperating partners. It remains to be determined which factors favour the integration of Citizen Science into extracurricular educational programmes. Respondents to the CS Survey 2020 identified three areas as challenges for incorporating Citizen Science into their learning opportunities: little flexible organisational structures, lack of human and financial resources and lack of expertise and supporting materials such as guides. Thus, it seems that more structures and services are needed to stimulate and support extracurricular learning centres and Citizen Science coordinators.

9.2.3 University teaching

The CS Survey 2020 shows that the majority of students are not familiar with the concept of Citizen Science, according to the researchers. On the part of the researchers, the amount of those who are aware of Citizen Science predominates. However, only 33% of the researchers surveyed thought that the teachers at their institutions were open to this concept. There is also a lack of training opportunities on teaching Citizen Science methods. Consequently, there is a shortage of teaching staff with corresponding expertise. Furthermore, Citizen Science is not integrated into the curricula of the degree programmes. However, both are regarded as an essential aspect and requested by the EU [92]. The shortcomings of university teaching in teacher training regarding Citizen Science naturally continue in schools.

9.2.4 Lifelong learning

The positive assessments of the project coordinators on participant knowledge, interest, skills and attitudes indicate positive learning and development effects in Citizen Science projects. However, the reasons for the discrepancies between participant and project coordinator assessments should be investigated and explained (e.g. socially desirable answers, self-selection). However, it seems to be more important to support project evaluations through funding, as standardised questionnaires and structured interviews can be used to ensure comparable evaluations.

Educational opportunities created in many Citizen Science projects are not necessarily used by more participants. In many cases, educational opportunities that are in demand and successful (e.g. feedback on activities) should be developed further and shared as examples.

European Union programmes create co-creative formats. Here is a workshop with Latin American universities and initiatives in Panama City. Photo: LASIN, Glasgow

9.3 Recommended actions for area integration into educational concepts

9.1
Science and educational institutions should work **together to develop and make available practical recommendations for establishing Citizen Science in extracurricular learning centres**.

9.2
To create and attract learning opportunities, Citizen Science coordinators should **tailor educational opportunities to the interests and abilities of participants** by drawing on previous research on participant motivation.

9.3
Participants should build on research findings to develop **effective educational opportunities**, such as systematic feedback to participants on activities and expanding projects to promote learning.

9.4
The Standing Conference of the Ministers of Education and Cultural Affairs of the Länder and the Ministries of Education of the Länder **should initiate integrating Citizen Science into curricula and teacher training as a format for authentic, research-based learning** and promote this by developing teaching and learning materials.

9.5
Sponsors support Citizen Science coordinators, educational institutions and educational sciences by jointly d**eveloping teaching and learning materials (as open educational resources when possible)** based on the latest research to **integrate Citizen Science into teaching practices.**

9.6
Academic institutions should offer **measures to build capacity** for university lecturers on the topic of Citizen Science, as part of funded internal or external training programmes, to **integrate Citizen Science into the module plans and thus into university teaching** (→ action area 8).

9.7
Funding agencies and scientific institutions should **fund and assist the evaluation and research** (→ action area 15) of educational processes in Citizen Science by funding and promoting the evaluations, providing professional advice using evaluation guidelines and strengthening collaboration between Citizen Science projects and educational research.

9.8
Develop a **comprehensive and long-term Citizen Science funding programme** that integrates schools, extracurricular learning centres, universities and other research institutions. The extensive and long-term Sparkling Science funding programme in Austria is a successful best-practice model for the required recommendations for action to strengthen collaboration between education and science in the area of Citizen Science (2007 to 2019 with a volume of 34.9 million euros). The success of the funding approach, which integrates schools, extracurricular learning centres, universities and other research institutions, as evidenced by evaluations, should serve as a model for the development of innovative structures and activities in educational concepts and Citizen Science.

Addressees

Practitioners · Civil society · Science · Educational organisations · Policymakers · Funding bodies

Norbert Steinhaus
Bonn Science Shop

Photo: private

"I support the Citizen Science Strategy 2030 for Germany because of the need for responsible research and teaching that focuses on stakeholder involvement and participatory processes to incorporate values, needs and expectations."

10 Integration into decision-making processes

10.1 Situation analysis: Where do we stand since the Green Paper?

The status of Citizen Science has improved in recent years in German and European political strategies [16, 41]. Citizen Science is a component of the European Union's Open Science Strategy [93] and the German High-Tech Strategy 2025 [31], as well as the policy papers of the Federal Ministry of Education and Research on science communication [28] and participation [94], and the recommendations for action from #FactoryWisskomm, among other things (→ action area 4 on the combined effort between Citizen Science and scientific communication). While the potential to integrate Citizen Science results into decision-making processes at the strategic level has been repeatedly expressed, Citizen Science results have thus far rarely been incorporated into concrete political and societal decision-making processes, such as in the areas of transport and urban planning or review of environmental standards [95, 96, 97].

Selected areas of nature conservation are much further along. Data from Citizen Science projects in these areas already contribute to fulfilling national and international reporting obligations, such as the European Farmland Bird Indicator [98, 99] and the Grassland Butterfly Indicator (→ Box 8) [100]. The use of Citizen Science results in nature conservation is also expressed by how Citizen Science has been integrated into the structure of relevant authorities. Examples of this include the Citizen Science Special Interest Group of the European Environment Agency [61]) and the long-standing cooperation of the Federal Agency for Nature Conservation (BfN), the Red List Centre and the Biodiversity Monitoring Centre with volunteers, associations and professional societies, among others.

Other examples from the environmental field include a 70-year-old Citizen Science project by the Deutscher Wetterdienst (DWD), in which citizens collect regional phenological data that form the basis for DWD forecasts, especially for the weather for farmers in rural areas. Citizen initiatives use "senseBoxes" to measure fine dust and noise levels and share data with authorities. In the Netherlands and in Flanders/Belgium, the open environmental data from Sensor.Community is already being integrated into the data portals of public authorities.

Since Citizen Science is a cooperative and often application-oriented research method, it has great potential to contribute to political and societal decision-making processes [95, 96, 101] and to involve citizens in policymaking. Citizen Science projects can provide a foundation for evidence-based policymaking [102, 103], for example by answering questions relevant to local policy (e.g. small-scale exposure to air pollutants) or by providing data on large space-time scales (e.g. distribution of invasive animal and plant species). Citizen Science can contribute to different phases of policymaking, ranging from defining problems, preparing policymaking processes and implementing policies to monitoring policy decisions [104]. Citizen scientists can contribute to data collection, assist in interpreting data through their expert knowledge and contribute to the development of policy recommendations. Policies based on Citizen Science results have the potential to become more relevant to citizens, as policy solutions are more closely aligned with their realities. The research process is made transparent by citizen participation in key research steps, from the collection and analysis of Citizen Science data to the interpretation of research results. This can increase the legitimacy of the research results and the subsequent acceptance of political decisions made based on these data [105, 106]. Additionally, citizen researchers can develop a deeper understanding of democracy by gaining insights into the often difficult deliberation processes that accompany political decisions during their research activities.

The potential attributed to Citizen Science in strategy papers [93] conflicts with the fact that the results from Citizen Science projects are often not actually taken into account in politics. This is reflected in the CS Survey 2020 results. Approximately 58% of the 281 participants saw added value from the results of Citizen Science projects for political and societal decision-making processes, as they can form the foundation for decisions together with other data sources. About 30% stated that Citizen Science data is an essential data basis for decision-making processes. Only 3% of the respondents considered Citizen Science data to be of no value for decision-making processes due to uncertain data quality.[1] For around 65% of the 75 participating researchers, Citizen Science provides added value by strengthening the social relevance of research through the collaborative development of research questions with citizens and other stakeholders. For 49% of the researchers, further added value comes from more effective implementation of research results. Practical implementation of research results from Citizen Science

Mission statement 10:

In 2030, Citizen Science will provide practical knowledge on socially relevant issues and thus support political and social decision-making processes.

Citizen Science contributes to evidence-based policy and management decisions through the collaboration of civil society, governmental, political and academic partners.

The data collected using the Night Lights app makes it possible to better analyse light emissions and draw conclusions on how we can reduce light pollution in the future. Photo: Christopher Kyba/GFZ

1 Participants who indicated the option "Don't know" are not shown. The cumulative relative frequency is therefore below 100%.

BOX 8 – Involvement of Citizen Science initiatives in European biodiversity monitoring and reporting

Citizen Science plays a key role in biodiversity monitoring and reporting, both in the collaborative design of monitoring and data collection as well as in evaluation and communication. Many citizen scientists throughout Europe have been collecting data for several decades. These data are used in detailed species mapping and lists. The citizen scientists are sometimes organised in natural history associations and projects or work individually. This enables a level of coverage and accuracy of reporting that official monitoring alone could not achieve. Citizen Science initiatives thus provide important information for political decision-makers. Specific areas of application are:

- The Pan-European Common Bird Monitoring Scheme (PECBMS), where a network of citizen scientists submit bird observations. The resulting PECBMS Common Farmland Bird Index and the EU Common Bird Index are recognised indicators of biodiversity in Europe and have been incorporated into the
  - assessment of the rural development plans of the European Union Member States,
  - the assessment of the EU Biodiversity Strategy and progress towards the Sustainable Development Goals (SDGs), and
  - the monitoring and evaluation measures in the Common Agricultural Policy (CAP).
- Citizen scientists from 20 European countries are collecting comprehensive data on the distribution of butterfly species as part of the European Butterfly Monitoring Scheme (eBMS). The Grassland Butterfly Index is calculated based on this data and includes data on 17 butterfly species. The indicator is used to assess progress in the EU Biodiversity Strategy, to report to the Convention on Biological Diversity and to evaluate progress towards the SDGs. Monitoring is currently being extended to Southern and Eastern Europe as part of the Assessing Butterflies in Europe (ABLE) project funded by the European Union.
- The Red List of Threatened Species, established by the International Union for Conservation of Nature in 1964, has become the most comprehensive source of information on the extinction risk of animal, fungal and plant species (IUCN Red List). The IUCN Red List is thus an important indicator of global biodiversity and an effective instrument for implementing political measures to protect biological diversity. Endangered species are classified into categories on the Red List based on standard criteria. Data from Citizen Science repositories such as eBird, BirdTrack and xeno-canto are already being used for IUCN assessments on bird species. Citizen Science data on range, population size, habitat and ecology, as well as use and trade, help to inform necessary conservation measures.

More than 6,000 volunteers participate in the nationwide bird monitoring organised by the Dachverband Deutscher Avifaunisten. For two years now, mapping breeding birds has been possible with the help of the NaturaList app, which enables digital recording directly in the field. The digital service is now used by about half of the staff because it alleviates most desk work. More info at www.dda-web.de and www.ornitho.de. Photos: DDA

projects is addressed at various points in the CS Survey 2020. From 2016 to 2020, 20% of the 199 respondents attended Citizen Science events that addressed transferring research findings to policy and practice. When asked about important recognition factors for citizen scientists, 74% of the 200 respondents identified these as the joint development of practical measures based on Citizen Science results and 72% as the direct exchange with politicians. In contrast however, only 16% of the 276 respondents felt that Citizen Science is currently valued by policymakers as a valid tool for making decisions. Overall, the results from the Citizen Science survey suggest that Citizen Science has not yet fully realised its potential for integration into decision-making processes.

The clear commitment of German politics to Citizen Science with the Coalition Agreement 2021–2025 is therefore all the more welcome: "We will use Citizen Science to incorporate perspectives from civil society more strongly into research." [26, pg. 24] Good channels should now also be created so that the results from citizen research can also be used as an evidence base for political decisions.

10.2 What are the requirements, opportunities and challenges?

Developing a common understanding of how Citizen Science can contribute to decision-making processes
Citizen Science can fully develop its added value for society as a typically application-oriented research approach if relevant results are consistently taken into account in political and societal decisions [94]. Discrepancies between its reported potential to contribute to decision-making processes and the lack of participation can reduce the credibility of the affected decision-making processes and demotivate citizen scientists. To avoid this, it is important that all stakeholders involved collectively determine both whether Citizen Science can contribute to decision-making processes and how. The level of participation should be considered mandatory by all stakeholders and should be considered throughout the entire decision-making process. Whether and how Citizen Science can contribute to decision-making processes must there-

fore be determined at the beginning of a decision-making process. For this purpose, it often makes sense to communicate with representatives from public authorities and agencies early in the project, for example, to clarify possible expectations and demands regarding data quality. Public authorities and agencies can support involvement in decision-making processes by embedding collaboration with Citizen Science projects in their strategies, i.e. permanently integrating it into their official activities and also equipping their staff with the necessary competences and enabling them to act.

Respecting relevant quality standards so that Citizen Science project results can be incorporated into decision-making processes

Ensuring data quality is a key challenge for Citizen Science projects, since concerns are often raised about the quality and transparency of data collection, processing and analysis [106, 107]. Compliance with established quality standards must be ensured in all Citizen Science projects [106], much like projects outside of Citizen Science. In addition to general quality standards, Citizen Science data must also meet legally defined standards in many policy fields before they can be used in decision-making processes (e.g. Water Framework Directive WFD, Monitoring of Common Breeding Birds MhB, Pan-European Common Bird Monitoring Scheme PECBMS) [108, 109]. Currently, data from Citizen Science projects are not or only partially compatible with these standards. In order to rectify this situation, it is necessary to consider how the results are later used during the conception phase of projects [95]. The necessary standards and methods should be planned and documented from the beginning, since observing them at a later stage may only be possible to a limited extent. We must ensure close communication with

In the KnowledgeFlow: the Berlin Panke CS project, citizen scientists explore and discover the biodiversity and habitats of a local Berlin river – the Panke – as well as wetlands in the Berlin hinterland (Spreewald, Spandauer Forst and Karower Teiche) on river and wetland excursions. Photo: Maryam Mumladze

the users of the data that will be collected (e.g. local and national environmental agencies or nature conservation authorities) [95]. It may be useful to appoint specific contact persons with a corresponding mandate for all stakeholders involved in order to support early coordination processes. In some decision-making processes, consideration should also be given to how data from traditional research projects and results from Citizen Science projects can usefully complement each other [103].

Linking participatory processes with Citizen Science

The way that citizens participate in political and social decision-making processes has changed in recent years. In representative democracies, traditional participation through elections is increasingly supplemented by deliberative (participation-centred) procedures such as citizens' petitions or citizens' councils, which are particularly important at the level of municipalities and federal states [110]. Both deliberative procedures and Citizen Science are distinguished by a high level of citizen participation. With that in mind, there are promising starting points for connecting deliberative processes with Citizen Science approaches, which could lead to the strengthening of both. Particularly decision-making processes with high conflict potential and low legitimacy (e.g. measures to reduce traffic in urban districts, construction of wind turbines) could contribute to strengthening deliberative processes by integrating Citizen Science approaches. Research results that are developed during Citizen Science projects and enjoy a high level of acceptance, legitimacy and credibility among all stakeholders could be fed into deliberative processes and objectify the discourse. This could strengthen deliberative processes. Thus far, we lack experience integrating Citizen Science approaches into deliberative processes in Germany. Having said this, relevant

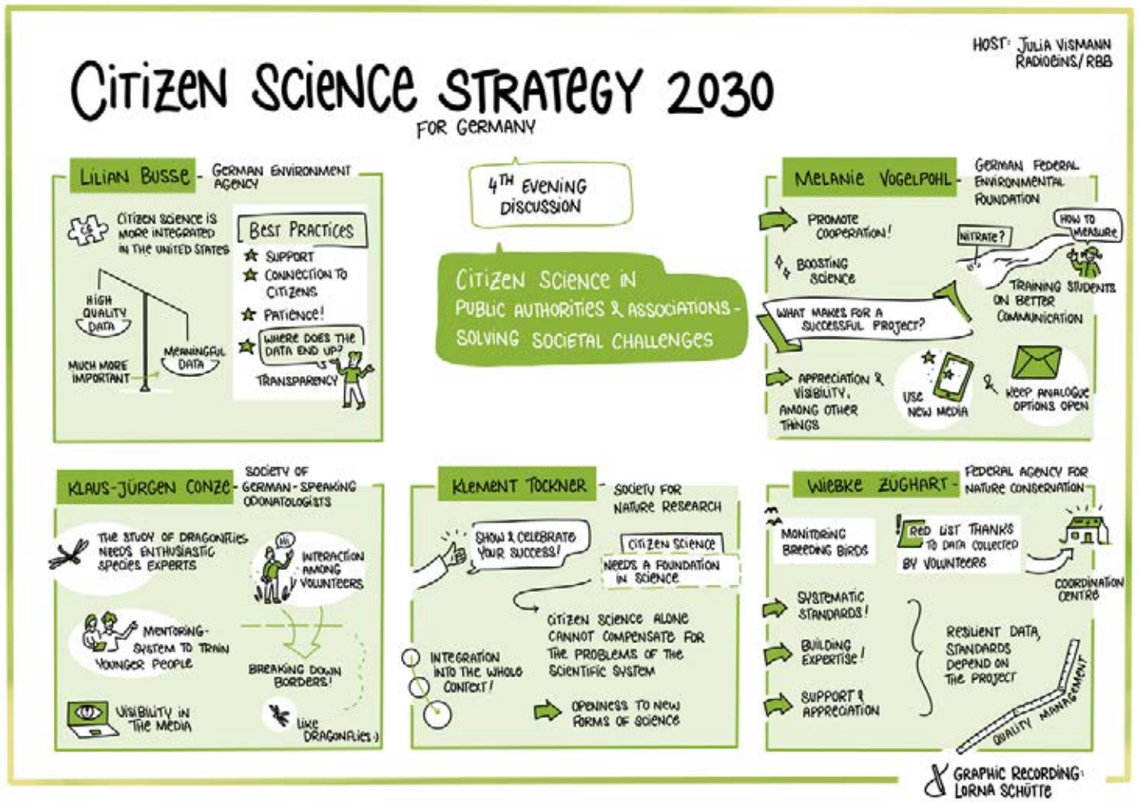


Figure 10: Results from the digital panel discussion on 29 September 2021 on "Citizen Science in public authorities and associations – solving societal challenges"

model projects should be performed in the sense of regulatory sandboxes, including a systematic evaluation of barriers and success factors (→ action area 8 "Integration into scientific processes"). Based on the experience gained from the model projects, structural conditions should be created in the medium term and appropriate capacities built so that Citizen Science approaches can be broadly integrated into deliberative processes if they are successful (→ Fig. 10).

Creating structural conditions to integrate Citizen Science results into decision-making processes

Integrating results from Citizen Science projects into political and societal decision-making processes involves many prerequisites and the intensive use of personnel. Coordination centres and other structural prerequisites should be created among the stakeholders involved (e.g. local points of contact in authorities, associations, museums and universities for Citizen Science) to design and coordinate the necessary processes. In organisational terms, coordination centres could be incorporated into places such as science shops and regulatory sandboxes that already exist. Creating structural conditions to successfully integrate Citizen Science in a mutually beneficial way into decision-making processes is a medium-term project. This can only be realised through sustainable structural funding. Short-term project funding is not suitable, as even at the end of multi-year projects there are usually discontinuities and accumulated knowledge is lost.

Building capacity to integrate Citizen Science into decision-making processes

The prerequisites to successfully integrate Citizen Science into political and societal decision-making processes range from the participatory determination of whether or not Citizen Science results can profitably contribute to decision-making processes and to what extent, to actually considering the results in political and societal decisions. Successfully integrating Citizen Science results into decision-making processes, i.e. incorporating the results into planning, monitoring or policy development, requires a wide range of competencies that are currently not yet available across the board. This was reflected in the CS Survey 2020 among other things, where 82% of the 88 participants wanted support and consultation on how to implement Citizen Science project results into policy and practice. Relevant education and training opportunities should be created at universities and non-university institutions (e.g. science shops) to meet the need to build capacity. In order to comprehensively strengthen the integration of Citizen Science into decision-making processes, services should be made available for citizen scientists and project coordinators as well as for politicians and employees in public authorities. Decision-makers in politics and funding institutions should create long-term incentive structures to support this.

10.3 Recommended actions for area integration into decision-making processes

10.1
Decision-makers in politics and management should incorporate the integration of Citizen Science into decision-making processes into their action-guiding strategies and firmly integrate collaboration with Citizen Science projects into their regulatory actions. For this purpose, they must equip their staff with sufficient capacities to enable consistent integration into decision-making processes.

10.2
In order to ensure usability of Citizen Science results in decision-making processes, the Citizen Science community, scientific institutions and the subsequent users of the results (e.g. authorities and agencies) should collectively define the standards to be observed. The mandatory standards should be observed starting in the conception phase of Citizen Science projects.

10.3
The Citizen Science community, civil society organisations and political decision-makers should test the integration of Citizen Science approaches into deliberative procedures such as citizens' petitions or citizens' councils during model projects. The model projects should be systematically and scientifically supported in order to identify barriers and success factors for successful integration and examples of best practice.

10.4
Civil society organisations and policymakers should create the structural conditions to successfully integrate Citizen Science into decision-making processes (e.g. coordination centres, defined workflows to integrate quality-assured Citizen Science data into policy development, planning and monitoring).

10.5
Civil society organisations and scientific and educational institutions should create opportunities to build capacity (e.g. education and training formats at universities and non-university institutions) that support stakeholders (e.g. project coordinators, public authority employees) in building the competences necessary to successfully integrate Citizen Science into decision-making processes. Practical advisory services for public authorities and agencies planning to increase the integration of Citizen Science could be offered at municipal and city conventions or at universities with a focus on administrative sciences, for example.

Addressees

Practitioners · Civil society · Science · Educational organisations · Policymakers · Funding bodies

Johannes Vogel
Director General of the Museum für Naturkunde Berlin,
Leibniz Institute for Evolution and Biodiversity Science

Photo: Pablo Castagnola

"You should actively implement the Citizen Science Strategy 2030 for Germany so that every voice is heard and together we advance the opening of science and exchange ideas across society, policy and business."

11 Medicine and health research

11.1 Situation analysis: Where do we stand since the Green Paper?

In the Green Paper, Citizen Science in the context of medicine and health research was not yet treated as a separate topic. In the evaluation survey, the majority of the stakeholders ascribed great future importance to the Citizen Science approach in the medical field. In fact, Citizen Science is still a comparatively young field in medicine in Germany, especially when Citizen Science is regarded as intensive, active participation of patients and their relatives (→ Box 9). However, there is a long tradition of participation by non-scientific stakeholders in public health and health promotion, which will not be discussed in depth here. In the participatory or community-based health research approaches, for example, the focus is often on the living conditions as they pertain to health of socially disadvantaged people [111, 112, 113]. In medical research, patient-reported outcomes are becoming increasingly important and are now perceived as beneficial to scientific knowledge [114], but the level of participation is rather low. Nevertheless, considering subjective perceptions and experiences (such as symptoms, quality of life and lifestyle habits) as a target criterion in medical and health research is an important first step towards strengthening the individual in the research context. Crowdsourcing methods are also used, for example to identify and classify cancer cells [115]. However, patients are typically not involved in this.

The reasons for this rather weak dissemination of Citizen Science in medicine are, inter alia, that medical knowledge competences are very specialised and are unilaterally ascribed to doctors. The experiences and perceptions of patients or citizens are usually dismissed as insignificant if they cannot be classified in the existing specialised knowledge. Also, in German-speaking countries, the medical terminology is an obstacle to citizen participation [116].

11.2 What are the requirements, opportunities and challenges?

Citizen Science in medicine and health research with the active participation of patients is special in many ways. The most striking peculiarity is that citizen scientists in medical projects are also patients or affected persons and are thus both subject and object of the research. The data they provide is usually highly personal. A second relevant feature is the motivation to participate in a Citizen Science project. While participation in traditional Citizen Science projects is often based on the joy of learning and participating in knowledge production, in medical and health-related Citizen Science projects the motivation lies more likely in shared suffering, concern for one's own health or even the desire to pass on the experience of one's own illness to others. Thirdly, communication between doctors and patients and their relatives is hierarchical. In the German-speaking countries, this hierarchy is exacerbated by the Latin medical terminology, which makes it difficult for citizens to participate in research. Fourthly, patients are always experts on living with their illness or on their illness as such. In light of all this, Citizen Science should be subject to specific criteria in medical research. With regard to patient expertise, for example, it makes sense to integrate patients into the Citizen Science project from the very beginning, i.e. when defining the research questions and the research design. So far, this has been implemented in only a few projects (→ Box 9).

Mission statement 11:

In 2030, patients will be frequently involved in all phases of medical and health research as citizen researchers.

In medicine, the experience and expertise of patients and their families is recognised as significant. Their involvement in research through Citizen Science increases the relevance and usefulness of research results, facilitates their practical implementation and improves the situation of the patients. New frameworks and structures have emerged that enable joint research, the mutual respect of all participants, responsibly handling the health data of the contributors, adequate funding and recognition in science and medicine.

The SMOVE CS project involves using the ActivPAL sensor, which records the total activity of the students over seven days – sitting, lying down and moving around. Photo: SMOVE/MCD

Involving patients more often and more actively in all phases of the research process has the potential to make the scientific knowledge process both more comprehensive and more needs-based [117] (→ Fig. 11). This can increase the relevance and usefulness of the results for healthcare as a whole. Furthermore, adherence and trust between healthcare professionals and patients may potentially increase if research is conducted jointly rather than hierarchically. This also increases the chance of citizen scientists distributing the results of the Citizen Science project they were involved in through their own patient networks.

In classical medical research, a strict set of rules is recognised and required worldwide [118]. These strict rules are sometimes to be questioned when patients are actively involved in the research project. For example, if patients are involved as citizen scientists (and not exclusively as persons being researched), they cannot consistently adhere to the required pseudonymisation of the data. In this respect, the requirements of medical ethics committees for Citizen Science projects in particular needs to be adapted. Simultaneously, high clinical research standards (e.g. regarding data quality) must be adhered to in Citizen Science projects, too.

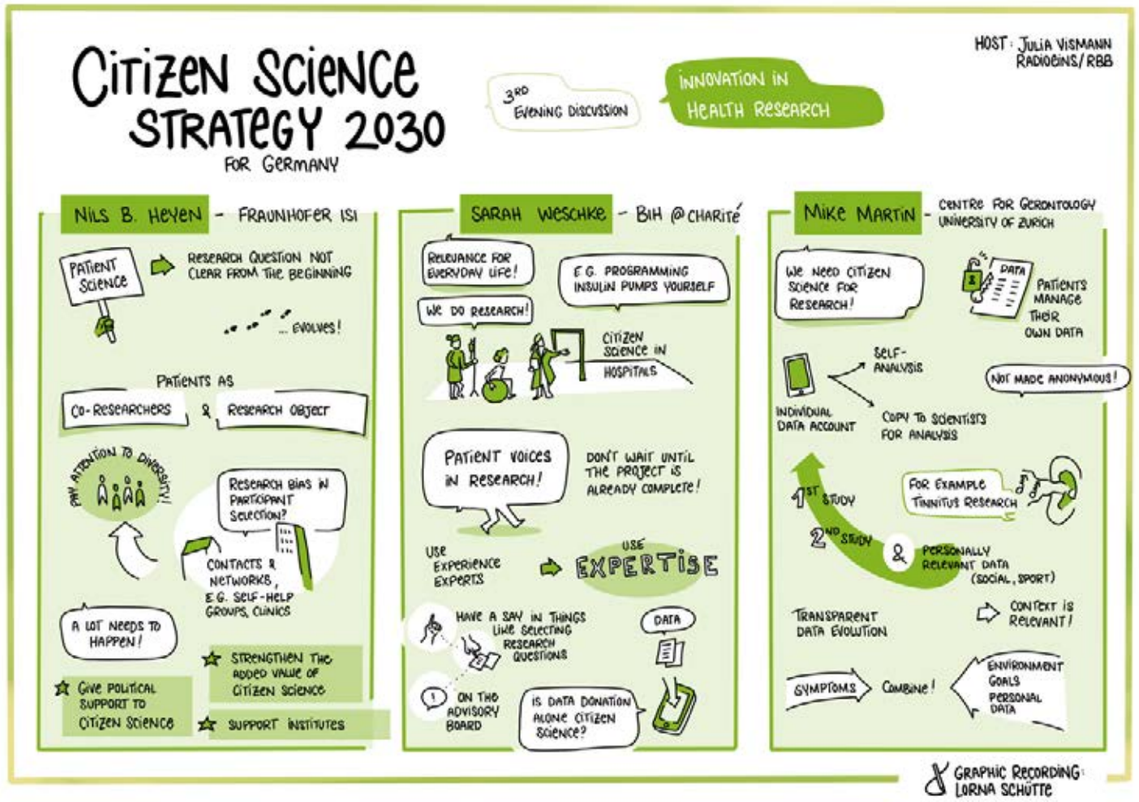


Figure 11: Results from the digital panel discussion on 22 September 2021 on "Citizen Science – Innovation in Health Research".

BOX 9 – Best practice examples for Citizen Science in medicine and health research

Type 1 diabetes (T1D) is a disease in which the pancreas no longer produces insulin, so it has to be administered externally. Technological systems have significantly improved the living conditions of people with T1D in recent years, but are still far from entirely replacing the function of the pancreas. Some people with T1D are now using innovatively enhanced DIY artificial pancreas systems that significantly outperform the effectiveness of commercial technologies. The Citizen Science project **TeQfor1**

www.itas.kit.edu/english/projects_woll19_teqfor1.php

provides the users of these systems with a scientific approach that enables them to make sound and valid assessments of DIY technologies, focusing on individual user criteria.

Patient Science is a co-creative Citizen Science approach for medical and health research that was developed and tested during a pilot project funded by the BMBF

www.buergerschaffenwissen.de/projekt/patient-science-patienten-schaffen-wissen

[117]: A team of co-researchers consisting of relatives and patients with the chronic rare disease cystic fibrosis as well as professional researchers from the social sciences, psychology and medicine, or medical and psychosocial practitioners, conducted a complete scientific study on everyday problems in living with cystic fibrosis, from the determination of the concrete research topic and design, to data collection and evaluation, to the utilisation and publication of results.

In the **Gestational Diabetes Aftercare** project

www.buergerschaffenwissen.de/projekt/nachsorge-schwangerschaftsdiabetes-was-ist-wichtig

research is being conducted on how women and those treating them assess the aftercare situation. Patients and citizens can participate by evaluating interviews, for example. The aim of the Citizen Science approach is to involve as many different people as possible who enrich the process through their different experiences and skills. In order to achieve this diversity, the aim is for participating co-researchers to be both men and women, to come from different age groups and professions, and to include people with a migration background.

11.3 Recommended actions

In order to realise the potentials mentioned above, patients and their relatives should be involved more frequently and more significantly in all phases of the research process. Research should be conducted with them, not only on them or about them. Mutual respect from all participants is a prerequisite for this. Citizen scientists should be given the opportunity to name research topics and to participate in designing projects. Due to the special features outlined above, Citizen Science projects in medicine have a responsibility to empower participants and patients and to strengthen their perspectives. At a minimum, the following actions must be performed to promote Citizen Science in medicine and health research and to reduce structural obstacles:

11.3 Recommended actions for area medicine and health research

11.1
Research actors and sponsors should be made aware of the potentials, requirements and challenges of Citizen Science projects in medicine and health research. To accomplish this, in particular the professional actors within participatory research must become active and raise awareness regarding the added value.

11.2
Participants and research actors should develop and implement specific training opportunities for existing personnel in healthcare and research to meet the specific needs of Citizen Science projects.

11.3
New professional staff at clinical institutions should be established that are medically educated but whose core tasks are to **coordinate and guide the research process with patients.**

11.4
New guidelines must be developed and institutionalised on how medical ethics committees should structurally deal with Citizen Science projects in medicine and health research. Ethical principles need to be adapted to strengthen the position of the patients in the research process and to enable equal participation. The initiative for this should come from Citizen Science stakeholders from research and civil society.

11.5
Funding institutions should provide additional financial resources to support Citizen Science projects in medicine and health research, which are usually particularly costly. This makes it possible to compensate patient volunteers and benefits patient organisations, which often have a great interest in the research projects but no capacity to participate. Funding opportunities should include the option for civil society organisations to apply, such as patient associations.

11.6
A culture of recognition for Citizen Science in medicine and health research should be established in the relevant research communities. Commitment to increasing patient involvement in the research process should be rewarded with incentives (e.g. competitions, credits in internal and external evaluation processes and should have a positive impact on professional careers.

11.7
The citizen scientists involved should be motivated to contribute to disseminating the Citizen Science project results by acting as multipliers and harnessing other communication channels. This way, a large and diverse audience can be reached to use the research findings.

Addressees

Practitioners | Civil society | Science | Educational organisations | Policymakers | Funding bodies

Otmar D. Wiestler
President of the Helmholtz Association of German Research Centres

Photo: David Ausserhofer

"I support the Citizen Science Strategy 2030 for Germany because the active participation of citizens is particularly important for the Helmholtz Association, conducting cutting-edge research for major challenges."

12 Sensor technology and artificial intelligence

New technologies shape developments in society. Citizen Science should contribute to making these technologies philanthropic and environmentally friendly and thus contribute to a sustainable, inclusive future. In this action area, we will pursue the correlation between Citizen Science and sensor technology and artificial intelligence as an example.

12.1 Situation analysis: Where do we stand since the Green Paper?

Artificial intelligence (AI) is the ability for machines to perform tasks independently, reacting to unknown situations in a similarly adaptive way as humans. Combined with sensor technology, the application of sensors, artificial intelligence offers new opportunities for digital transformation and social development. Machine learning is of particular importance as it applies to AI, in which technical systems with learning algorithms independently identify patterns and connections in data sets. The Citizen Science community is increasingly utilising these possibilities to actively shape a sustainable future for itself, even if it is far from exhausting the potential. One driving force for this development is the ever-improving availability of smart sensors. For example, the number of sensors sold is increasing by 17% each year, while their price is falling by 8% annually. This "democratisation of technology" means that Citizen Science projects can now collect data in a much more automated way. For example, the citizen scientists from the Sensor.Community have built an air quality measurement network of over 14,000 sensors in more than 70 countries.

As the amount of data generated in Citizen Science projects grows, so does the demand for efficient analytical tools. Artificial intelligence (AI) offers new possibilities for this. These possibilities did not exist in 2016, the year the Green Paper was published. A large proportion of the respondents from the CS Survey 2020 also addressed the increasing importance of sensor technology and AI in Citizen Science projects.

12.2 What are the requirements, opportunities and challenges?

The role of sensors and artificial intelligence in Citizen Science can theoretically be viewed from two perspectives: How does Citizen Science benefit AI and sensor technology? And how does AI and sensor technology benefit Citizen Science? Both of these approaches are important. Measurements using sensors provide high-quality input data for later analysis. AI can also help by determining the right measurement strategy before taking these measurements. Apart from this,

Mission statement 12:

In 2030, sensor technology and artificial intelligence will be established tools for Citizen Science activities.

In the projects, citizen scientists can take on different roles, operating the sensors, programming or analysing data. Cost-intensive tools are also provided by scientific institutions. Algorithms are an open and transparent foundation for decision-making processes.

data can also be enhanced by citizen scientists performing an initial quality check. For example, data on biodiversity, image processing or audio analysis are excellent for developing Citizen Science tools, such as plant identification apps (e.g. https://floraincognita.com, www.inaturalist.org). This also makes "data collection" interesting for data collectors because the data can also be used for secondary purposes while the project focuses on applying artificial intelligence (plant identification). Additionally, users can play around with the annotation which is important for machine learning, i.e. the qualitative description of certain data sections or labelling events that have produced certain data.

Furthermore, large amounts of data can be collected remotely from poorly accessible or inaccessible locations if applicable. Artificial intelligence helps to depict complex dynamic systems in a clear way to investigate them and also communicate them better. AL facilitates visualisations of complex data in Citizen Science projects or complex processes, such as infection events during a pandemic. As a result, AI and sensor technology can also become part of didactic concepts in schools, universities and other educational institutions.

Challenges

Citizen Science should focus more on **collaboration** between citizens and scientific institutions. Such collaboration also includes different participation in resources for sensors and artificial intelligence. Scientific institutions can also make **cost-intensive sensor technology available to involved citizens** (e.g. SMARAGD). The citizen scientists can contribute to sensor maintenance, contextually interpreting data and data utilisation. In such a model, citizen scientists should be integrated into the processes of the scientific institution

Citizen scientists collect climate data using a bike-mounted sensor. The climate data is uploaded to the open-source platform sensemap. CityCLIM CS project. Photo: Peter Barczewski/3d-artstudio

to enable training. **Networking** Citizen Science initiatives can also be an effective way to share resources and add value. For example, projects such as Data Science for Social Good and CorrelAid Programmers and Data Scientists offer their capabilities for non-profit purposes.

Components of an open-source closed-loop system of the TeQfor1 CS project. Photo: TeQfor1/KIT

Citizen Science projects often face the challenge of **bringing together a wide range of stakeholders in productive collaboration**. Citizen Science projects should be planned so that citizen scientists can take on different roles, from collecting to analysing and interpreting data, according to their motivation and level of knowledge (Bee Observer). Possible tasks should be defined and communicated before starting the project so that it is clear when the citizens can participate and which roles are available to them. In this regard, acceptance of public contributions is also important, because sensor technology and AI require participation from project participants with expertise. Citizen scientists should be trained to perform their task and lead citizens should be actively and carefully involved in various innovative processes.

Collaboration should be organised as a knowledge partnership (such as in exploration space by the Austrian Academy of Sciences: https://openinnovation.gv.at/portfolio/oeaw-exploration-space). This also includes ensuring the **sustainability** of a project beyond the project duration. We believe that working with existing groups, facilitating collaboration and developing workflows take precedence over the project objectives of tool development or data collection. The project should create the conditions for citizen scientists to continue independently.

In the CS Survey 2020, 74% of the respondents see the **cost** of using sensors and AI as a barrier for entry. Thus when discussing costs, it is important to consider the value of the data with regard to the financial consequences of decisions based on that data and the cost with regard to acceptance of decisions.

There are still **acceptance problems** for AI in the Citizen Science community despite the considerable potential that artificial intelligence has to analyse large amounts of data, which the majority of respondents in the Citizen Science survey also attest to. This is usually a matter of ethical aspects, reservations about information technology and fear of data misuse. AI must be non-discriminatory and fair, but also technically robust and secure. Approaches that transparently address the needs of users (human-centred design) and socially relevant issues (humanity-centred design) in technology development help to reduce these acceptance problems.

Algorithms used as the basis for decision-making processes should be **transparent**. AI can be made understandable to enable conscious use of it (e.g. with commercial data collectors). Citizens should be enabled to judge the results of artificial intelligence. In the field of AI and sensor technology, digital literacy is key to engagement. The Algorithm Inventarium project is based on participatory methods, citizen innovation and strong involvement from artists.

12.3 Recommended actions for area sensor technology and artificial intelligence

12.1
Participants and researchers should clearly demonstrate the potential added value of using artificial intelligence and sensor technology. Essentially, the more robust the information gained through the use of the technologies is, the more informed the conclusions and decisions derived from this information will be.

12.2
Scientists should clearly define the goals of using AI and sensors and evaluate milestone achievement during the project. Sensors and AI can be used in Citizen Science projects to answer research questions of varying complexity. At a low level, there are questions such as: How green is my neighbourhood? How high is the concentration of particulates in my neighbourhood? More complex questions involve analyses of seasonal trends. How have the properties of these elements changed over time and are there trends towards sustainable development or the other way around? The most complex studies combine different data sets and include how they affect individuals, such as: How does air quality affect my health and what does that mean for my environment?

12.3
Established research institutions should provide much more sensor technology and help maintain and calibrate Citizen Science projects. This concerns both specific laboratory-quality sensor technology and DIY standard sensor kits provided with detailed instructions on how to build and use the sensor technology for education and research. The sensors should be robust and reliable and able to transfer data to a database in real time. An appropriate legal framework must be created for scientific institutions to be able to make cost-intensive sensor technology available to participating citizens.

12.4
Policymakers should provide the infrastructure to process data generated by citizens and other freely available data (especially environmental, land use, urban structure, socio-economic and other geodata) and transfer them to a common **spatial data infrastructure** or data catalogue. With this step, citizens are given back their own data: "Bring the (geo)data back to the people". Analysis tools for relevant research questions should be made available on central platforms (e.g. SDG12 One Planet Network).

12.5
Educational institutions should provide low-threshold ways for citizen scientists to access information on AI and sensors and to get involved in networks. One possibility could be a **platform for networking and innovation** (→ action area 6 "Data quality and data management") that provides links to existing tools and lists demonstrators to establish communities and final innovation networks. It is important to involve local groups and to network with makerspaces and repair cafés.

12.6
Scientists and participants should provide various **online and offline tools** to promote dialogue between citizens, science and municipal stakeholders such as companies, politicians and NGOs. This especially includes citizen laboratories, a central web GIS with analytical functions and mobile apps. A key project objective is to **involve civil society stakeholders in a socially balanced and inclusive way in knowledge-based local and regional decision-making processes**. Citizens are involved at the beginning and through different levels of participation, especially by participating in data collection, collaborating to define the research question and in data analysis. Modern developments (e.g. the **Internet of Things**) can be used, and not only for data collection, but also to discuss data access, rights to data on a societal/political level and to create the knowledge background for informed discourse. One example could be to increase established use of sensor technology and AI through Citizen Science for data collection and data evaluation for processes to plan and realise infrastructure measures (e.g. sensor technology provision for citizens when determining environmental pollution, such as noise or air pollution).

12.7
In Citizen Science projects, researchers and participants can **specifically use the great potential of sensor technology and artificial intelligence in new fields of application**, such as: Species identification, biodiversity, Environmental DNA, medical research, animal welfare / environmental and climate protection, monitoring changing processes (land use) / urban development (identification of hotspots in environmental pollution, mobility, sociological aspects, migration) / medical research (e.g. using activity and health data) / art created using artificial intelligence, generated texts/consumer texts, lyrical texts, etc.

Addressees
Practitioners · Civil society · Science · Educational organisations · Policymakers · Funding bodies

Angelika Zahrnt
Honorary Chair of Friends of the Earth Germany (BUND)

Photo: private

"I would like to see a great deal of participation in the implementation of the Citizen Science Strategy 2030, which will help to ensure that citizens experience their involvement in science as individually enriching and at the same time as a contribution to research and solving societal questions and problems."

Mission statement 13:

In 2030, archives, libraries, museums and science shops, along with other institutions at the interface of science and the public, will identify as knowledge spaces and educational institutions tasked with institutional mediation, and thus as memory and transfer organisations.

Citizen Science as a research and transfer approach is an integral part of the mission statements and image of the institutions at the interface of science and the public for active collaboration with citizens. They work as established contact points for professional societies and civic engagement to link science and society.

13 Archives, libraries, museums and science shops

13.1 Situation analysis: Where do we stand since the Green Paper?

Citizen Science and open science projects have noticeably increased in number and range of subjects in Germany since the Green Paper was published. This also extends to archives, libraries, museums and science shops (ALMSs), which have not yet been addressed in the Green Paper. For example, the increasing digitisation of scientific collections enables citizen scientists living in different parts of the world to get involved and offers them common exchange platforms (→ Box 10) [119, 120]. Citizen Science has vast potential to be used as a creative approach with added value for society and science. But while open science is already firmly established, there is comparatively little participatory research at museums, archives and libraries in German-speaking countries beyond crowdsourcing projects [121, 122] that is seen as Citizen Science and is registered, for example, on the national platform "buergerschaffenwissen.de" [123, 124]. At the same time, there is a tradition of civic engagement in historical and cultural associations, some of which go back more than 150 years, which could be built on (using the example of historical associations [125]). Since the 19th century, libraries, museums and especially archives have been and continue to be firm cooperation partners with specialist societies and associations, providing rooms for meetings, offering and providing a place to collect and publish their publications. Current examples from the library sector that correlate with this tradition are the close connection between the Upper Lusatian Library of Sciences and the Görlitz Museum of History and Culture as municipal institutions with the Upper Lusatian Society of Sciences as a professional society organised by citizens, or between the SLUB Dresden as a state library, the Dresden Society for Genealogy and the Society for Saxon Regional History, which also collaborates closely with the Saxon State Archives, Main State Archives Dresden.

Science shops and public libraries approach Citizen Science from a participatory programme and methodology, while archives, academic libraries and museums are mostly active in Citizen Science contexts through their substantive focus as memory institutions, i.e. through their focus on holdings and collections. Both approaches in conjunction have a common value as transfer institutions that goes beyond a pure service function and focuses on enabling citizens to conduct independent research. This also conveys a new understanding of the role of memory institutions, which focuses on joint knowledge work for mutual knowledge transfer, builds on the traditional tasks of collecting, preserving and mediating and reinterprets

or updates them. Thanks to the positioning as transfer institutions, memory institutions can contribute to transforming the relationship between science and the public, in which the creation of scientific knowledge becomes part of a participatory process and it is accepted that this knowledge is constantly developing and changing. Particularly transfer institutions, along with continuing education institutions such as adult education centres and independent institutions (such as the Landeskuratorium Ländlicher Raum e. V. in Saxony), have a duty to promote an open approach to science in order to promote the credibility of science, especially in times of scientific scepticism (→ Fig. 12).

13.2 What are the requirements, opportunities and challenges?

Digital formats available today offer multiple opportunities to expand data collection and analysis, develop research questions and apply research results to real life issues as a collaborative activity between research "professionals" and "laypersons". Successful formats are characterised by the fact that the institutions flexibly adapt them to

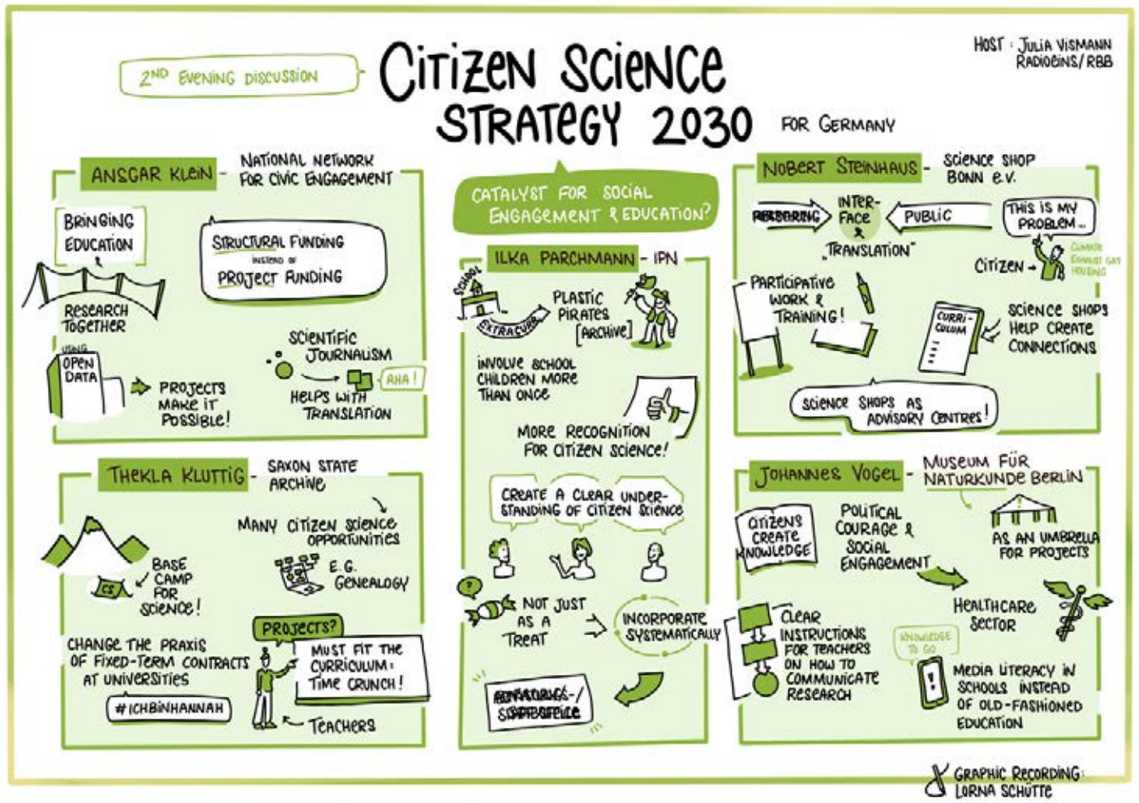


Figure 12: Results from the digital panel discussion on 15 September 2021 on "Citizen Science – engine for social engagement and education?"

the target groups or develop them with target groups, for example by using existing data material from collections to match with research questions from volunteer researchers. It does not make sense to use Citizen Science processes for every research process. In this context, it can be made operational as Citizen Science wherever citizens formulate questions that can be answered scientifically with the help of our collections and holdings – be it individually or during collaborations and projects.

Experience shows that the goals of researching citizens often vary greatly. Some want to explore issues close to their heart, others want to solve socially relevant problems, others want to explore connections or fundamentals, or they simply enjoy contributing to shared work and discovery. For archives, libraries and museums, for example, a motivation to participate in Citizen Science processes may be an interest in high-quality preparation of their collections and thus increased attractiveness of their particular institution. Defining the goals is a very important challenge, especially when "professionals" and "laypeople" are conducting research in a joint process. This clarification can also be the key to developing more openness for each other's research process. ALMSs can be a point of contact and a place to exchange ideas for all these special interests, beyond a concrete research interest, due to the broad range of topics they focus on. In doing so, they must ensure adherence to scientific standards and standards of good collaboration with citizen researchers and project partners, as well as legal requirements and ethical discussions (→ action area 7).

The task of transfer organisations such as archives, libraries, museums and science shops should be to repeatedly develop and apply flexible participation and communication formats. During this task, they should be open to the requirements and requests for such formats formulated by citizen research, as well as actively approaching the target groups for which they can create opportunities based on their holdings, methodological competence and research experience. One example of this is transcription workshops, in which participants work with staff from ALMSs on historical documents and are integrated into the academic work, e.g. through their own selection of documents.

Their task is also to define common and separate research paths so that all stakeholders on the interdisciplinary and transdisciplinary research team can achieve their own goal and do not feel overshadowed by each other. It may be valuable to work together on one part of the research process and then continue working separately. One example is the collaborative creation of corpora by transcribing historical data collections, and based on which different research questions can then be addressed. Beyond pursuing their own goals, such as supporting the development of individual inventory through crowdsourcing, ALMSs can support citizen researchers in their own projects and at various points in the research cycle by providing inventory, but also by teaching methods and techniques or by providing working plat-

The Kosmos cinema in Berlin: one of the postcards of various GDR cinemas from the archive holdings of the Cinema in the GDR project. Much of this evidence was made available to us by citizen scientists. Photo: Collection holdings “Cinema in the GDR”

forms and publication opportunities. This also applies to participatory projects by professional and voluntary researchers, such as the “Hallische Heiratsgeschichten” project by the Historical Data Centre Saxony-Anhalt, the Chair for Economic and Social History of the Martin Luther University Halle-Wittenberg and the Association for Computer Genealogy. Under certain circumstances, this can also entail memory institutions that act as transfer institutions becoming active beyond their own systems where citizen researchers themselves are active. Examples of this can be seen in the various Wikimedia portals such as Wikipedia, Wikisource, Wikidata and Wikimedia Commons, where numerous objects from the institutions are digitally preserved, indexed and edited [126, pg 165–169, pg 174–177].

However, participation and public engagement in projects or research processes are designed, they should also be understood by all participants as an “endeavour to learn” in addition to creating factual knowledge. Beyond a pure “participation capacity” of citizen researchers, ALMSs must also develop their own “cooperation capacity” [127], i.e. learn to adapt to different needs and interests and develop suitable structures and processes to do so. The existing variety of participatory formats and instruments for participation and engagement should be used or recombined. Experimental spaces need to be created, both physical as well as virtual and conceptual, in which exchange and collaborative learning can take place in the otherwise rather separate spheres of society and science [128, 129]. ALMSs are particularly suitable as interfaces because of their institutional stability and their role as meeting places visited by many thousands of people of different origins and backgrounds every year. It is essential that they also cooperate more closely with each other in the future for this purpose and for their inventories and col-

BOX 10 – Networks, WGs and best practice examples

On the networks, see also Box 3.

Networks

- Network of German-speaking science shops – Wissnet (www.wissnet.de)
- Network of European science shops and similar working institutions – living knowledge (https://livingknowledge.org/lk9)

Working groups

- LIBER Citizen Science Working Group: Working group on Citizen Science of the *Ligue des Bibliothèques Européennes de Recherche – Association of European Research Libraries* (https://libereurope.eu/working-group/liber-citizen-science-working-group)
- Open Archives Working Group in the Association of German Archivists (www.vda.archiv.net/arbeitskreise/offene-archive-1.html)

Best Practice Projects

- Volunteers help to create and complete a scientific database from the almost four million herbarium specimens at the Botanical Museum in Berlin-Dahlem (https://herbonauten.de)
- Citizens help to make the hymenoptera collection at the Natural History Museum Berlin accessible by transcribing the labels (www.zooniverse.org/projects/mfnberlin/bees-and-bytes)
- In the transcription workshop from the Historical Workplace of the Museum of Natural History Berlin, a dedicated group transcribes historical documents from Sütterlin and Kurrent and digitises the texts (www.museumfuernaturkunde.berlin/en/museum/participate/transcription-workshop)
- Citizens can either take photos themselves or share old photo albums with the German Maritime Museum for pictures of flood marks, of the labour dispute and strikes at the Bremerhaven shipyards and of artistic representations of the Bremen cog (www.dsm.museum/en/participation/citizen-science)
- The Association for Computer Genealogy (“CompGen”) runs various joint projects on family research with archives and libraries (www.compgen.de), e.g. “Kartei Leipziger Familien” with the Saxon State Archives, National Archives Leipzig (http://wiki-de.genealogy.net/Kartei_Leipziger_Familien)) and “Dresdner Totengedenkbuch (1914–1918)” with the SLUB Dresden (http://wiki-de.genealogy.net/Totengedenkbuch_Dresden/Projektbeschreibung)
- Archives and libraries support pupils nationwide in participating in the Federal President's History Competition, the largest historical research competition for young people in Germany

lections to relate more strongly to each other. Digitisation has more than ever created the conditions for this [130].

In terms of theses, the following conclusions can be drawn for the future development of Citizen Science in these institutions:

1) Memory institutions must leave the passive role of being visited or used and actively seek and promote collaboration with their users in order to fulfil their function as an interface.
2) As transfer institutions, archives, libraries, museums and science shops should use their potential to create spaces of shared experimentation and learning, thereby enabling trust in a science that is allowed to continuously question itself and review results.
3) In the face of limited resources, Citizen Science participation and scientific participation in general must be more effective by establishing and disclosing common and separate researcher goals.
4) Transfer institutions must also increasingly develop or support digital forms of communication and projects to place knowledge management on a broader basis.

Another picture postcard from the archive holdings of the Cinema in the GDR project – here a cinema hall in Potsdam. Photo: Collection holdings "Cinema in the GDR"

13.3 Recommended actions for area Archives, libraries, museums and science shops

13.1
Become active: Memory institutions such as archives, libraries, museums and science shops (ALMS) must leave the **passive role of being visited or used and actively seek and promote cooperation with their users** to fulfil their function as an interface. To do so, full-time equivalents must be planned, included in job descriptions and incorporated into calls for proposals. Appropriate financial frameworks and funding guidelines must be created in order to give full-time employees security and scope of action through permanent employment contracts. Citizen Science must be promoted as an operational objective by governments and included in corresponding strategies and budget plans.

13.2
Collaboration with communities: As transfer institutions, ALMSs should seize their opportunity to create both **physical and digital spaces for shared experimentation and learning.** ALMSs can act as a link between science and existing research communities (e.g. historical, genealogical or natural history societies or Wikimedia communities) and strengthen collaboration by providing appropriate tools and infrastructure. They can thus enable trust in a science that continually questions itself and is permitted to review results.

13.3
The method must fit the objective: Due to limited resources, participation in science and Citizen Science must become more effective by setting common and separate goals for researchers. ALMSs should focus on their respective core topics and competencies to provide effective research support.

13.4
Digitisation: Transfer institutions such as ALMSs must also increasingly develop or support digital forms of communication and projects to place knowledge management on a broader basis. ALMSs should therefore formulate digital strategies to promote Citizen Science activities that enable adequate technical equipment and access to necessary digital tools. Public spaces and inclusive access to technology and tools must be made possible and users must be trained to use them.

13.5
Employees of ALMSs participate in training courses on Citizen Science in order to be prepared for the requirements. They also exchange information with each other – both within their institution and with other institutions – in order to benefit from common experiences.

13.6
Citizen Science is part of the training in archives, libraries and museums in order to promote awareness and understanding of Citizen Science in these professions at an early stage.

Addressees

Practitioners | Civil society | Science | Educational organisations | Policymakers | Funding bodies

14 European perspective (D-A-CH)

14.1 Situation analysis: What have we achieved since the Green Paper?

There are different forms of cooperation within Citizen Science throughout Europe. European and international research institutions are successfully cooperating with civil society organisations in many projects within the Horizon 2020 or the Horizon Europe of the EU Framework Programme for Research. Those engaged in the European Citizen Science Association (ECSA) exchange ideas on mutual visions and develop strategic topics related to specific areas and funding applications. Prominent examples of cooperation are the publications on the *ECSA 10 Principles* (2016) and the Characteristics of Citizen Science (2020), both important milestones in the development of Citizen Science. The characteristics were identified and discussed through vignette analysis with the involvement of the community in a transnational work process focused on cooperation [131, 132]. The "EU-Citizen.Science" online platform also documents successful cooperation throughout Europe. The platform is the result of a joint effort and has functioned as a communication and information hub since 2019. In the *Citizen Science COST ACTION 15212*, the European community held important discussions on the content and strategic development of Citizen Science in Europe between 2016 and 2020 [7]. The first "European Citizen Science Conference" in May 2016 in Berlin with 29 international partners provided an opportunity for strategic networking, scientific exchange and the subsequent publication of a Citizen Science book. It was organised by the Helmholtz Centre for Environmental Research – UFZ, the "BürGEr Schaffen WISSen (GEWISS)" consortium of the Helmholtz and Leibniz Association with universities and 17 international partners [95, 61]. In October 2020, Berlin was also the venue for the conference on the Global Sustainability Goals (SDGs) and Citizen Science, funded by the European Commission, organised by the Museum für Naturkunde Berlin with many partners and supported by the European Commission and the BMBF. The conference resulted in policy recommendations entitled "Our world – our goals: Citizen Science for the Sustainable Development Goals". The declaration is a voluntary commitment by all stakeholders to define the roles, competencies and specific potential of Citizen Science to advance the SDGs. It was formulated in an open and participatory process. The combined effort between national development and the European perspective are particularly important for Citizen Science.

Cooperation between the DACH countries (D-Germany, A-Austria, CH-Switzerland) in Citizen Science is diverse and has developed significantly in recent years.

Mission statement 14:

The DACH network is an established stakeholder in the European Citizen Science Network on a political and professional level.

International measures and initiatives such as jointly developed capacities for the community, e.g. continued education and networking offers, as well as joint evaluations of various funding guidelines make Citizen Science an integral part of research and a central task of various organisations. The diverse cooperation at the political, scientific and network levels serves as best practice examples for European collaboration. This strengthens and promotes the national structures in Germany, Austria and Switzerland.

Reviewing cooperation, or: How do the DACH countries cooperate amongst each other?
Cooperation in Germany, Austria and especially the German-speaking part of Switzerland takes place at various levels, in informal networks to exchange experiences and also in standardised and formal formats for networking offered by institutions. A current example of this close cooperation is the joint citizen science Survey 2020, the results of which form the basis for this "White Paper Citizen Science Strategy 2030".

A central instrument for joint work is the D-A-CH Working Group (www.buergerschaffenwissen.de/Citizen-Science/arbeitsgruppen/dach). There are regular workshops, joint contributions and presentations at conferences and strategic activities, such as the exchange on results of the WG Quality Criteria for Citizen Science Projects on "Österreich forscht" in the context of a strategy workshop by "Bürger schaffen Wissen". At the respective national conferences in Switzerland, Austria and Germany, the advisory boards are jointly staffed, there are joint session submissions and the audience is made up of participants from the three countries.

Situational analysis, or: What is the current status in the DACH countries?
We will outline below the different situations and Citizen Science activities in Germany, Austria and Switzerland. The cooperation between these countries has decisively shaped the development of Citizen Science in the respective countries. While the development of the Citizen Science landscape in Austria can be understood as a grassroots, bottom-up process that was later complemented by top-down measures by the Ministry of Science, and in Switzerland various institutions worked together to build distributed structures and content, in Germany political support by the Federal Ministry of Education and Research was decisive from the beginning. However, all three routes have enabled each country to develop specific competences, structures and capacities, which have given rise to the specific national networks and shaped them in many ways.

Citizen scientists help to process an important source for social and family history – by deciphering the index cards for the still unpublished Dresden Book of Remembrance of the Dead for the First World War. Dresden Book of Remembrance of the Dead 1914 -1918 CS project. Photo: Peter Barczewski/3d-artstudio

Austria

Citizen science projects have a long tradition in Austria, although it has gone by different names (e.g. volunteer research, citizen research). The "Sparkling Science" funding programme in Austria by the Ministry of Science ran from 2007 to 2019 under the catchphrase 'research-education-cooperation'. The cooperation between researchers and school classes promoted through this programme can be understood as an early form of citizen science. With the founding of *Österreich forscht* (www.citizen-science.at/en) in 2014, a platform was created to present research projects with active citizen participation side by side under the term 'citizen science'. The platform is the result of a bottom-up initiative by citizen science stakeholders for citizen science stakeholders without an official founding mandate.

Until now, the two founders of Österreich forscht and the corresponding Citizen Science Network Austria (CSNA) (www.citizen-science.at/en/network) have been coordinating *Österreich forscht* in cooperation with the project coordinators and partners through "do-ocracy", in which the partners contributing resources get to steer the development. Especially due to the very limited resources in the beginning, this method worked well to distribute the workload and create a sense of community. This work also includes the "Austrian Citizen Science Conference". This conference has been organised annually since 2015 and in cooperation with the citizen science networks from Germany and Switzerland since 2019. In the meantime, about 50 projects currently running in different research areas by different organisations and citizens are presented on the *Österreich forscht* platform. These projects meet the quality criteria for citizen science projects on *Österreich forscht* (www.citizen-science.at/en/network/working-groups/wg-quality-criteria). *Österreich forscht* and the CSNA are funded by the University of Natural Resources and Life Sciences Vienna.

Simultaneously, the Ministry of Science launched the OeAD Centre for Citizen Science and, together with the Austrian Science Fund FWF, the "Top Citizen Science" funding initiative in 2015. The two funding programmes, "Top Citizen Science" (FWF 2016–present and Ministry of Science 2016–2018) and "Sparkling Science 2.0" (Ministry of Science 2007–2019, relaunched 2021), have supported the citizen science movement in Austria ever since. Furthermore, the OeAD Centre for Citizen Science supports research projects and contributes to making citizen science known to the public through the annual "Citizen Science Award" competition. Regional and local funding programmes have also increasingly fostered citizen science projects in recent years.

In 2019, the University of Natural Resources and Life Sciences Vienna committed itself to long-term support for both the CSNA and *Österreich forscht*, thus enabling citizen science activities to continue. It issued a specific work mandate to expand and strengthen citizen science in Austria with the tenured employment of the two coordinators. Today, numerous institutions have incorporated citizen science into their profiles, e.g. the Natural History Museum Vienna and the International Institute of Applied Systems Analysis (IIASA), and citizen science contact persons are in place at numerous other research institutions.

Switzerland

In Switzerland, the Citizen Science landscape also began to develop in 2014 with a situational analysis by the *Science et Cité Foundation*. This was followed by the establishment of the Citizen Science Network Switzerland and the Citizen Science office based at Science et Cité in 2015. The "Schweiz forscht" platform (www.schweizforscht.ch) makes Citizen Science projects visible and provides information. Additionally, the office focuses on network maintenance and mutual learning, and provides information and communication on Citizen Science. The Citizen Science Competence Centre (www.citizenscience.ch/en) focuses on digital tools and was founded as a joint initiative of the University of Zurich and ETH Zurich in 2017. The central element is the "Project Builder" (https://lab.citizenscience.ch/de), which can be used to classify data. In 2018, the Participatory Science Academy (PWA, www.pwa.uzh.ch/en) was also launched at the University of Zurich and ETH Zurich. It focuses on training and education for co-creation, such as international summer schools. The PWA also awards seed grants. In 2018, Science et Cité organised the second European Citizen Science Conference in Geneva along with other partner institutions, including the University of Geneva.

Nature observations by citizen scientists. Photo: Detlef Metzer/naturgucker.de

This was followed three years later in 2021 by CitSciHelvetia, the first Swiss Citizen Science Conference, during which the "Citizen Science Initiative of the Swiss Academies of Arts and Sciences" was announced under the leadership of Science et Cité. Existing activities are being intensified through the initiative and a participatory process has been set in motion to systematically and impactfully advance Citizen Science in Switzerland.

Currently, three organisations are primarily active in Switzerland at the institutional level. In addition to Science et Cité, these include the Participatory Science Academy and the Citizen Science Competence Centre at the University of Zurich and ETH Zurich. Additionally, there are important research groups in French-speaking Switzerland that are also involved in the network: the *Citizen Cyberlab* (University of Geneva) on the topics of Citizen Science and crowdsourcing, the research group "The Rise of the Citizen Science: Rethinking Public Participation in Science" (University of Geneva) and the *ColLaboratoire* on public participation in science and technology and scientific communication and mediation (University of Lausanne).

Citizen Science has also left its mark on education policy in Switzerland. For example, Citizen Science was mentioned in three papers from the Swiss Science Council (2017, 2018 and 2019) and in a report by Science et Cité for *swissuniversities*, the umbrella organisation of Swiss universities (Perception and Experience with Citizen Science at Higher Education Institutes, 2019).

A special feature of the Swiss Citizen Science landscape is the fact that all three language regions must be adequately represented. Particularly noteworthy is the commitment of three universities (UZH, ETH, University of Geneva), which have different focal points with complementary target groups and exper-

tise, and which also conduct internationally visible research in Citizen Science through their research groups.

In general, the number of stakeholders in Switzerland is manageable. The advantage of this is that communication channels are short and cooperation is carried out in an amicable manner. Swiss stakeholders are also involved in international initiatives (*Board of Directors of the European Citizen Science Association*, scientific advisory board of the Austrian Citizen Science Conference). Additionally, the media continuously reports on Citizen Science.

Germany

In Germany, the Ministry of Research and Education (BMBF) funded the "Bürger schaffen Wissen - Wissen schafft Bürger" (GEWISS) consortium project between 2014 and 2016 to build capacity in Citizen Science and to assess the potential and challenges of Citizen Science. Researchers from all fields, citizens, civil society organisations and scientific institutions contributed their ideas and experiences to a programme based on dialogue and participation to strengthen Citizen Science. The resulting Green Paper "Citizen Science Strategy 2020 for Germany" attracted a great deal of attention in the political arena and in international Citizen Science networks. Following this and based on the programme to build capacity and the Green Paper [1], the BMBF has launched two funding programmes for Citizen Science projects since 2016. Other institutions are also dedicated sponsors of Citizen Science projects. These include both federal ministries (e.g. the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety) and foundations (e.g. German Federal Environmental Foundation) as well as non-university funding programmes.

The "Bürger schaffen Wissen" project was then continued by two consortium partners and now manages a project website, promotes the Citizen Science Network, offers numerous events for different target groups as well as advisory services for Citizen Science projects and organises the annual Citizen Science Forum. The platform also offered the first test run for training workshops for university staff in research and research management in 2020 and continued this in 2021. Regional and subject-specific working groups (e.g. WG Region West, WG White Paper and WG Law) and other regional networks have been formed in cooperation with the German Citizen Science Platform. Citizen Science activities take place in a variety of forms and sectors, e.g. in and through science shops, regulatory sandboxes, associations and universities (→ Box 4, → action area 1).

14.2 What are the requirements, opportunities and challenges?

Discrepancy between strategy papers and funding

Policymakers formulate their demands and expectations of Citizen Science similarly in Germany, Austria and Switzerland. egarding targeted collaboration between stakeholders from science and the non-scientific public, Citizen Science should integrate citizens into the field of science, implement global topics of the sustainability goals locally and establish trust in scientific knowledge processes. In contrast to these comprehensive demands, the Citizen Science community has jointly formulated demands for more recognition for Citizen Science as a valid research approach, upgrading science communication, stabilising necessary infrastructure and more recognition for the work they have done. There is, however, a discrepancy between these demands and the reality as Citizen Science activities and the associated costs (e.g. scientific communication, data management, volunteer management and clarification of legal issues) are largely taken for granted in both science and politics.

The goal is to establish Citizen Science projects as an integral part of research and a central task of various organisations by 2030, which would eliminate the current discrepancy between strategy papers and the implementation of specific funding. The existing structures in Germany, Austria and Switzerland should be strengthened and promoted. This includes both the established platforms and infrastructures

As part of the KnowledgeFlow: the Berlin Panke CS project, citizen scientists and schools are researching and collecting data on the occurrence of birds, insects, plants and macrozoobenthos in the Panke river and the wetlands in the area surrounding Berlin (Spreewald, Spandauer Forst and Karower Teiche). Photo: Kim Mortega

such as science shops, associations, voluntary agencies and others. A change of perspective in science is therefore required at the political level.

Building capacity and capabilities

Capacities and structures need to be established and expanded to develop sustainable structures for Citizen Science. Close cooperation and mutual support of Citizen Science networks is possible in the case of the three German-speaking countries, which is a unique situation for Europe. The collaborations already in place result in multiple approaches to create synergy effects which should be actively supported and expanded further, e.g. by making successful tools available on all platforms. We should also intensify and support the structural capacity building for the community in and through institutions and organisations, as it is already taking place in the three countries. The possibility of building an open infrastructure that could be used by all three DACH countries and possibly adapted by other countries should be examined as a combined effort with the open science movement.

The goal is to establish a DACH network by 2030 through transnational measures and initiatives at the political and professional level. Strengthening the DACH network in this way offers the following added values, among others: transnational knowledge exchange and capacity building, mutual consultation and support culture, intensive professional exchange and advancement of the research field of Citizen Science.

All measures take into account the existing structures and special features of the Citizen Science networks in Germany, Austria and Switzerland. Testing, developing and evaluating joint funding programmes offers political opportunities for transnational and interdisciplinary cooperation in Citizen Science.

A classic Zeiss TK 35 cinema projector was used for the opening event of the Cinema in the GDR project at the Kulturhaus Dacheröden in Erfurt. Photo: Martin Schlobach

14.3 Recommended actions for area European perspective (D-A-CH)

14.1
Funding and political institutions in the DACH countries should develop, test and evaluate joint international Citizen Science funding programmes in order to strengthen the links between the societies in the three countries.

14.2
Funding bodies should exchange information on the success of different funding programmes in the three countries and initiate joint learning processes.

14.3
The online platforms and Citizen Science stakeholders in the three countries should work together on overarching professional issues in order to sustainably strengthen Citizen Science stakeholders, e.g. the **conception of building competence for training and continuing education**, strategically **advancing quality criteria** and the necessary **structural changes in the various sectors and distributed organisations.**

Addressees

Practitioners | Civil society | Science | Educational organisations | Policymakers | Funding bodies

15 Accompanying Citizen Science research

Citizen Science is faced with high demands regarding its desired impact: It is supposed to impart knowledge, increase the understanding of research processes, strengthen social engagement and promote transparency in science. However, little research has been done so far on the extent to which Citizen Science meets or can meet these different demands. Accompanying research is a means to tackle this problem.

The term 'accompanying research' describes an application-oriented type of research aimed at assessing the effectiveness and benefits of economic, technical or political measures and programmes using qualitative and quantitative scientific methods. There are overlaps particularly with evaluation and innovative research. While the scientific methods used may be identical, evaluation is always based on an appraising perspective that focuses on the assessment of concrete benchmarks and goal attainment. In contrast, the focus of accompanying research is not primarily evaluative [133]. Accompanying research for Citizen Science aims to generate insights about Citizen Science projects, especially regarding their implementation and impact.

Accompanying research in Citizen Science is therefore defined as the scientific investigation of the implementation and effects of Citizen Science projects or programmes to expand the knowledge base. It describes all research activities that are not concerned with the project's research question but with the project itself. For example, the following questions can be addressed in the context of accompanying research: Which affective variables (e.g. motivation) and cognitive variables (e.g. scientific thinking) change in participants? Which factors influence this process? This research is essential to find out whether the demands on Citizen Science are being met. Only this knowledge makes it possible to advance Citizen Science in a scientifically sound manner – both conceptually and analytically. The achievement of goals in a Citizen Science project is verified through evaluation research. Even though the boundaries between accompanying research and evaluation research are often fluid, it is important to clearly define the goal and purpose of the research.

15.1 Situation analysis: Where do we stand since the Green Paper?

Accompanying research on Citizen Science was already mentioned in the Green Paper "Citizen Science Strategy 2020 for Germany". Since then, interest in accompanying research measures and the need for them have increased significantly in politics, society and science. In many funding programmes, however, the need for accompanying research on Citizen Science has not yet been sufficiently documented. Accompanying research is needed to sustainably and scientifically develop Citizen Science. It should be considered a distinct professional effort and be independently funded as such.

Mission statement 15:

In 2030, accompanying research will be an integral part of Citizen Science projects and will already be considered at the project planning stage and supported by appropriate financial resources.

Accompanying research is carried out by interdisciplinary teams and is oriented towards the scientific standards of empirical social research and evaluation research. Citizens are involved in order to clarify central points and questions.

Participants in the MigOst project share their personal migration stories in storytelling cafés. Photo: Paolo Le van

So far, expertise in researching Citizen Science in Germany is still limited. At the same time, there is little experience regarding the conception and implementation of study designs. The Science of Citizen Science Working Group in cooperation with "Bürger schaffen Wissen" is therefore trying to establish the perspective of accompanying research in Germany. The high demand for scientifically sound studies on the effectiveness of Citizen Science is also repeatedly emphasised in the international literature [134, 85, 135, 136, 137]. To be able to conduct accompanying research, the acceptance and understanding of accompanying research and thus the willingness of stakeholders to participate in data collection must be increased.

Following the inclusion of the requirement to evaluate Citizen Science projects in a large number of funding guidelines, the accompanying evaluation of an entire funding programme (BMBF's Citizen Science funding programme) was commissioned for the first time in July 2020. The results of this evaluation are meant to contribute to gaining knowledge about the effects of Citizen Science projects on science, on the participating institutions and on the citizen researchers and scientists involved. This accompanying evaluation of Citizen Science is an important development in quality management. However, research on Citizen Science should not be limited to evaluative observations, but should also advance theory developments in basic science. In particular, this includes findings that can be applied more broadly beyond project-specific target reviews.

15.2 What are the requirements, opportunities and challenges?

There are initial approaches to structurally incorporate accompanying research in German-speaking countries (e.g. the *Science of Citizen Science* WG, Citizen Science chair at the Friedrich-Schiller-Universität Jena and the WG "Citizen Science in Agricultural Areas" at the Thünen Institute), but accompanying research on Citizen Science projects needs to be more strongly established and promoted (→ Box 11).

One challenge for accompanying research is the diversity of Citizen Science projects. The research design of accompanying research must be specifically adapted to the goals, content and methods of each project, with qualitative and quantitative approaches being equally relevant and useful. In many cases, comprehensive accompanying research requires including an interdisciplinary perspective. Additionally, the transfer to other Citizen Science projects with different conditions must always be considered and discussed in the specific research designs. Empirical approaches generating findings on impact relationships that can be generally applied and transferred to other projects and topics are ideal. Thus, a classical impact measurement using suitable research designs is important to underpin research on Citizen Science with findings on cause-effect relationships.

A general challenge of scientific-empirical working methods, including Citizen Science accompanying research, is that they must adhere to quality criteria of empirical social research (including reliability, validity, objectivity, transparency and intersubjectivity) to ensure meaningful results. Accompanying researchers should be aware of these quality requirements. This also means that accompanying research requires the corresponding competencies and capacities, making it more than just an additional task for team members in Citizen Science projects. Furthermore, accompanying research needs to be visible beyond the Citizen Science community. Accompanying research addresses the current scientific discourse, and in addition it provides the empirical basis for strategic project development in Citizen Science practice.

BOX 11 – Best practice examples

A notable example of accompanying research is the joint project WTimpact by the Leibniz Institute for Zoo and Wildlife Research (IZW) in Berlin, the Leibniz Institute for Tropospheric Research (TROPOS) in Leipzig, the Leibniz Institute for Science and Mathematics Education (IPN) in Kiel and the Leibniz Institute for Knowledge Media (IWM) in Tübingen. The objective of the project was to determine what participants take away from Citizen Science projects. For example, it examined how the participants' topic-specific knowledge and their ability to think scientifically developed throughout the project, how the participants perceived their activities and the topics of the project, and whether their attitudes towards natural sciences and Citizen Science changed. The findings will be used to develop recommendations for the design and implementation of future Citizen Science projects.

Another example is the accompanying research of the "Plastic Pirates – Go Europe!" Citizen Science campaign (**www.plastic-pirates.eu**). The accompanying research is being carried out at the Chair of Research on Learning and Instruction at the Ruhr University in Bochum. The aim is to gain insights into the effect of participation in the campaign and to increase the visibility of the high rate of acceptance of the campaign within the EU. To measure causal effects in large-scale Citizen Science projects, a research design was created that combines the investigation of large samples with impact studies in controlled experimental settings. One question being investigated is whether knowing participation in the Citizen Science campaign has lasting effects e.g. on the interest and motivational quality of the pupils. The pupils' interest in the project topic, along with their motivation to apply scientific working methods and, among other things, a possible increase in topic-specific knowledge among the pupils as a result of their participation in the campaign will be assessed [139].

15.3 Recommended actions for area accompanying Citizen Science research

15.1
Citizen Science coordinators should see accompanying research as an opportunity for Citizen Science projects. Accompanying research should be carried out by interdisciplinary teams composed of the relevant disciplines and social scientists or educational researchers.

15.2
Researchers should develop new methods of accompanying research for Citizen Science and adapt the ones already in use.

15.3
Scientists, participants and funding institutions should communicate accompanying research and its results to interested members of the public.

15.4
Politicians should base funding decisions on Citizen Science on well-founded results of accompanying research. In this, both measuring the effects using empirical methods and investigating causal mechanisms with theory-based research approaches should be pursued. This is the only way to scientifically evaluate Citizen Science to see if it meets the heterogeneous demands placed on it – especially when such measures are financed using public funds. Accompanying research thus creates the prerequisites for the acceptance and long-term incorporation of Citizen Science in society.

Addressees

Practitioners · Civil society · Science · Educational organisations · Policymakers · Funding bodies

DEVELOPMENT PROCESS OF THE WHITE PAPER

The *White Paper Citizen Science Strategy 2030 for Germany* was developed in an open, participatory process over a period of 18 months. It involved 219 people from 136 organisations and institutions using various participatory formats and 14 public dialogue and workshop events. The process was primarily driven by the department heads of 49 subjects (→ Imprint and → Fig. 14) from institutes of the Helmholtz Association, the Leibniz Association, the Fraunhofer Society, various universities and libraries as well as non-university institutions, which led the development of the chapters. The development process was based on several components (→ Fig. 13, 15):

- The White Paper working group with bi-weekly meetings open to anyone interested
- Input from over 120 participants at two public dialogue forums on 26 June 2020 and 10 December 2020
- Online Citizen Science Survey 2020 with 420 participants from September to October 2020
- A strategy workshop and four writing workshops held by the White Paper WG
- Discussion on the draft of the courses of action at public workshops at the Citizen Science Forum in May 2021 and the annual conference from the Society for Ecology in September 2021
- Open online consultation on the White Paper in August and October 2021 During the online consultation period, a total of 1,343 contributions (posts, text annotations and votes) and 119 comments were made
- Five online discussion panels from August to October 2021
- Results from the submission of 31 position papers in September/ October 2021
- Communication of the results through a film
- Launch of the White Paper on 29 April 2022

The *White Paper Citizen Science Strategy 2030 for Germany* was developed in an open, participatory process over a period of 18 months. It involved 219 people from 136 organisations and institutions using various participatory formats and 14 public dialogue and workshop events.

The process was primarily driven by 49 thematic chairs from institutes of the Helmholtz Association, the Leibniz Association, the Fraunhofer Society, universities and libraries as well as non-university institutions, who led the development of the chapters.

The White Paper Working Group

The White Paper working group (WG) was initiated as a bottom-up network by various organisations in April 2020 to develop a White Paper based on the Green Paper "Citizen Science Strategy 2020 for Germany" [01]. Over 700 people from more than 350 organisations were involved in the participatory development of the Green Paper 2014–2016, which was funded by the BMBF. In the White Paper WG, anyone interested from the Citizen Science community in Germany was invited to critically review the visions and courses of action in the Green Paper and to formulate current and specific recommendations for action on how Citizen Science should develop in Germany by 2030 in order to strategically incorporate these into the White Paper.

The White Paper WG launched this strategic process in April 2020 with the cooperation of a total of 219 stakeholders from 136 organisations and institutions, including scientific institutions, professional societies, associations and federations, museums, libraries, foundations and individuals. Due to the COVID-19 pandemic, the process was conducted entirely virtually. This was a challenge, but it allowed for different stakeholders to participate in the various online formats of the participation processes. The entire process was facilitated by the steering committee.

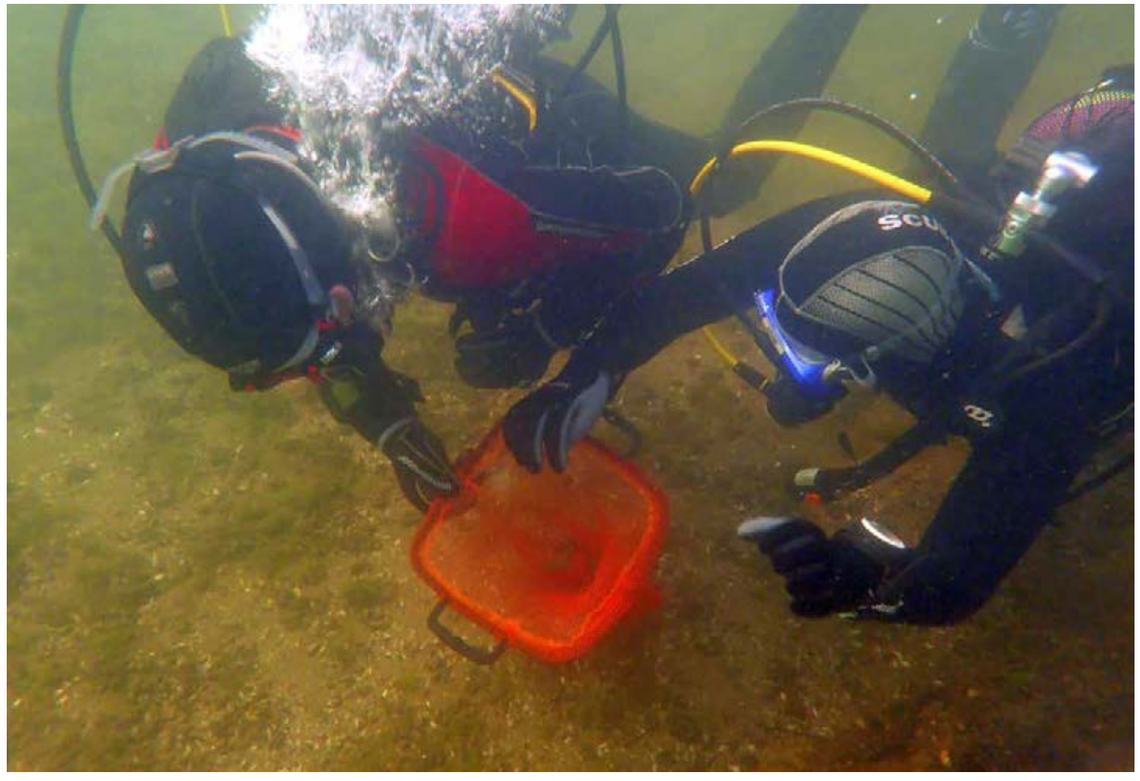
White Paper Steering Committee

The White Paper Steering Committee met weekly with Aletta Bonn – UFZ/FSU Jena/iDiv, Thora Martina Herrmann – UFZ/iDiv and Matthias Premke-Kraus – Leibniz Association office as speakers, along with Wiebke Brink – WiD, Susanne Hecker - MfN, Christin Liedtke – Helmholtz Association office, Silke Voigt-Heucke – MfN and Julia von Gönner – FSU Jena/UFZ/iDiv.

White Paper Working Group

The White Paper WG met every two weeks, with approximately 50 meetings attended by an average of 20 to 30 people.

Contributors to the White Paper WG include: Lena Albrecht – Nature And Biodiversity Conservation Union (NABU), Wilhelm Bauhus – University of Münster, Luiza Bengtsson – Max Delbrück Center for Molecular Medicine in the Helmholtz Association, Vanessa van den Bogaert – Ruhr University Bochum, Miriam Brandt



Scuba divers are predestined to observe aquatic plants – as seen here in an open-cast lignite mine in Saxony. Diving for Nature Conservation CS project. Photo: Silke Oldorff/NABU BFA Living Lakes

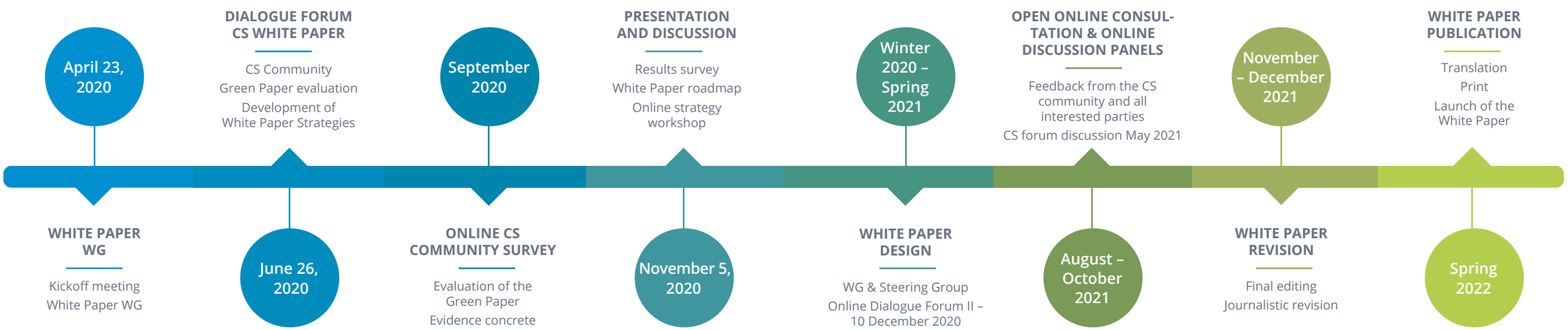


Figure 13: The participatory development process of the White Paper from April 2020 to the launch in April 2022

– Leibniz Institute for Zoo and Wildlife Research (IZW), Till Bruckermann – Leibniz University Hannover, Peter Dietrich – Helmholtz Centre for Environmental Research – UFZ, Daniel Dörler – University of Natural Resources and Life Sciences, Regina Eich-Brod – Forschungszentrum Jülich, Michael Eichinger – University Medical Centre Mannheim, Laura Ferschinger – Heinrich Heine University Düsseldorf, Linda Freyberg – Natural History Museum Berlin – Leibniz Institute for Evolution and Biodiversity Research, Agnes Grützner – Fraunhofer Information Center for Planning and Building (IRB), Gertrud Hammel – Helmholtz Zentrum für Umwelt und Gesundheit München, Florian Heigl – University of Natural Resources and Life Sciences, Nils B. Heyen – Fraunhofer Institute for Systems and Innovation Research ISI, Franz Hölker – Leibniz-Institute of Freshwater Ecology and Inland Fisheries (IGB), Carolin Johannsen – University of Bremen, Sarah Kiefer – Leibniz Institute for Zoo and Wildlife Research (IZW), Friederike Klan – Institute of Data Science from the German Aerospace Center (DLR), Jörn Knobloch – Natural History Museum Berlin – Leibniz Institute for Evolution and Biodiversity Research, University of Lübeck, Thekla Kluttig – Saxon State Archives – State Archives Leipzig, Thorsten Kluß – University of Bremen, Valerie Knapp –Ruhr University Bochum, Monika Koop – University of Münster, Julia Lorke – IPN – Leibniz Institute for Science and Mathematics Education at the University of Kiel, Kim Mortega – Natural History Museum Berlin – Leibniz Institute for Evolution and Biodiversity Research, Martin Munke – Saxon State and University Library Dresden (SLUB), Carsten Pathe – Friedrich Schiller University Jena/Institute of Data Science from the German Aerospace Center (DLR), Anett Richter – The Thünen Institute German Federal Research Institute for Rural Areas, Forestry and Fisheries, Anna Soßdorf – Heinrich Heine University Düsseldorf, Tiina Stämpfli – Science et Cité, Ulrike Sturm – Natural History Museum Berlin – Leibniz Institute for Evolution and Biodiversity Research, Christian Thiel – Institute of Data Science from the German Aerospace Center (DLR), Susanne Tönsmann – Participatory Science Academy, Anke Valentin – Bonn Science Shop, Katherin Wagenknecht – Federal Office for the Safety of Nuclear Waste Management, Robert Wegener – Forschungszentrum Jülich and Silvia Woll – Karlsruhe Institute of Technology.

The Citizen Science Survey 2020

In September 2020, an online Citizen Science Survey 2020 was conducted to determine the state of Citizen Science in Germany, Austria and Switzerland. The survey was based on the results of the first dialogue forum in June 2020. The aim of this CS Survey 2020 was to gain a better understanding of the achieved objectives from the Green Paper "Citizen Science Strategy 2020 for Germany". The topics and questions of the survey were developed through participation in the White Paper WG on the 15 subject fields.

Overall, 420 people participated in the CS Survey 2020 (84% from Germany, 8% from Austria, 8% from Switzerland). This survey is thus the most comprehensive to date on this issue in the German-speaking world. Since 52% of the participants stated that they had never taken part in a Citizen Science event before, we were also able to reach Citizen Science stakeholders and those interested in CS outside the previously active networks. The survey results demonstrate that the implementation of Citizen Science 2020 has progressed in essential areas, but that the various action areas have so far been designed and implemented to varying degrees.

The survey gave respondents the opportunity to answer various questions depending on their interests and affiliation to different stakeholder groups (e.g. Citizen Science coordinators, academic scientists, citizen scientists). Therefore we always indicate the total number of answers in the text with (n = x) to enable classification of the data. Detailed explanations are given in von Gönner et al. (in preparation) [54] and in the planned handbook on Citizen Science.

The White Paper dialogue forums and writing workshops

In June 2020, the **first dialogue forum** from the White Paper WG was held online. 123 participants discussed current developments and action areas in Citizen Science during themed workshops based on the Green Paper 2016. There were a total of 15 topical sessions, each of which was led by a subject chair.

The thematic chairs of the 15 action areas

Networking and exchange

Wilhelm Bauhus & Monika Koop
Westfälische-Wilhelms-Universität Münster

Christin Liedtke
Helmholtz-Gemeinschaft, Geschäftsstelle Berlin

Funding instruments

Matthias Premke-Kraus
Geschäftsstelle der Leibniz-Gemeinschaft

Franz Hölker
Leibniz-Institut für Gewässerökologie und Binnenfischerei (IGB)

Volunteer management

Andrea Büermann & Julia von Gönner
Helmholtz-Zentrum für Umweltforschung-UFZ/ Deutsches Zentrum für integrative Biodiversitäts-forschung (iDiv) Halle-Jena-Leipzig

Synergies with scientific communication

Wiebke Brink
Wissenschaft im Dialog

Luiza Bengtsson
Max-Delbrück Centrum für Molekulare Medizin in der Helmholtz Gemeinschaft

Regina Eich-Brod
Forschungszentrum Jülich

Anna Soßdorf
Heinrich-Heine-Universität Düsseldorf

Recognition culture in and for Citizen Science

Anett Richter
Johann Heinrich von Thünen-Institut Bundesforschungsinstitut für Ländliche Räume, Wald und Fischerei

Laura Ferschinger
Heinrich-Heine-Universität Düsseldorf

Data quality and data management

Friederike Klan
Institut für Datenwissenschaften des Deutschen Zentrums für Luft- und Raumfahrt e.V. (DLR)

Carsten Pathe
Friedrich-Schiller-Universität Jena/Institut für Datenwissenschaften des Deutschen Zentrums für Luft- und Raumfahrt e.V. (DLR)

Legislation and ethics

Linda Freyberg & Jörn Knobloch
Museum für Naturkunde Berlin, Leibniz-Institut für Evolutions- und Biodiversitätsforschung

Integration into scientific processes

Thora Herrmann
Helmholtz-Zentrum für Umweltforschung - UFZ/ Deutsches Zentrum für integrative Biodiversi-tätsforschung (iDiv) Halle-Jena-Leipzig

Agnes Grützner
Fraunhofer-Informationszentrum Raum und Bau (IRB)

Integration into educational processes

Julia Lorke
Leibniz-Institut für die Pädagogik der Naturwissenschaften und Mathematik-IPN

Ulrike Sturm
Museum für Naturkunde Berlin, Leibniz-Institut für Evolutions- und Biodiversitätsforschung

Till Bruckermann
Leibniz-Universität Hannover

Christian Thiel
Institut für Datenwissenschaften des Deutschen Zentrums für Luft- und Raumfahrt e.V. (DLR)

Integration into decision-making processes

Michael Eichinger
Universitätsmedizin Mannheim

Kim Mortega
Museum für Naturkunde Berlin, Leibniz-Institut für Evolutions- und Biodiversitätsforschung

Aletta Bonn
Helmholtz-Zentrum fürUmweltforschung-UFZ / Friedrich-Schiller-Universität Jena / Deutsches Zentrum für integrative Biodiversitätsforschung (iDiv) Halle-Jena-Leipzig

Medical and health research

Gertrud Hammel
Helmholtz Zentrum für Umwelt und Gesundheit München

Nils B. Heyen
Fraunhofer-Institut für System- und Innovationsforschung ISI

Silvia Woll
Karlsruher Institut für Technologie

Sensor technology and artificial intelligence

Robert Wegener
Forschungszentrum Jülich

Peter Dietrich
Helmholtz-Zentrum für Umweltforschung - UFZ

Thorsten Kluß & Carolin Johannsen
Universität Bremen

Archives, libraries, museums and science shops

Silke Voigt-Heucke
Museum für Naturkunde Berlin, Leibniz-Institut für Evolutions- und Biodiversitätsforschung

Thekla Kluttig
Sächsisches Staatsarchiv – Staatsarchiv Leipzig

Martin Munke
Sächsische Landesbibliothek – Staats- und Universitätsbibliothek Dresden (SLUB)

Anke Valentin
Wissenschaftsladen Bonn

European perspective (D-A-CH)

Katherin Wagenknecht
Technische Hochschule Wildau

Susanne Hecker
Museum für Naturkunde Berlin, Leibniz-Institut für Evolutions- und Biodiversitätsforschung

Susanne Tönsmann
Partizipative Wissenschaftsakademie, Universität Zürich

Tiina Stämpfli
Science et Cité

Daniel Dörler & Florian Heigl
Universität für Bodenkultur Wien

Accompanying Citizen Science research

Vanessa van den Bogaert & Valerie Knapp
Ruhr-Universität Bochum

Katherin Wagenknecht
TH Wildau

Miriam Brandt & Anke Schumann & Sarah Kiefer
Leibniz-Institut für Zoo- und Wildtierforschung

Anett Richter
Johann Heinrich von Thünen-Institut

Carolin Altmann
Institut für Datenwissenschaften des DLR

Figure 14: The department heads of the 15 action areas

In October 2020, the results of the CS Survey 2020 were presented at the **Strategy Workshop** I and the structure of the White Paper was collectively developed. Based on the survey results, the 97 participants worked out needs, potentials, challenges and recommended actions at the public **Dialogue Forum II** in December 2020. The proposed position papers were collected into one document and revised by the subject chairs and the steering committee in December. The subject chairs (→ Fig. 14) drew up a joint document during the **Writing Workshop I** in January 2021. The **Writing Workshop II** in February 2021 was used to finalise the position papers and refine the content of the White Paper. **Writing Workshops III and IV** in October 2021 served to incorporate the comments from the online consultation and the results of the online panel discussions into the revision of the White Paper.

Online panel discussions (lunch break and evening talks)

In order to facilitate lively personal discussions, the White Paper WG organised a series of moderated online "evening talks" and digital lunch breaks to serve as panel discussions with the patrons of the Citizen Science Strategy and other individuals from society, politics and research. The results of the discussions were recorded in the graphic recordings by Lorna Schütte (Figures 7, 10, 11,12, 15) and have been incorporated into the revision of the White Paper text.

- 27. August 2021: Digital lunch break by "Bürger schaffen Wissen" for online consultation with participants Manfred Ronzheimer, freelance journalist, Gaby Schulemann-Meier, Naturgucker Platform, and Anke Valentin, Bonn Science Shop (→ Fig. 15)
- 8 September 2021: First evening discussion on "Citizen Science in Science and Research – Quo vadis?" with participants Christine Ahrend, first Vice President of the Department of Research, Appointment Strategy and Transfer at TU Berlin, Michael Quante, Prorector for International and Transfer Students at the University of Münster, Tobias Holle, netzwerk n, and Anne Overbeck, BMBF, Division 115 - Strategic Foresight / Participation and Citizen Research (→ Fig. 7)

As part of the VielFalterGarten CS project, 15-minute point counts of butterflies are carried out on urban green spaces. Photo: Peter Barczewski/3d-artstudio

Figure 15: Results of the digital lunch break by "Bürger schaffen Wissen" for the online consultation on 27 August 2021

- 15 September 2021: Second evening discussion on "Citizen Science – an engine for social engagement and education?" with participants Ansgar Klein, CEO of the Federal Network for Civic Engagement (BBE), Thekla Kluttig, Saxon State Archives, State Archive Leipzig, Ilka Parchmann, Leibniz Institute for Science and Mathematics Education (IPN), Norbert Steinhaus, Bonn Science Shop, and Johannes Vogel, Director General Natural History Museum Berlin (→ Fig. 12)
- 22 September 2021: Third evening discussion on "Citizen Science - innovation in health research" with participants Nils B. Heyen, Fraunhofer Institute for Systems and Innovation Research (ISI), Mike Martin, Centre for Gerontology, University of Zurich, and Sarah Weschke, Berlin Institute of Health at Charité (BIH) (→ Fig. 11)
- 29 September 2021: Fourth evening discussion on "Citizen Science in public authorities and associations - solving societal challenges" with participants Lilian Busse, Vice President of the Federal Environment Agency (UBA), Klaus-Jürgen Conze, Organisational Chairman of the Society of German-Speaking Odonatologists (GdO), Matthias Meissner, Head of Biodiversity Department at Friends of the Earth Germany (BUND), Klement Tockner, Director General of the Senckenberg Gesellschaft für Naturforschung, Melanie Vogelpohl, Head of Division Sustainability Education Digitalisation & MINT of the German Federal Environmental Foundation (DBU), and Wiebke Züghart, Head of Terrestrial Monitoring at the Federal Agency for Nature Conservation (BfN) (→ Fig. 10)

The White Paper online consultation

After finalising the editing of the complete document at the beginning of 2021 during the two writing workshops mentioned above, an open **online consultation** was held in August and September 2021. This offered an additional opportunity to actively contribute to the preparation of the White Paper to anyone interested. The online consultation was published and actively advertised to the public on the website www.citizen-science-weissbuch.de. The users of the consultation process were able to participate in many ways through contributions and comments by commenting on the text, evaluating specific recommendations for action and naming particular challenges for Citizen Science. A total of 1,343 contributions (contributions, text annotations and votes) and 119 comments were submitted. Participation in the online consultation was largely anonymous, so no statements can be made about the origin of the participants. Members of the steering committee and the White Paper WG carefully reviewed the comments and proposed changes, categorised them and incorporated them into the final document, taking into consideration transparent criteria. The diverse comments from the online consultation provided many valuable contributions and contributed to the constructively critical revision of the White Paper draft. The development of the White Paper for the Citizen Science Strategy 2030 benefited from this kind of collaboration and was able to incorporate the knowledge and expertise of many.

The position papers

Various organisations and institutions from science and society also submitted 31 position papers on Citizen Science, as was done during the process of creating the Green Paper "Citizen Science Strategy 2020 for Germany". The majority of the position papers were submitted by name and are publicly available upon request. A detailed evaluation of the position papers and the consultation will be published separately. A well-balanced mix of organisations from science and society participated. The position papers contributed important points to help develop the White Paper. The consultation process was very inspiring and we would like to thank all the participants for their time and expertise.

Listed below are the participating organisations and institutions that submitted position papers. The views and opinions expressed in this White Paper do not necessarily reflect those of the participants or their organisations.

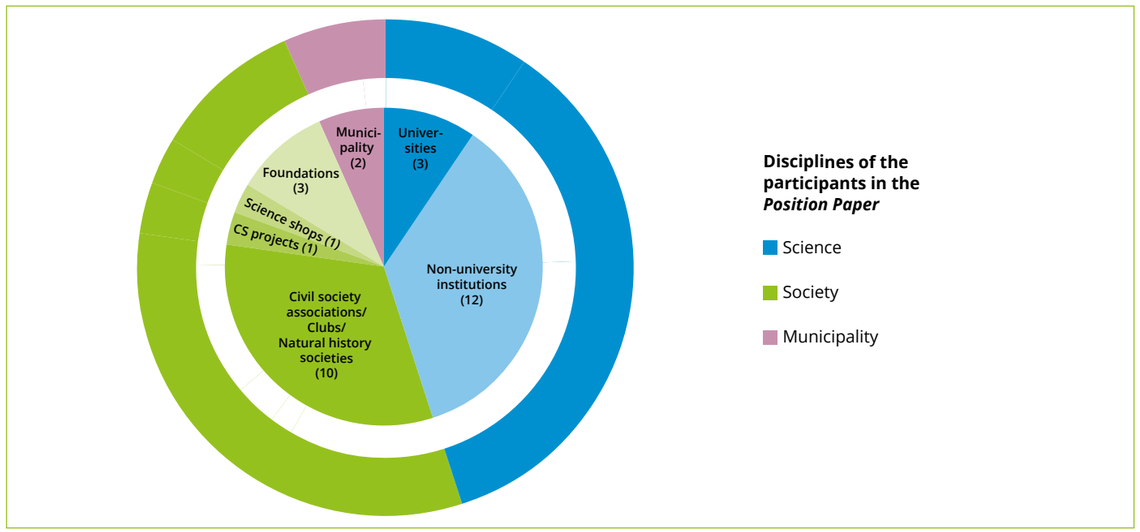


Figure 16: Distribution of position paper participants (n = 31) according to form of organisation

PARTICIPATING ORGANISATIONS THAT SUBMITTED POSITION PAPERS

Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research (Alfred Wegener Institute – AWI)

German Arachnological Society

Berlin Institute of Health at Charité (BIH)

Federal Network for Civic Engagement (BBE)

German Centre for Integrative Biodiversity Research (iDiv) Halle-Jena-Leipzig

Forschungszentrum Jülich

Friends of the Environmental Education Centre Pleistalwerk

Helmholtz Centre for Environmental Research UFZ/butterfly monitoring

IANUS Association for Peace-Oriented Technology Design e.V./IANUS Peacelab

Institute for Technology Assessment and Systems Analysis (ITAS) at the Karlsruhe Institute of Technology (KIT)

Johann Heinrich von Thünen Institute, Federal Research Institute for Rural Areas, Forests and Fisheries/Citizen Science Working Group at the Thünen Institute for Biodiversity

Körber Foundation/Science Division

Leibniz Institute for the Analysis of Biodiversity Change (LIB)/ZFMK, Public Law Foundation/Zoological Research Museum Alexander Koenig and Zoological Museum Hamburg

Leibniz Citizen Science Working Group

Leibniz Centre for Agricultural Landscape Research (ZALF)

Martin Luther University Halle-Wittenberg: Didactics of Biology

Natural History Museum Berlin, Leibniz Institute for Evolutionary and Biodiversity Research

naturgucker.de non-profit association

Lower Saxony Heritage Society

POLLICHIA, Association for Nature Research, Nature Conservation and Environmental Education

Ruhr University Bochum

Senckenberg Society for Nature Research SGN/Civic Engagement

Rhineland-Palatinate Nature and Environment Foundation/ArtenFinder Rheinland-Pfalz

VdA – Association of German Archivists

German Diving Association/Environment and Science Section

German Association for Computer Genealogy

Wikimedia Deutschland e. V./Education, Science & Culture

Science in Dialogue

Bonn Science Shop

Centre for General Scientific Continuing Education(ZAWiW) at the University of Ulm/Humanities Department

Another organisation that does not wish to be named.

ORGANISATIONS OF THE AUTHORS AND CONTRIBUTORS

Authors and contributors to the dialogue forums and to the writing and review processes were active in the following organisations (The views and opinions expressed in this White Paper do not necessarily reflect those of the participants or their organisations):

University of Freiburg • Alfred Wegener Institute – Helmholtz Centre for Polar and Marine Research (AWI) • basis.wissen.schafft e. V. • Bavarian Research Institute for Digital Transformation • Berlin Institute of Health-QUEST Center • Vocational College • BIO-Diverse • Bliesgau Biosphere Association • Botanical Garden and Botanical Museum Berlin (BGBM) • Brandenburg University of Technology Cottbus-Senftenberg • BUND – German Federation for the Environment and Nature Conservation • Federal Ministry of Education and Research (BMBF) • German National Network for Civil Society (BBE) • German Centre for Integrative Biodiversity Research (iDiv) Halle-Jena-Leipzig • German Federal Environmental Foundation • German Research Foundation • Deutsches Museum in Munich • ECSA European Citizen Science Association • European Institute for Participatory Media • European Commission • Familia Austria • Forschungszentrum Jülich • Fraunhofer Information Center for Planning and Building Stuttgart • Fraunhofer Institute for Systems and Innovation Research ISI Karlsruhe • Fraunhofer Institute for Factory Operation and Automation Magdeburg • Fraunhofer Institute for Industrial Engineering Stuttgart • Fraunhofer Center for International Management and Knowledge Economics Leipzig • Freie Universität Berlin • Heidelberg Volunteer Agency • University of Jena • Austrian Science Fund • University of Göttingen • German Council for Scientific Information Infrastructures (RfII) • Helmholtz Association's Berlin Head Office • Leibniz Headquarters • Helmholtz Open Science Office • Helmholtz-Zentrum Hereon • Helmholtz Centre for Infection Research • Helmholtz-Zentrum München – German Research Centre for Health and Environment • Helmholtz Institute for Pharmaceutical Research Saarland (HIPS) • GFZ German Research Centre for Geosciences • Helmholtz Centre for Environmental Research - UFZ • Heimatmuseum Egling • Heinrich Heine University Düsseldorf • Hof University of Applied Sciences • Weihenstephan-Triesdorf University of Applied Science • Eberswalde University for Sustainable Development • Heilbronn University of Applied Sciences • Institute for Community Medicine University of Greifswald • Institute of Data Science at the German Aerospace Center (DLR) • Institute for Research on Higher Education Halle-Wittenberg • IEM Institute of Environmental Medicine Helmholtz Munich • Institute for Quality and Efficiency in Health Care (IQWiG) • Jade University of Applied Sciences Wilhelmshaven/Oldenburg/Elsfleth • Johann Heinrich von Thünen Institute, Federal Research Institute for Rural Areas, Forests and Fisheries • Julius Kühn-Institut (JKI) Federal Research Centre for Cultivated Plants • Karlsruhe Institute of Technology KIT • Kiel Science Factory • Culture Management Network • Regional Association for Bird Protection • Leibniz Citizen Science Working Group • Leibniz Research Network Biodiversity (LVB) • Leibniz Institute for Evolutionary and Biodiversity Research (MfN) • Leibniz Institute of Freshwater Ecology and Inland Fisheries (IGB) • Leibniz Institute for Regional Geography (IfL) • Leibniz Institute for Science and Mathematics Education (IPN) Kiel • Leibniz Institute for Zoo and Wildlife Research (IZW) • Leibniz University Hannover • Leibniz Centre for Agricultural Landscape Research (ZALF) • Martin Luther University Halle-Wittenberg CompGen • Max Delbrück Center for Molecular Medicine (MDC) • Max Planck Institute for Biogeochemistry • Mehr Demokratie Deutschland – LV Sachsen • Museum of Labour • Natural History Museum Berlin • NABU naturgucker.de • NABU-Münsterland Nature Conservation Station – Federal Botany Committee • National Institute for Science Communication • Natural Research Society of Emden of 1814 • Natural History Museum Vienna • CitizenScience@Helmholtz Network • Bürger schaffen Wissen Network • OeAD Centre for Citizen Science • Open Knowledge Lab • Ostfalia University of Applied Sciences – Healthcare Wolfsburg • Österreich forscht: University of Natural Resources and Life Sciences, Vienna • Participatory Science Academy – University of Zurich and Swiss Federal Institute of Technology • Project Management Agency German Aerospace Center (DLR) • Ruhr University Bochum • Saxon State Library – Dresden State and University Library • Schweiz forscht: Science et Cité • Berlin Senate Department for the Environment, Transport and Climate Protection • Senro.Community • Donors' Association • Rhineland-Palatinate Nature and Environment Foundation • Technical University of Wildau • Technical University of Munich • Federal Environment Agency • Environmental Education Centre • Pleistalwerk e. V. • University of Bremen – Cognitive Neuroinformatics • University of Innsbruck • Leipzig University • University of Potsdam – Inno-UP • University of Rostock • University of Salzburg • University of Stuttgart • University Centre for Health Sciences at Augsburg Hospital (UNIKA-T) • Frankfurt University Hospital – Christiane Herzog CF Centre • Association for Biology, Biosciences and Biomedicine in Germany – VBIO • German Association for Computer Genealogy • University of Münster • Science in Dialogue (WiD) • Bonn Science Shop • Wuppertal Institute for Climate, Environment and Energy • Centre for Social Innovation • Civil Society Platform Forschungswende

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Successful sampling at the Großer Stechlinsee in the Diving for Nature Conservation CS project. Photo: Silke Oldorff/NABU BFA Living Lakes

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GEFÖRDERT VOM Bundesministerium für Bildung und Forschung
UFZ HELMHOLTZ Zentrum für Umweltforschung
AFO Arbeitsstelle Forschungstransfer
Bürger schaffen Wissen Die Citizen Science Plattform
DLR
JÜLICH Forschungszentrum Wandel gestalten
Fraunhofer ISI
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HELMHOLTZ
iDiv Deutsches Zentrum für integrative Biodiversitätsforschung (iDiv) Halle-Jena-Leipzig
IPN Leibniz Institut für die Pädagogik der Naturwissenschaften und Mathematik
itas Institut für Technikfolgenabschätzung und Systemanalyse
THÜNEN
KIT Karlsruher Institut für Technologie
IGB Leibniz-Institut für Gewässerökologie und Binnenfischerei
Leibniz-Institut für Zoo- und Wildtierforschung IM FORSCHUNGSVERBUND BERLIN E.V.
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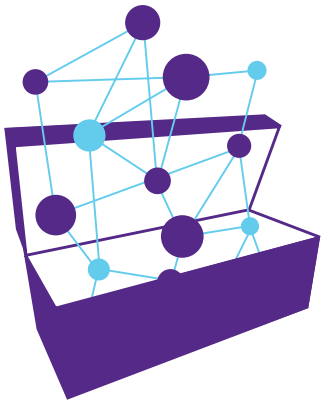
SLUB Wir führen Wissen.
WWU MÜNSTER
wissenschaft im dialog
WILA Wissenschaftsladen Bonn



TEFCE Toolbox

An Institutional Self-Reflection Framework for Community Engagement in Higher Education

Thomas Farnell, Paul Benneworth, Bojana Ćulum Ilić, Marco Seeber, Ninoslav Šćukanec Schmidt

PROJECT

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Dedication: The authors would like to dedicate this report to the memory of Paul Benneworth (1976-2020), whose intellectual leadership and academic work was central to the development of the TEFCE Toolbox and who will be sadly missed by all of us.

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Contents

1. COMMUNITY ENGAGEMENT IN HIGHER EDUCATION: WHAT IS IT AND WHY IS IT CRUCIAL TODAY?

Defining community engagement in higher education

Community engagement in higher education is about how universities[1] address societal needs in partnership with their external communities. More precisely, the TEFCE project team proposes the following definitions of 'engagement', 'community' and 'societal needs'.

Engagement	The TEFCE project defines community engagement as a process whereby universities undertake joint activities with external communities in a way that is mutually beneficial, even if each side benefits in a different way. In practice, such joint activities can be undertaken by university staff or students, whether as a part of their teaching and research, as a part of joint projects and initiatives, or as a part of university governance and management.
Community	The TEFCE project defines the term community broadly as 'communities of place, identity or interest', thus including organisations from government, business, civil society, as well as the general population. The term community is not limited to the local community: although it is easier to sustain productive relationships with partners that are geographically close rather than more remote partners, community engagement can also have regional, national and international dimensions.
Societal needs	The TEFCE project adopts a broad definition of the term 'societal needs' that can be addressed through community engagement, by encompassing all political, economic, cultural, social, technological and environmental factors that can influence quality of life in society.

Community engagement is emerging as a policy priority in higher education, reflecting increasing pressure on universities to demonstrate how they deliver public benefits. The European Commission features community engagement as a priority in the *Renewed Agenda for Higher Education* (2017) and the Horizon 2020 programme. Universities are also expected to contribute to the UN Sustainable Development Goals and to respond to the COVID-19 crisis, making community engagement increasingly relevant.

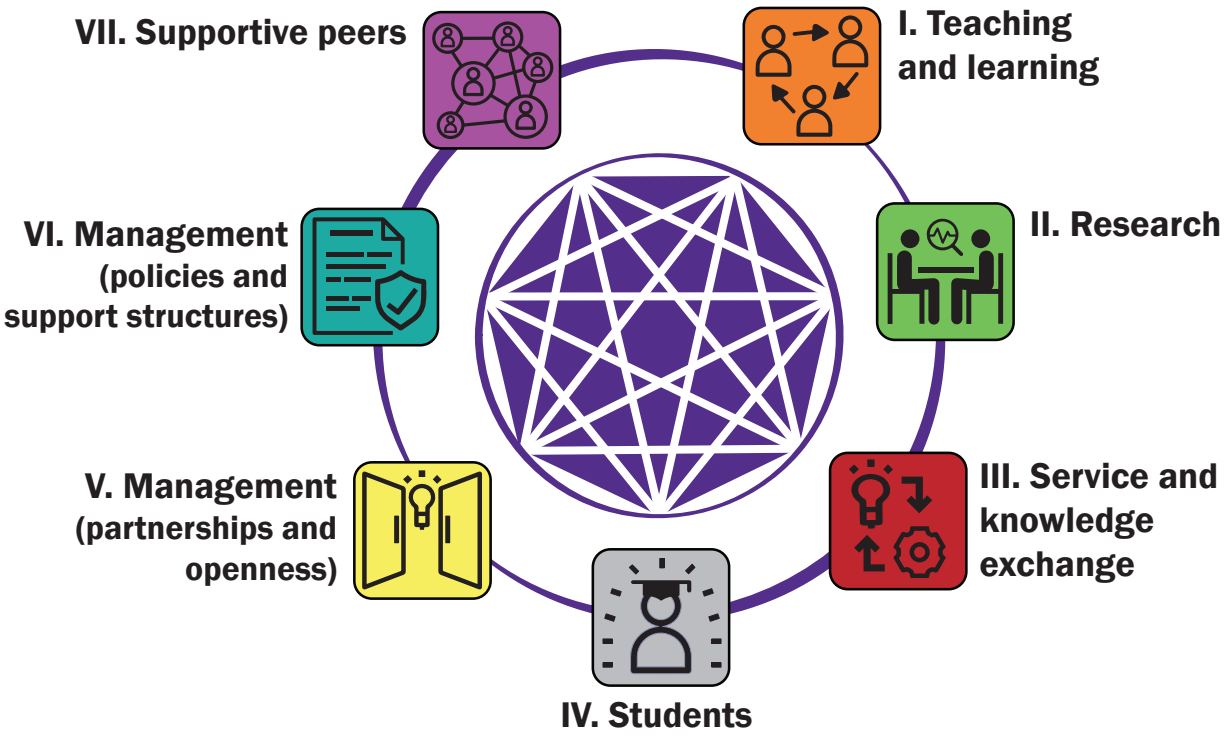
Dimensions of community engagement

The TEFCE project defines seven thematic dimensions of community engagement in higher education:

Dimensions	Brief description
I. Teaching and learning	Extent to which study programmes reflect societal needs, include community-based learning and involve external communities in teaching and learning.
II. Research	Extent to which research is carried out *about* and *with* external communities.
III. Service and knowledge exchange	Extent to which academic staff is involved in joint initiatives supporting external communities' development and empowerment.
IV. Students	Extent to which students lead their own projects and initiatives with external communities (outside the framework of their study programmes).

1 The TEFCE project uses the term 'university' to refer to all forms of tertiary education institutions, including research-intensive universities and universities of applied science.

V. Management (partnerships and openness)	Extent to which the university establishes mutually beneficially partnerships with external communities and provides them with access to facilities and resources.
VI. Management (policies and support structures)	Extent to which the university management reflects its commitment to community engagement in policies and institutional support structures.
VII. Supportive peers	Extent to which the academic and administrative/professional staff actively support community engagement.



Context-specific, authentic, multifaceted and embedded engagement

The TEFCE Toolbox for Community Engagement in Higher Education is a new framework that stimulates universities and their communities to jointly carry out a process to examine their community engagement in a robust and comprehensive way. The way in which the TEFCE Toolbox differs from previous tools for assessment of community engagement is that it focuses on four distinct features of community engagement in higher education:

Context-specific	The TEFCE definition of community engagement encompasses almost any activity that includes cooperation with external organisations. This broad approach is adopted purposefully to acknowledge that community engagement is context-specific: engagement activities depend significantly on the type of institution, its socioeconomic and historical context and on its external communities. Allowing for a broad definition ensures that no activities are excluded *a priori* based on a 'one-size-fits-all' definition of community engagement.

Authentic	In practice, community engagement can range from being 'transactional' to 'transformational', from being 'exploitative' to 'inclusive' and from fostering 'dissemination' to ensuring 'co-creation'.[2] Progress across such sequences depends on producing mutual benefits for academic and for community goals and on fostering understanding and cooperation between university and community partners. The TEFCE Toolbox focuses specifically on the extent to which a university has authentic community-engagement practices in place.
Multifaceted	Community engagement should also be multifaceted by going beyond partnerships solely with highly-structured organisations (e.g. large businesses and governmental/public institutions) and by also engaging with groups or organisations that do not have the resources to engage easily with universities. Such groups include NGOs, social enterprises, cultural organisations, schools and citizens. Similarly, the type of societal needs that are addressed through engagement reflect different levels of engagement, progressing from the needs of business and of the public sector, through to global 'grand challenges' (e,g. climate change, ageing, migrations) and to the needs of harder-to-reach and vulnerable groups.
Embedded	Community engagement can be either peripheral or embedded in the university's core activities. In the latter case, community-engagement practices will take place across a range of academic departments, will be supported by management policies and structures and will be financially and institutionally sustainable. This aspect of community engagement has been the most prominent in previous tools for assessing community engagement.

In conclusion, community engagement is a concept that encompasses how universities work with external partners to address pressing societal needs, both in their immediate local environments and in the broader regional, national and global context. The TEFCE Toolbox provides a framework for universities to undertake a learning journey to discover the range of ways in which their staff, students and external communities cooperate, to determine the level of mutual benefits achieved through this engagement and to discuss in a participative way how community engagement can be further improved.

The TEFCE project team is eager to support new institutions wishing to apply the TEFCE Toolbox, both during the TEFCE project's implementation and after the end of the project (June 2021). Please contact us at: iro@iro.hr.

2 For more details, see the TEFCE project publication *Mapping and Critical Synthesis of Current State-of-the-Art on Community Engagement in Higher Education (2018)* here: https://www.tefce.eu/publications

2. TEFCE TOOLBOX: WHAT IS IT AND WHAT'S IN IT FOR ME?

Purpose of the TEFCE Toolbox

The TEFCE Toolbox for Community Engagement in Higher Education is a framework that stimulates universities and their communities to jointly carry out a process to examine their community engagement in a robust and comprehensive way. The TEFCE Toolbox serves as a reference tool for universities, communities and policymakers to better understand the dimensions of community engagement and as a practical tool for universities to determine how well they perform according to each dimension and to identify where they can improve.[3]

While building upon previous international initiatives to assess community engagement, the TEFCE Toolbox provides a novel and innovative approach based on four principles:

(1) Commitment to authentic, mutually beneficial community engagement
(2) Empowerment of individual actors within and outside university
(3) Participative approach, combining bottom-up and top-down involvement
(4) Collaborative learning rather than comparison of competitive performance

Target groups and benefits of the TEFCE Toolbox

Universities with an interest in community engagement are the primary target group of the TEFCE Toolbox and are expected to be the 'early adopters' of the TEFCE Toolbox. This could include both universities that are already community-engaged universities or that are interested in becoming more community-engaged. This target group is therefore defined by its authenticity to learn about community engagement rather than its existing level of authenticity of commitment to community engagement. Universities that do not yet see community engagement as a realistic priority may become interested in applying the TEFCE Toolbox at a later stage.

Core benefits for universities:

- Demonstrating the value that the university brings to communities in terms of public benefit (and social impact, if applicable) and the value that communities bring to the university.
- Demonstrating how the university's teaching and research is enriched and has increased relevance through co-determination and interdependence between university and community partners.

Additional benefits for universities:

- Increasing institutional knowledge of the diversity of university practices and impacts through the discovery of community-engaged practices already taking place at the university.
- Improving university capacity in terms of institutional data/research, which links to strategic capacity.
- Increasing public visibility of the ways in which the university contributes to society, and building a reputation as a community-engaged university.
- Creating an evidence basis for planning improvements to the university's performance in terms of (a) increasing social impact and (b) enriching the university's research and teaching.
- Empowering university staff and students through recognition of good practices and achievements.
- Responding to emergent policy agendas such as the sustainable development goals (SDGs), responsible research and innovation (RRI), relevance/impact of higher education.

3 For more information on how the TEFCE Toolbox was developed, see the TEFCE project publication *Building and Piloting the TEFCE Toolbox for Community Engagement in Higher Education* (2020) here: https://www.tefce.eu/publications

University staff and students that are already involved in community-engagement activities, along with their external partners, are the second target group of the TEFCE Toolbox. These groups will be those who will be intrigued, interested and intrinsically motivated to provide their time to participate in the TEFCE Toolbox application by providing narratives describing their practices and reflecting on whether their institutional environment is conducive to such activity

Benefits for individual TEFCE Toolbox participants:

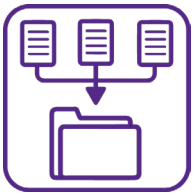
- Increasing motivation and a sense of recognition by staff and students due to the acknowledgement of the value of their community-engagement activities by the university.
- Increasing motivation and a sense of recognition by external communities due to the acknowledgement of the value of their partnership with the university and the contribution they make to enriching university teaching, research and other university activities.
- Increasing the sense of inclusion and ownership of staff, students and external partners in institutional developmental processes through active participation in discussions that shape conclusions regarding institutional performance and future directions.

Overview of the TEFCE Toolbox: the implementation stages

The application of the TEFCE Toolbox takes place through a sequence of stages undertaken by participating universities and involving university management, academic and professional staff, students and representatives of external communities.

STAGE 1: QUICK SCAN — Month 1

Setting up team of university management, staff, students and community representatives and launching initial discussion on the type and extent of community engagement at the university.



STAGE 2: EVIDENCE COLLECTION — Months 2-3

Collecting case studies of community-engaged practitioners throughout the university and from external communities.

STAGE 3: MAPPING REPORT — Month 4-5

Based on collected practices, identifying good practices and assigning a level of community engagement of the university, resulting in a ‘mapping report’ (later integrated in the overall institutional report).

STAGE 4: PARTICIPATIVE DIALOGUE — Month 5

Open discussions among university management, staff, students and the community on strengths and areas of improvement.

STAGE 5: INSTITUTIONAL REPORT — Month 6

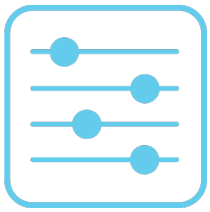
Comprehensive report which presents the TEFCE Toolbox mapping results, celebrates good practices and highlights areas for further improvement.

Overview of the TEFCE Toolbox: the tools

Each stage of the TEFCE Toolbox involves the application of a different tools, as presented below:

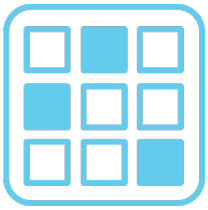
TOOL 1: DIMENSIONS OF ENGAGEMENT

The first tool provides a summary classification of the range of activities through which community engagement can take place. Its purpose is thus to help users quickly understand the scope of what is meant by a community-engaged university and to help identify engagement practices at their institution.



TOOL 2: LEVELS OF ENGAGEMENT

The second tool provides a rubric defining different levels of engagement (from beginner to advanced) for each sub-dimension of the TEFCE Toolbox. Its purpose is to allow users to critically analyse the practices they have mapped with the previous tool and to reach conclusions regarding the level of engagement.



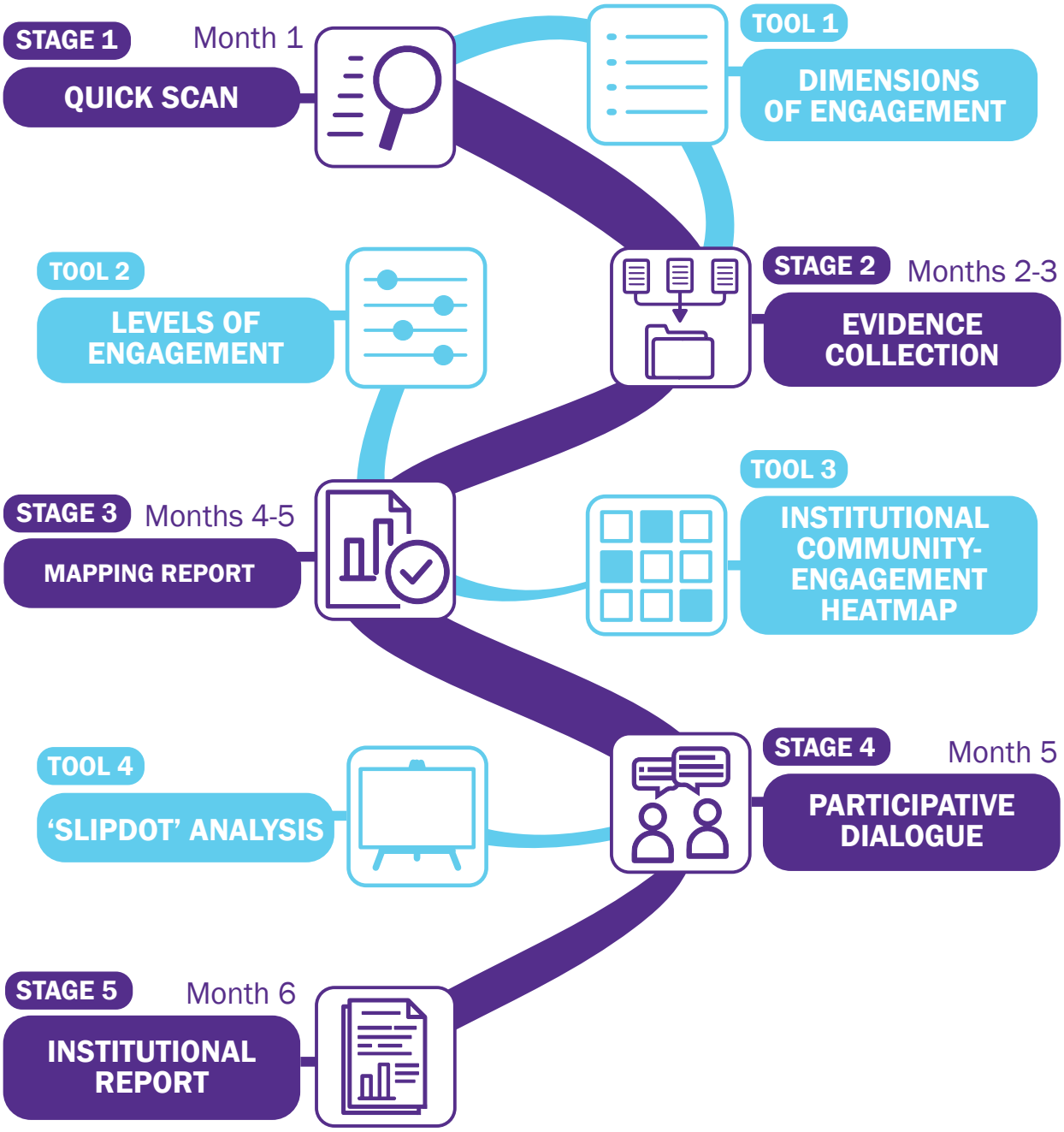
TOOL 3: INSTITUTIONAL COMMUNITY-ENGAGEMENT HEATMAP

The third tool provides a colour-coded matrix to synthesise the findings for each dimension and to further determine the extent to which community engagement is multifaceted and embedded at the university. Its purpose is to allow users to reach conclusions on the level of community engagement for each dimension and for the entire university, based on the previously mapped and analysed practices.

TOOL 4: 'SLIPDOT' ANALYSIS

The fourth and final tool provides a customised 'SWOT' analysis to facilitate self-reflection discussions (via workshops or focus groups) between all stakeholders about the results of the implementation of the entire TEFCE Toolbox process. Its purpose is to validate the conclusions, acknowledge achievements and define areas for improvements.

The TEFCE Toolbox stages and tools interact as follows in practice:



How to apply the TEFCE Toolbox

The TEFCE project team recommends to apply the TEFCE Toolbox at the level of the entire university, in order to advocate a whole-institution approach to supporting community engagement and to involve university management in the process. We also recommend to apply all stages of the TEFCE Toolbox in order to ensure a holistic approach that brings value to all participants.

However, the TEFCE Toolbox is an open-access and flexible tool that can also be applied at the department/faculty level and that could also be applied in different ways (e.g. focusing on a few dimensions only, starting only with a quick scan, etc).

The benefits of applying the TEFCE Toolbox are proportional to the efforts invested in its application. Based on our experience of piloting the Toolbox, the following resources are needed for its implementation over a 6-month period:

- one coordinator to organise the Toolbox's application, the evidence collection, meetings/ workshops and produce the resulting report (approx. 10-20 working days)
- one researcher (or expert) is needed to lead/ensure the quality of the mapping and analysis and the self-reflection process (approx. 5-10 days)
- 7-10 working group members (including management, staff, students and community representatives) to participate at meetings/workshops (approx.. 1-3 days)
- 20-40 university and community members to contribute to collection of practices (approx. 1 hour per participant to complete form).

The TEFCE project team is eager to support new institutions wishing to apply the TEFCE Toolbox, both during the TEFCE project's implementation and after the end of the project (June 2021). Please contact us at: iro@iro.hr.

Guiding principles of the TEFCE Toolbox

Finally, as mentioned in the introduction, potential users of the TEFCE Toolbox should be aware that four principles guide the TEFCE Toolbox and differentiate it from previous approaches:

(1) Commitment to authentic, mutually beneficial community engagement	The TEFCE Toolbox should promote university-community partnerships that benefit both universities and communities. The TEFCE Toolbox's interpretative framework thus differentiates engagement that provides the community with a meaningful role and tangible benefits from more superficial engagement.
(2) Empowerment of individual actors within and outside university	The TEFCE Toolbox should recognise and award value for different kinds of individual efforts and results in community engagement. The qualitative approach of the TEFCE Toolbox should ensure that good practices are acknowledged and celebrated and should examine to what extent the institution's values such achievements.
(3) Participative approach, combining bottom-up and top-down involvement	The TEFCE Toolbox is based on mapping community-engaged practices through a participative approach that combines both a bottom-up and top-down approach. This provides university management, staff, students and the community with an active role in the process, providing critical reflection on the value of the mapped engagement practices and on the overall conclusions reached.
(4) Collaborative learning rather than comparison of competitive performance	The TEFCE Toolbox results in a qualitative discovery of good practices and a critical reflection on strengths and areas to improve, achieved through a collaborative learning process. The TEFCE Toolbox thus represents a learning journey to further improve universities' community-engagement efforts, rather than as a narrow performance assessment for the purpose of ranking or competitive benchmarking.

3. TEFCE TOOLBOX IN PRACTICE

STAGE 1
QUICK SCAN

Purpose

The aim of the quick scan is to launch an initial discussion within the university and with community partners on the type and extent of community engagement at the university. The stage involves setting up a team of university management, staff, students and community representatives and organising a joint meeting during which an initial list of community-engagement initiatives can be mapped.

Timing

Month 1 of the TEFCE Toolbox implementation.

Tool: Dimensions of engagement

The first tool provides a summary classification of the range of activities through which community engagement can take place. Its purpose is thus to help users understand the scope of what is meant by a community-engaged university and to help identify engagement practices at their institution.

The tool defines seven dimensions of community engagement, encompassing the different areas of activities of the university. Each dimension is accompanied by sub-dimensions, presented as statements of what a community-engaged university can aim to achieve. Using this tool, universities identify and collect engagement practices throughout their institution.

TOOL 1
DIMENSIONS OF ENGAGEMENT

Dimensions	Sub-dimensions
I. Teaching and learning	I.1. The university has study programmes or courses to respond to societal needs that are specific to the university's context and its external communities. I.2. The university has study programmes or courses that include a community-based learning component for students. I.3. The university facilitates the participation of community representatives in the teaching and learning process (in a curricular or extra-curricular context). I.4. The university has study programmes or courses that are created, reviewed or evaluated in consultation/cooperation with the university's external communities.
II. Research	II.1. The university carries out research focusing on the societal needs of the university's external communities. II.2. The university carries out collaborative/participatory research in cooperation with the university's external communities.

III. Service and knowledge exchange	III.1. University staff contribute to debates and initiatives that address societal needs of the university's external communities. III.2. University staff provide their knowledge to support and/or build the capacity of the university's external communities. III.3. University staff community-engagement activities have demonstrable benefits for the university's external communities.
IV. Students	IV.1. Students deliver community-engagement activities independently through student organisations or initiatives. IV.2. The university facilitates and supports partnerships between students and external communities.
V. Management (partnerships and openness)	V.1. The university has a track record of mutually beneficial partnerships with its external communities. V.2. The university makes learning and research resources accessible to its external communities. V.3. The university has facilities and services that are jointly managed and/or accessible to its external communities.
VI. Management (policies and support structures)	VI.1. The university provides support and/or incentives for community-engagement achievements by its staff, students and external communities. VI.2. The university has a support structure (e.g. committee, office or staff) for embedding and coordinating community-engagement activities at the university level. VI.3. The university has staff-development policies (e.g. recruitment, tenure, promotion) that include community engagement as a criterion. VI.4. The university has a mission, strategy, leadership and (funding) instruments that specifically promote community engagement.
VII. Supportive peers	VII.1. The university has prominent academic staff members that have a strong track-record of community engagement and that advocate for its further advancement. VII.2. The university's academic staff are acceptive of the idea of university-community engagement and of the value and rigour of community-engaged teaching and research.

Instructions

Each participating university should set up a University Community Engagement Team to carry out the initial quick scan. Since the process should cover activities throughout the university, the proposed composition of the university team could include the following representatives:

- university management (vice-rector/pro-vice-chancellor; other senior management)
- academic staff members that have a strong track-record of community engagement and that advocate for its further advancement
- administrative/professional staff working of aspects of engagement in university office (e.g. engagement and outreach office) or through projects
- administrative/professional staff with good overview of institutional-level data (e.g. quality assurance office)
- student union representative
- representatives of societal partners/community groups.

The team leader or coordinator should ideally be a university staff member with extensive prior knowledge and experience of community engagement in higher education and with the ability to mobilise relevant actors and identify community-engagement initiatives around the university (e.g. university management member, community-engagement officer, researcher on community engagement, etc.).

The 'quick scan' takes the form of a meeting/workshop with the university team to present the TEFCE Toolbox objectives and process and to make an initial mapping of concrete practices of community engagement on existing knowledge of team members.

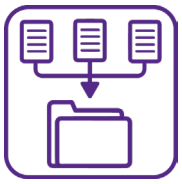
A 'simple' quick scan can be carried out using a template based on the list of the dimensions of engagement. University teams may also wish to carry out a more advanced quick scan that already considers the *level* of engagement, by using the TEFCE Toolbox mapping report template (see Stage 3). Whatever the approach adopted, each dimension of the TEFCE Toolbox is populated with an initial set of practices (and/or with notes on possible further sources of evidence). Based on the result of the quick scan, an evidence-collection process is planned to collect enough case studies of community-engagement practices to cover the various dimensions and sub-dimensions of engagement defined in the TEFCE Toolbox.

Illustrative example

I. Teaching and learning	*Examples of initial list of practices mapped by university during quick scan (fictional examples)* • *Bachelor's programme in _____studies directly responds to local and regional needs for _____.* • *Masters programme in _____studies developed as a result of cooperation with regional government.* • *Service-learning courses available in study programmes such as _____.* • *Guest lecturers from government, business and NGOs involved in study programmes _____.* • *Necessary to collect additional practices through data-collection phase.*

Template

Templates for the quick scan are available in the Appendix of this publication.



STAGE 2

EVIDENCE COLLECTION

Purpose

Based on the quick scan, the university team collects evidence in the form of case studies of academics, students and administrative/professional staff from a range of departments, as well as from external partners, on how they have participated in community-engagement initiatives. The TEFCE Toolbox is **not** intended to catalogue all community-engaged practices of a university. Instead, it aims to initiate a robust, qualitative evidence-collection process that the university team believes reflects the variety and diversity of the university's community-engagement activities. The findings are then validated through consultations and focus groups.

Timing

Months 2-3 of the TEFCE Toolbox implementation.

Instructions

Each university can adopt its own approach to evidence collection. Options include desk research, interviews with community-engaged practitioners, using university offices (engagement, communication and access offices), or even publishing a public call for practices via university media and circular emails.

The final collection of practices can include two kinds of evidence:

- In-depth case studies (using the case-study template provided below)
- Brief practice descriptions (based on summary findings of desk research).

There is no fixed number of practices to be collected. The general criterion should be to reach 'saturation point'– i.e. ensure that all of the 21 sub-dimensions are covered by the collected practices. As will be presented later in the document, one practice can cover several sub-dimensions and dimensions in parallel. A preliminary estimate based on piloting the TEFCE Toolbox is that **30-40 practices** were usually required to draw accurate university-level conclusions.

Illustrative example

*Case of practice entitled **"Connecting Hands"** from University of Twente (provided by: Laura Kräh, Connecting Hands)*

1. Description of community-engagement practice	
What are the main goals of the practice?	*Connecting Hands intends to create a platform for refugees, asylum seekers, students, Dutch people and all other people living with us. The goal of Connecting Hands is to try to help refugees and asylum seekers from all over the world to fit into their new lives, integrate into their relatively new social environment and to help them accomplish what they aim for.*
What are the main activities?	*More recently, Connecting Hands is working on the development of education and employment projects for refugees contributing to social and economic sustainability in the region through public engagement.* *The students are organizing events in the areas of culture, sports, education and events especially for women to achieve these goals. In addition, they are working together with external (non-political) parties and other organizations to have a bigger impact.*

Who is organizing the practice?	*Connecting Hands is a Student Union committee affiliated with the University of Twente.*
Who initiated it?	*It was initiated after a think tank that was organised by the Student Union. A fundraiser was organised to support refugees and employees of the UT generously contributed for the cause.*
Web link for further information	*https://su.utwente.nl/en/connectinghands/*
How is the community/target group with which you engage involved in the implementation of this practice?	*Connecting Hands works with two main partners: COA (AZC Almelo & AZC Azelo) and M-PACT.* *COA is the central agency for the reception of asylum seekers. We maintain effective communication with a contact person from AZC Almelo and AZC Azelo. We invite asylum seekers to our events through communication with a contact person that help to promote our events to asylum seekers within the AZCs.* *M-PACT is an integration partner and part of what M-PACT does is that they facilitate refugees to integrate into the Dutch culture through offering integration courses. We invite refugees to our events as well through our contact person in M-PACT.*
2. Support for community engagement	
How does the university support this community-engaged practice?	*Connecting Hands is a committee of the Student Union. Student Union provides budget, guidance and support to the committee. A mentor for the committee is also available to guide members to achieve their goals.* *The events organised do not directly fit in a broader framework of the university although the education and employment projects directly fit into the strategy of the university. These projects are aimed at "social and economic sustainability through public engagement" which is a part of the mission of the university. The events organised are continuous activities although the projects are independent and may be considered as one-off projects. However, the ambition of the committee is to develop two (new) projects each academic year.* *The committee is invited to networking events such as the Rode Loper however most promotion is done by the committee itself with direct support from the Student Union and hence, the university.*
How do partners/collaborators from the community support and value this practice?	*The response from participants at the events is very positive as they highly value the interaction with students. The activities organised are fun yet informative and there is great appreciation from students, asylum seekers and refugees for the events. Partners working towards the same goal have shown their appreciation through invitations and requests for input.*
How do your peers (university staff and management) and students support and value this practice?	*University staff is very supportive of the initiative in fact some employees are directly involved in the education and employment projects. Their guidance and support are because of their own personal interest in contributing to this initiative.*

Template

A template for the evidence-collection form (which can be adapted) is available in the Appendix to this publication.

STAGE 3

MAPPING AND ANALYSIS

Purpose

Following the collection of practices, case studies and other evidence of community engagement, the university team analyses the collected evidence and produces a 'mapping report' that provides a comprehensive overview of the range of community-engagement practices of the university and a critical assessment of the level of mutually beneficial community engagement that has been achieved.

Timing

Months 4-5 of the TEFCE Toolbox implementation.

Tool: Levels of engagement

The second tool provides a rubric defining different levels of engagement (from beginner to advanced) for each sub-dimension of the TEFCE Toolbox. Its purpose is to allow users to critically analyse the practices they have mapped with the previous tool and to reach conclusions regarding the level of engagement.

During the quick scan, a range of activities are identified involving various forms of cooperation with the community. But this, in itself, tells us little about what role the community has in such activities and the extent to which the practices follow the principle of 'authenticity' that is central to the TEFCE Toolbox, defined as ensuring mutual benefits. Using the Levels-of-Engagement tool, users can compare the collected practices to descriptors of different levels of engagement, organised in a 1-5 level rubric. An example from the TEFCE Toolbox is provided below for one of the sub-dimensions of Teaching & Learning.

TOOL 2

LEVELS OF ENGAGEMENT

Example: Sub-dimension I.2 - The university has study programmes or courses that include a community-based learning component for students.

Levels of engagement	
Community-based learning is included in study programmes or courses at the university and...	
Level 1	.. benefits students to develop their knowledge and skills, although there is little evidence yet of their benefit for the community.
Level 2	
Level 3	... has demonstrated benefits for students and support community partners address a short-term problem or need.
Level 4	
Level 5	... builds capacities of community partners and brings equal benefits to the students, teaching staff and university as a whole.
Achieved level and conclusions *(300 words per sub-dimension)*	
Estimate of achieved level (1-5):	

The process of assigning each sub-dimension with level of engagement is focused on a critical examination of collected practices only, rather than on considering to what extent these are widespread throughout the whole university or are sustainable (this will be a subject of analysis in the following Tool 3). In short, Tool 2 helps answer the question: *"To what extent are the community-engagement practices mapped at the university advanced and mutually beneficial?"*

Illustrative example

Sub-dimension I.1. The university has study programmes or courses to respond to societal needs that are specific to the university's context and its external communities.	
Levels of engagement	
The university has study programmes or courses that…	
Level 1	*…make general references to their relevance to the societal needs of the university's external communities…*
Level 2	
Level 3	*… include specific content or make specific links with the societal needs of the university's external communities….*
Level 4	
Level 5	*… are developed in cooperation with the university's external communities to address a societal need….*
Achieved level and conclusions (300 words per sub-dimension)	
• *Many of the university's study programmes point to careers that focus on social needs, partly in the region (teacher training, local government, health/medical technology), partly global (energy transition, environment), partly in the Global South.* • *Social studies at the University are intended to be linked to technological problems to address societal needs holistically. For example, the Philosophy department offers courses focused on ethical issues of technology and hence the courses "include specific content or make specific links with the societal needs of the university's external communities" although the focus is often placed on a global future citizen.* • *Boards of several study programmes at the University also include representatives of local businesses, meaning that many study programmes respond to needs defined by the university's external community.* ***Good practice: Master's programme Geo-information science and natural resource management****: this joint programme between Faculty of _____ and _____the University of _____. The hub of the course is the application of geo-information and earth observation techniques in support of natural resources management. The curriculum concentrates on methods for assessing the state of the resource base and the changes that occur and progresses to the assessment of impacts and, finally, societal response.* ***Other examples of practices:*** *Master's programme _____; Bachelor programme _____; Course _____*	

Tool: Institutional community-engagement heatmap

The third tool provides a colour-coded matrix to synthesise the findings for each dimension and to further determine the extent to which community engagement is multifaceted and embedded at the university. Its purpose is to allow users to reach conclusions on the level of community engagement for each dimension and for the entire university, based on the previously mapped and analysed practices.

The heatmap also applies a five-level scale, but uses colours in order to provide a clearer visual presentation of the overall results at the end of the TEFCE Toolbox application process. The heatmap:

- synthesises the findings regarding the **authenticity** of engagement for each of the dimensions as a whole;
- assigns levels regarding how **multifaceted** the engagement of the university is (regarding the types of social needs addressed and the communities engaged with);
- assigns levels regarding how **embedded** the engagement of the university is (reflected in how widespread and sustainable the practices are).

The assignment of heatmap levels is flexible, rather than being a precise score determined by a corresponding indicator. Levels are assigned by the university team based on discussions acknowledging the collected evidence and that are then validated by stakeholders, based on the following guidelines:

TOOL 3

INSTITUTIONAL COMMUNITY-ENGAGEMENT HEATMAP

Characteristics of engagement	Heatmap level		
	Lowest level		Highest level
1. Authenticity of engagement	A level is assigned based on a synthesises of the findings of the previous levels of engagement for each sub-dimension, to reach a conclusion for the dimension as a whole.		
2. Societal needs addressed	Lower levels: engagement that meets the traditional notion of 'use to society', such as law, medicine, public administration, industry, etc.	Middle level: engagement that responds to needs such as digitalisation, innovation, smart cities, 21st century skills, etc.	Higher levels: engagement responding to pressing global challenges such as climate change or migration and to local social problems.
3. Communities engaged with	Lower levels: large, highly-structured and well-resourced institutions such as corporations, central government, hospitals.	Middle level: institutions with less capacity for engagement such as local authorities, SMEs, cultural institutions, public bodies.	Higher levels: engagement with partners with the least capacity for engagement, such as schools, NGOs, social enterprises and citizens.
4. Institutional spread	Lower levels: community-engagement practices being only present at one or two university departments.	Middle level: community-engagement practices taking place at several different departments.	Higher levels: community-engagement practices that take place across the entire university.
5. Institutional sustainability	Lower levels: community engagement that is primarily the result of short-term projects or collaborations.	Middle level: community-engagement initiatives that have seen continuous implementation.	Higher levels: community-engagement practices that have been institutionalised, with adequate funding.

The result is a heatmap for each dimension, which are then combined to form a single institutional community-engagement heatmap. This provides a visual guide to the areas in which the university is strongest and the areas which could be further improved (depending on the university's areas of priority).

Illustrative examples

Dimension-level heatmap:

Synthesis: community-engagement heatmap and conclusions						
Characteristics of engagement	*Heatmap level*					*Heatmap levels criteria*
	Lowest level				*Highest level*	
Authenticity of engagement			x			*Lower: superficial; no evidence yet of mutual benefit* *Higher: authentic; tangible benefits for communities*
Societal needs addressed		x				*Lower: needs of labour market and industry* *Higher: 'grand challenges' (e.g. climate), social justice*
Communities engaged with			x			*Lower: well-resourced partners (e.g. business)* *Higher: low-resourced partners (e.g. schools, NGOs)*
Institutional spread				x		*Lower: only at one or two university departments* *Higher: across the entire institution*
Institutional sustainability				x		*Lower: engagement through short-term projects* *Higher: engagement institutionalised, adequate funding*

Institution-level heatmap[4]

	Characteristics of community engagement				
Dimensions of community engagement	*Authenticity*	*Social Needs*	*Communities*	*Spread*	*Sustain-ability*
I. Teaching and learning					
II. Research					
III. Service/knowledge exchange					
IV. Students					
V. Management (partnerships)					
VI. Management (policies)					
VII. Peer support					

Heatmap colour legend:	Lowest level				Highest level

4 The heatmap is focused on the dimensions of community-engagement activities. The dimensions that relate to the supportive environment for community engagement (Dimensions VI – Management/policies; and Dimension VII - Supportive peers) are only subject to the 'Authenticity' characteristic of the heatmap since those dimensions relate to ensuring the institutional conditions for engaging with communities rather than on engagement activities themselves.

Instructions

Step 1: Categorising/'coding' the collected practices	Practices are sorted into corresponding dimensions and sub-dimensions of the TEFCE Toolbox. Importantly, however, most practices can be sorted into more than one sub-dimension. • E.g. The presence of a university-level centre for service-learning will belong to Dimension I: Teaching and learning and to Dimension VI. Management (policies and support structures).
Step 2: Analysing practices and assigning level of authenticity	Each sub-dimension is assigned a level of engagement (from a 1-5 scale) based on level descriptors provided in the tool presented below. The assignment of levels is not approached as a narrow 'scoring exercise' but is intended as a framework for universities to reflect critically on where their practices fit in a set of given criteria. • Important: Taking into account the context-specific nature of community engagement, the process of assigning a numerical level of engagement is intentionally designed to be flexible and based on internal, qualitative discussions rather than as precise 'scoring' mechanism based on a precise equivalence between the collected evidence and the level descriptors. For this reason, only three of five levels are provided with descriptors. Additionally, the context-specific nature of community engagement means that not all universities should necessarily be expected to achieve Level 5 and may not even wish to aspire to a Level 5. Each university can determine which sub-dimensions should be the highest priority.
Step 3: Synthesising results and assigning dimension 'heatmap' levels	Results for each dimension are synthesised by the university team using the 'heatmap' tool, which considers to what extent the community-engagement practices are multifaceted and embedded at the university. The assignment of heatmap levels is flexible, rather than being a precise score linked to an indicator.
Step 4: Creating institutional heatmap	The result of this stage is a comprehensive 'mapping report', containing a narrative for each subdimension detailing the characteristics of the mapped practices and concluding with assigned levels and a completed heatmap. This report is the subject of discussion and validation in the next stage of the TEFCE Toolbox process.
Step 5: Drafting mapping report ('background report')	The result of this stage is a comprehensive 'mapping report', containing a narrative for each subdimension detailing the characteristics of the mapped practices and concluding with assigned levels and a completed heatmap. This report is the subject of discussion and validation in the next stage of the TEFCE Toolbox process.

Templates

A template for the mapping report and an Excel template for creating the institutional heatmap are available in the Appendix to this report.

STAGE 4

PARTICIPATIVE DIALOGUE

Purpose

A crucial part of implementing the TEFCE Toolbox is to engage in a participative discussion with university staff, students and community representatives on the findings of the mapping report. The aim of this process is to first validate the findings of the report (or supplement the report with new findings) and then to critically reflect on the strengths, areas for improvement and the opportunities and threats to making such improvements. This stage of the TEFCE Toolbox differentiates it most from other, primarily indicator-based and desk-based assessment methods and should result in greater ownership of the process by all stakeholders.

Timing

Month 5 of the TEFCE Toolbox implementation.

Tool: SLIPDOT analysis

The fourth and final tool provides a customised 'SWOT' analysis to facilitate self-reflection discussions (via workshops or focus groups) between all stakeholders about the results of the implementation of the entire TEFCE Toolbox process. Its purpose is to validate the conclusions, acknowledge achievements and define areas for improvements.

As a tool to structure such discussions, the 'SLIPDOT analysis' was developed by the TEFCE project team. Following the structure of a SWOT analysis (Strengths, Weaknesses, Opportunities, Threats), the SLIPDOT analysis replaces 'Weaknesses' by two categories: 'Lower Intensity' and 'Potential for Development'. It also re-frames Opportunities and Threats as not only being external, but also as encompassing elements that are *internal* to the university, but that are outside the control of community-engaged practitioners (meaning that they mostly refer to university management).

TOOL 4

SLIPDOT ANALYSIS

Areas of **S**trength	Areas of **L**ower **I**ntensity	Areas with **P**otential for **D**evelopment
Areas where the university is doing particularly well in terms of community engagement.	Areas of community engagement that are not highly developed at the university (due to it not yet being a priority, due to limited capacity or other reasons).	Areas of community engagement that the university could realistically improve in the future.

Opportunities	**T**hreats
Internal: e.g. Level of support among leadership and academic staff	Internal: e.g. Level of support among leadership and academic staff
External: e.g. Level of community support; in line with national policy; availability of funds and programmes (at the national and European level)	External: e.g. Level of community support; in line with national policy; availability of funds and programmes (at the national and European level)

Instructions

The self-reflection is carried out in a participative form through workshop-style discussions between university management, staff, students and community representatives and/or through focus groups.

Step 1 in the self-reflection stage is therefore to discuss the 'mapping report' (or 'background report') drafted in the previous stage with participants of the meeting. This stage is usually carried out dimension by dimension, with meeting participants having the opportunity to provide comments or additions to the report. The aim of the meeting is to confirm whether the report findings (and proposed levels of engagement/institutional heatmap) are fair and accurate.

Step 2 in the self-reflection stage is to carry out the SLIPDOT analysis. The SLIPDOT can be carried out for each dimension or for clusters of dimensions (e.g. teaching/learning and research; service/knowledge exchange and students), with overall conclusions feeding into a single SLIPDOT analysis. Using the template below, each university can organise a workshop with university management, staff, students and community representatives to discuss the mapping report. Alternatively, such discussions can be held with focus groups by the University Community Engagement Team. The areas with potential for development and the identified opportunities can provide the recommendations for improvements and future plans.

Illustrative example

*Areas of **S**trength*	*Areas of **L**ower **I**ntensity*	*Areas with **P**otential for **D**evelopment*
• *Community-based learning is integrated into study programmes at several departments.* • *There are examples throughout the university of communities' and citizens' inclusion in research.* • *...*	• *The primary thematic focus of the university is technology and industry. This means that engagement with other groups in order to address broader societal needs has not been as high a priority so far.* • *...*	• *The university could consolidate and better interlink existing community-engagement initiatives.* • *The university could adopt more bottom-up level engagement with external communities with fewer resources.* • *....*

***O**pportunities*	***T**hreats*
Internal: • *The university is currently in a strategic planning phase for the period until 2030, which provides an opportunity to strengthen the position of community engagement.* • *...*	*Internal:* • *The university might decide to focus only on societal impact through engaging with business and industry, rather than harder-to-reach groups.* • *....*
External: • *The societal impact of research and higher education generally is becoming increasingly prominent in policy debates. Prioritising community engagement is a pathway towards achieving such an impact.* • *...*	*External:* • *The pressure of ensuring adequate funding for universities presents an obstacle to community engagement that does not have a clear funding stream.* • *...*

Template

A template for the SLIPDOT analysis is available in the Appendix to this publication.

STAGE 5

INSTITUTIONAL REPORT

Purpose

The institutional report is drafted by the university team and compiles and summarises the results of the mapping report and the SLIPDOT analysis. The report provides the basis for showcasing achievements in community engagement and for planning future community-engagement initiatives.

Timing

Month 5 of the TEFCE Toolbox implementation.

Structure of report

EXECUTIVE SUMMARY	Two-page summary of the report's main content with primary focus on the SLIPDOT recommendations.
INTRODUCTION	Explaining the objective of the TEFCE Toolbox, the reasons why the process was undertaken, the TEFCE Toolbox's structure and methodology and the entire process of implementation (and who was involved and consulted in the process).
1. INSTITUTIONAL OVERVIEW	*About the university:* Short introduction (one page) with information about the university's history and profile and about whether community engagement has so far had a prominent place in the institution. *Flagship community-engagement practices:* Selection of 3-5 practices from the collected case studies that illustrate the range of ways in which the university is community-engaged.
2. MAPPING PRACTICES	Main content of the institutional report. Final version of the Mapping Report completed by the university team based on the collection and analysis of practices and based on validation by university staff and external communities through participative discussions.
3. HEATMAP	Final version of the institutional community-engagement heatmap completed as part of the Mapping Report.
4. PARTICIPATIVE DIALOGUE	Summary of the SLIPDOT analysis carried out as part of the TEFCE Toolbox process, presented as a list of Strengths, Areas of Lower Intensity, Areas with Potential for Development, and Opportunities and Threats.
APPENDIX: CASE STUDIES	Inclusion of all the texts of the case studies that were collected as part of the TEFCE Toolbox process.

Instructions

Based on the results of the self-reflection stage, the university team coordinator writes up the conclusions of the SLIPDOT analysis and (if applicable) makes changes and additions to the background report. Those texts then become the core content of the institutional report (sections 2,3 and 4), while all the collected practices are included in the Appendix to the report.

The remaining steps involve drafting an introduction (on the process of the TEFCE Toolbox implementation) and an executive summary with key findings and recommendations.

Crucially – the institutional report should be published and made visible both within the university's academic community and with its external community partners. The report can then form the basis for future improvement's to the university's community engagement and as a reference point for a subsequent application of the TEFCE Toolbox in the future.

Examples of institutional reports

Examples of completed institutional reports (by TU Dresden, TU Dublin, the University of Rijeka and the University of Twente) are available on the website of the TEFCE project: www.tefce.eu.

Templates

A template for the institutional report is available in the Appendix to this publication.

APPENDIX: TEFCE TOOLBOX TEMPLATES

Templates for the TEFCE Toolbox are included below. Templates are also available in Word and Excel format upon request – please contact the Institute for the Development of Education (TEFCE project coordinator): iro@iro.hr

TEFCE

Towards a European Framework for Community Engagement in Higher Education

APPENDIX: TEFCE TOOLBOX TEMPLATES

Templates to accompany publication:

Farnell, T., Benneworth, P., Ćulum Ilić, B., Seeber, M., Šćukanec Schmidt. N. (2020). *TEFCE Toolbox for Community Engagement in Higher Education: An Institutional Self-Reflection Framework*. Zagreb: Institute for the Development of Education

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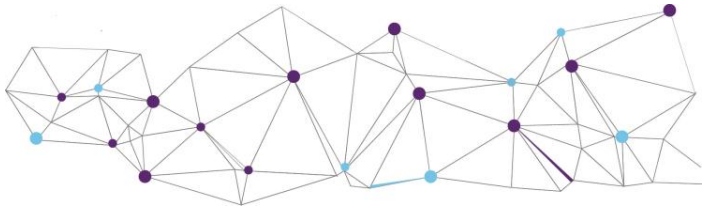
GOVERNMENT OF THE REPUBLIC OF CROATIA
Office for Cooperation with NGOs

TEFCE
Towards a European Framework for Community Engagement in Higher Education



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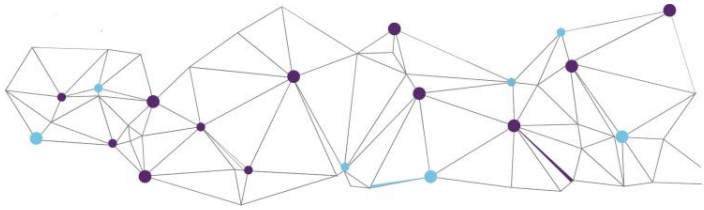
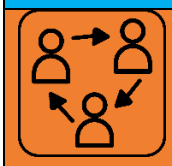


Note: The template below provides the shortest approach to carrying out a quick scan. However, universities and communities can carry out a more thorough quick scan by using the Mapping Report template (Template 3) instead, which also allows to make preliminary assessments of the level of engagement.

Dimensions	Sub-dimensions
 I. Teaching and learning	I.1. The university has study programmes or courses to respond to societal needs that are specific to the university's context and its external communities. I.2. The university has study programmes or courses that include a community-based learning component for students. I.3. The university facilitates the participation of community representatives in the teaching and learning process (in a curricular or extra-curricular context). I.4. The university has study programmes or courses that are created, reviewed or evaluated in consultation/cooperation with the university's external communities.

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 II. Research	II.1. The university carries out research focusing on the societal needs of the university's external communities. II.2. The university carries out collaborative/participatory research in cooperation with the university's external communities.

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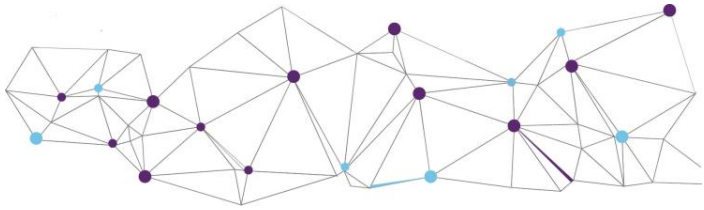

 III. Service and knowledge exchange	III.1. University staff contribute to debates and initiatives that address societal needs of the university's external communities. III.2. University staff provide their knowledge to support and/or build the capacity of the university's external communities. III.3. University staff community-engagement activities have resulted in demonstrable benefits for the university's external communities.

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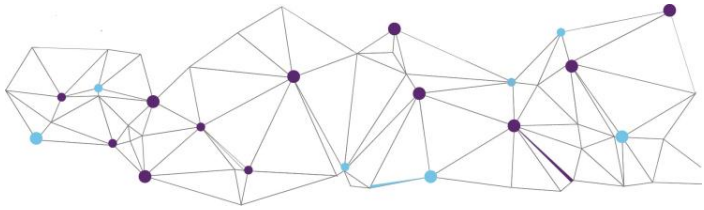

 IV. Students	IV.1. Students deliver community-engagement activities independently through student organisations or initiatives. IV.2. The university facilitates and supports partnerships between students and external communities.

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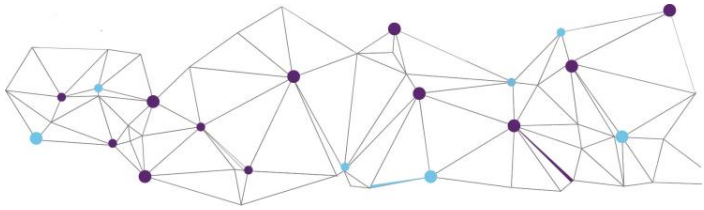

 V. Management (partnerships and openness)	V.1. The university has a track record of mutually beneficial partnerships with its external communities. V.2. The university makes learning and research resources accessible to its external communities. V.3. The university has facilities and services that are jointly managed and/or accessible to its external communities.

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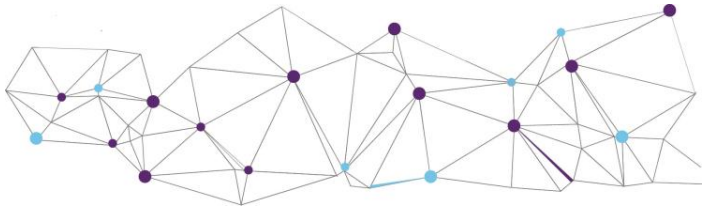

 VI. Management (policies and support structures)	VI.1. The university provides support and/or incentives for community-engagement achievements by its staff, students and external communities. VI.2. The university has a support structure (e.g. committee, office or staff) for embedding and coordinating community-engagement activities at the university level. VI.3. The university has staff-development policies (e.g. recruitment, tenure, promotion) that include community engagement as a criterion. VI.4. The university has a mission, strategy, leadership and (funding) instruments that specifically promote community engagement.

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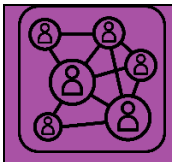 VII. Supportive peers	VII.1. The university has prominent academic staff members that have a strong track-record of community engagement and that advocate for its further advancement. VII.2. The university's academic staff are acceptive of the idea of university-community engagement and of the value and rigour of community-engaged teaching and research.

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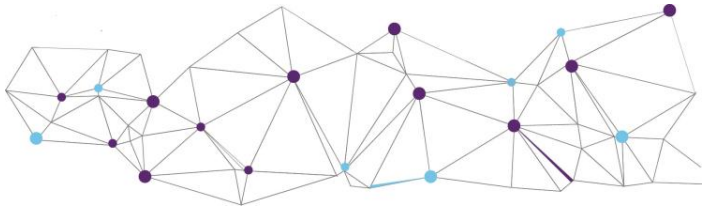

EVIDENCE COLLECTION

Case title: _____

Case study provided by: name, surname, institution

1. Description of community-engagement practice	
Brief description of practice *(Please use the sub-questions, if relevant.)*	
What are the main goals of the practice?	
What are the main activities?	
Who is organising the practice?	
Who initiated it?	
Web link	
How is the community/target group with which you engage involved in the implementation of this practice?	
2. Support for community engagement	
How does the university support this community-engaged practice?	
Does the organizer have a formal budget? Does the university provide facilities and/or administrative support?	
Does the practice fit in a broader strategy or framework of the organizer (the university)?	
Is it a continuous or a 'one-off' collaboration?	
Does the university give any form of recognition or promotion of the practice?	

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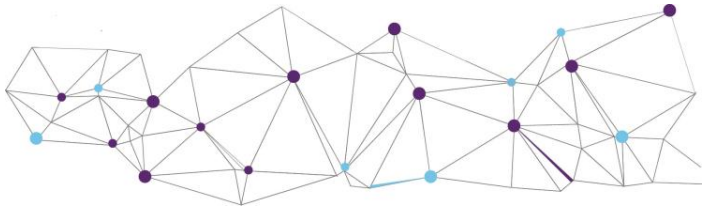

How do partners from the community support and value this practice?	
How do your peers (university staff and management) and students support and value this practice?	

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MAPPING REPORT

DIMENSION I: TEACHING AND LEARNING

Sub-dimension I.1. The university has study programmes or courses to respond to societal needs that are specific to the university's context and its external communities.

Levels of engagement	
The university has study programmes or courses that	
Level 1	...make general references to their relevance to the societal needs of the university's external communities.
Level 2	
Level 3	... include specific content or make specific links with the societal needs of the university's external communities.
Level 4	
Level 5	... are developed in cooperation with the university's external communities to address a societal need.
Achieved level and conclusions *(300 words per sub-dimension)*	
Estimate of achieved level (1-5)	

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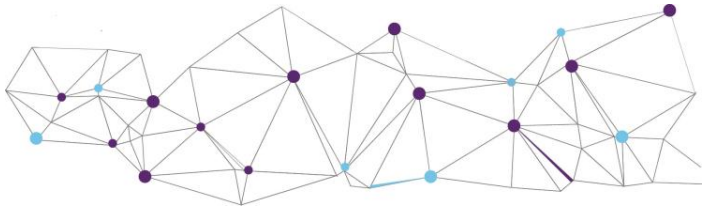

Sub-dimension I.2. The university has study programmes or courses that include a community-based learning component for students.

Levels of engagement	
Community-based learning is included in study programmes and courses at the university and...	
Level 1	.. benefits students to develop their knowledge and skills, although there is little evidence yet of their benefit for the community.
Level 2	
Level 3	... has demonstrated benefits for students and supports community partners to address a short-term problem or need.
Level 4	
Level 5	... builds capacities of community partners and bring equal benefits to the students, teaching staff and university as a whole.
Achieved level and conclusions *(300 words per sub-dimension)*	
Estimate of achieved level (1-5)	

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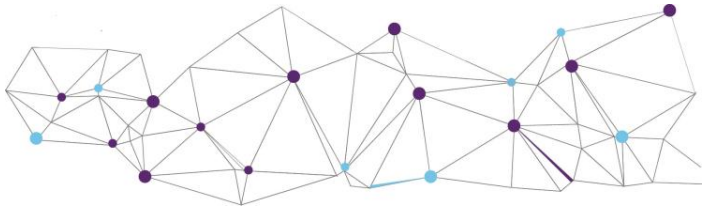

Sub-dimension I.3. The university facilitates the participation of community representatives in the teaching and learning process (in a curricular or extra-curricular context).

Levels of engagement	
External community representatives that cooperate with the university …	
Level 1	… have a partnership role that does not involve the delivery of teaching and learning.
Level 2	
Level 3	… are included occasionally in teaching and learning processes (e.g. extra-curricular guest lectures).
Level 4	
Level 5	… are included continually in teaching and learning processes (e.g. working with students on projects or research).
Achieved level and conclusions *(300 words per sub-dimension)*	
Estimate of achieved level (1-5)	

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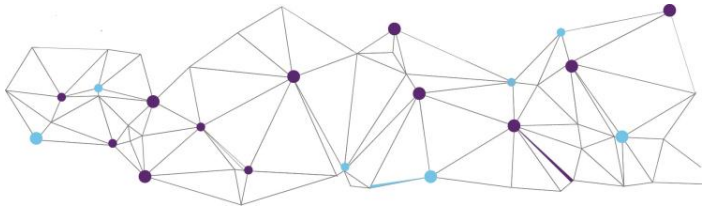

Sub-dimension I.4. The university has study programmes or courses that are created, reviewed or evaluated in consultation/cooperation with the university's external communities.

Levels of engagement	
External community representatives that cooperate with the university …	
Level 1	… are not formally consulted regarding the design of the programmes or courses with which they cooperate.
Level 2	
Level 3	… are formally consulted regarding the design of the courses with which they cooperate and their voices are taken into consideration.
Level 4	
Level 5	… co-design and co-evaluate the programmes or courses with which they cooperate.
Achieved level and conclusions *(300 words per sub-dimension)*	
Estimate of achieved level (1-5)	

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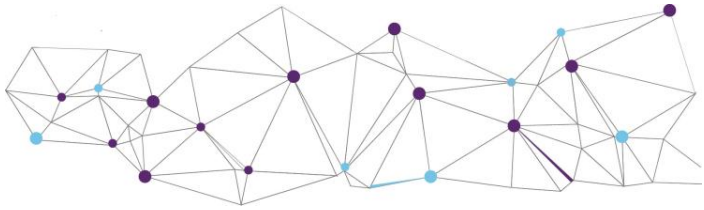

Synthesis: Community-engagement heatmap for Dimension I: Teaching and learning

Characteristics of engagement	Heatmap level					Heatmap levels criteria
	Lowest level				Highest level	
Authenticity of engagement						Lower: superficial; no evidence yet of mutual benefits Higher: authentic; tangible benefits for communities
Societal needs addressed						Lower: needs of labour market and industry Higher: 'grand challenges' (e.g. climate), social justice
Communities engaged with						Lower: well-resourced partners (e.g. business) Higher: low-resourced partners (e.g. schools, NGOs)
Institutional spread						Lower: only at one or two university departments Higher: across the entire institution
Institutional sustainability						Lower: engagement through short-term projects Higher: engagement institutionalised, adequate funding

[For each characteristic of engagement, mark with an X the heatmap level of the dimension as a whole, based on the findings of the mapping report. Insert a brief narrative explanation of the heatmap findings].

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DIMENSION II. RESEARCH

Sub-dimension II.1. The university carries out research focusing on the societal needs of the university's external communities.

Levels of engagement	
The research projects at the university that address societal needs....	
Level 1	... focus on community-specific needs and include community representatives as respondents.
Level 2	
Level 3	... include structured consultations with community stakeholders at different phases in the research process.
Level 4	
Level 5	... are developed based on a structured partnership, in which the community can co-determine the research agenda.
Achieved level and conclusions *(300 words per sub-dimension)*	
Estimate of achieved level (1-5)	

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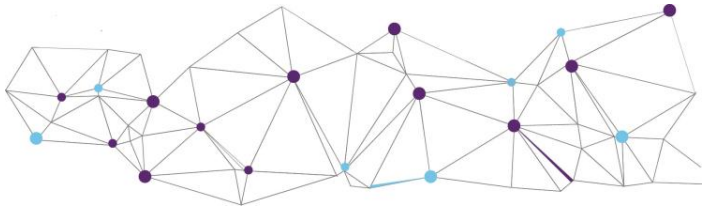

Sub-dimension II.2. The university carries out collaborative/participatory research in cooperation with the university's external communities.

Levels of engagement	
Collaborative/participatory research projects at the university…	
Level 1	… actively include community stakeholders in the process of data collection.
Level 2	
Level 3	… actively include community stakeholders' views relating to the interpretation of research results and implications for policy and/or for the community.
Level 4	
Level 5	… result in co-creation with community stakeholders (joint defining of research agenda, joint implementation and interpretation).
Achieved level and conclusions *(300 words per sub-dimension)*	
Estimate of achieved level (1-5)	

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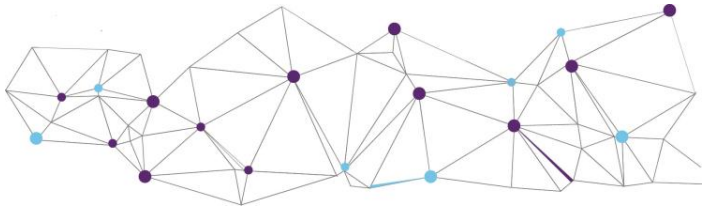

Synthesis: Community-engagement heatmap for Dimension II: Research

Characteristics of engagement	Heatmap level					Heatmap levels criteria
	Lowest level				Highest level	
Authenticity of engagement						Lower: superficial; no evidence yet of mutual benefits Higher: authentic; tangible benefits for communities
Societal needs addressed						Lower: needs of labour market and industry Higher: 'grand challenges' (e.g. climate), social justice
Communities engaged with						Lower: well-resourced partners (e.g. business) Higher: low-resourced partners (e.g. schools, NGOs)
Institutional spread						Lower: only at one or two university departments Higher: across the entire institution
Institutional sustainability						Lower: engagement through short-term projects Higher: engagement institutionalised, adequate funding

[For each characteristic of engagement, mark with an X the heatmap level of the dimension as a whole, based on the findings of the mapping report. Insert a brief narrative explanation of the heatmap findings].

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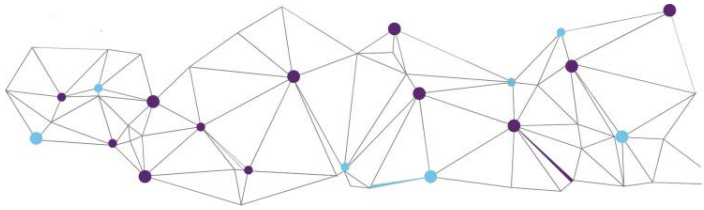

DIMENSION III. SERVICE AND KNOWLEDGE EXCHANGE

Sub-dimension III.1. University staff contribute to debates and initiatives that address societal needs of the university's external communities.

Levels of engagement	
University staff contribute to debates and initiatives that address societal needs of the university's external communities...	
Level 1	... through academic publications, public presentations and media articles.
Level 2	
Level 3	... through including community partners in university-led development projects (non-research) related to community-relevant issues.
Level 4	
Level 5	... through joint initiatives or advocacy with community groups, in which community groups are equal partners.
Achieved level and conclusions *(300 words per sub-dimension)*	
Estimate of achieved level (1-5)	

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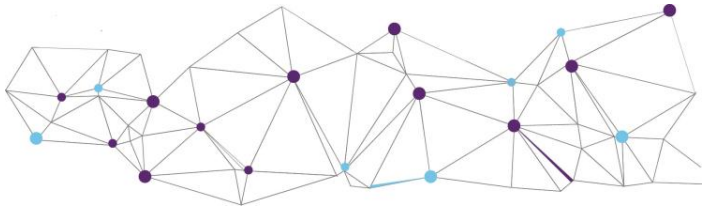

Sub-dimension III.2. University staff provide their knowledge to support and/or build the capacity of the university's external communities.

Levels of engagement	
The university contributes to building the capacity of external community groups through …	
Level 1	… occasionally including external community groups in joint projects (as partners).
Level 2	
Level 3	… regularly providing expertise to external community groups to resolve societal needs or issues that they are faced with.
Level 4	
Level 5	… continually supporting external community groups to develop their knowledge and skills and strengthen their ability to resolve challenges that they are faced with.
Achieved level and conclusions *(300 words per sub-dimension)*	
Estimate of achieved level (1-5)	

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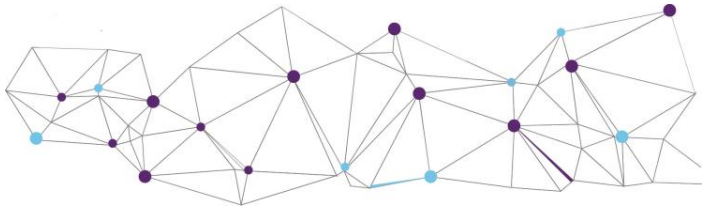

Sub-dimension III.3. University staff community-engagement activities have resulted in demonstrable benefits for the university's external communities

Levels of engagement	
The ways in which external communities benefit from service and knowledge exchange activities are …	
Level 1	… assumed, but not explicitly evaluated (quantitatively or qualitatively).
Level 2	
Level 3	… acknowledged through positive feedback from community stakeholders.
Level 4	
Level 5	… proven through tangible changes and improvements to public policy and/or to the communities involved.
Achieved level and conclusions *(300 words per sub-dimension)*	
Estimate of achieved level (1-5)	

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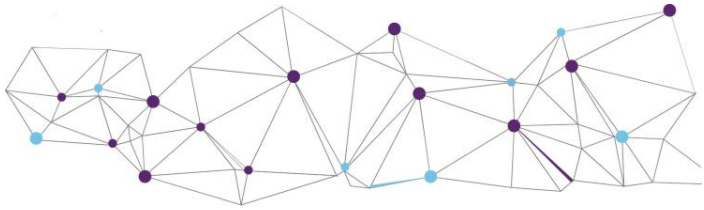

Synthesis: Community-engagement heatmap for Dimension III: Service and knowledge exchange

Characteristics of engagement	Heatmap level					Heatmap levels criteria
	Lowest level				Highest level	
Authenticity of engagement						Lower: superficial; no evidence yet of mutual benefits Higher: authentic; tangible benefits for communities
Societal needs addressed						Lower: needs of labour market and industry Higher: 'grand challenges' (e.g. climate), social justice
Communities engaged with						Lower: well-resourced partners (e.g. business) Higher: low-resourced partners (e.g. schools, NGOs)
Institutional spread						Lower: only at one or two university departments Higher: across the entire institution
Institutional sustainability						Lower: engagement through short-term projects Higher: engagement institutionalised, adequate funding

[For each characteristic of engagement, mark with an X the heatmap level of the dimension as a whole, based on the findings of the mapping report. Insert a brief narrative explanation of the heatmap findings].

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DIMENSION IV. STUDENTS

Sub-dimension IV.1. Students deliver community-engagement activities independently through student organisations or initiatives.

Levels of engagement	
Students deliver community-engagement activities through...	
Level 1	... awareness-raising campaigns to address community needs.
Level 2	
Level 3	... organising direct assistance to community groups in need (e.g. fundraising; organising charitable events; volunteering in schools).
Level 4	
Level 5	... partnerships with community groups to jointly address problems in the community.
Achieved level and conclusions *(300 words per sub-dimension)*	
Estimate of achieved level (1-5)	

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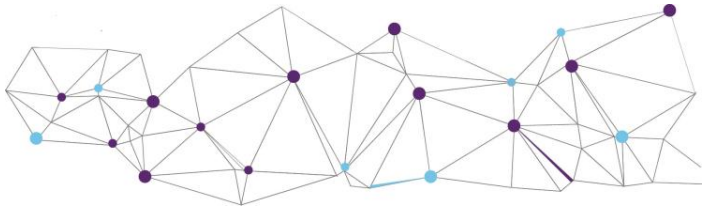

Sub-dimension IV.2. The university facilitates and supports partnerships between students and external communities

Levels of engagement	
The university facilitates and supports partnerships between community groups and students ...	
Level 1	... by providing information on extra-curricular activities to address community needs.
Level 2	
Level 3	... by supporting students in organising extra-curricular activities for community engagement.
Level 4	
Level 5	... by jointly designing extra-curricular opportunities to support students' community engagement.
Achieved level and conclusions *(300 words per sub-dimension)*	
Estimate of achieved level (1-5)	

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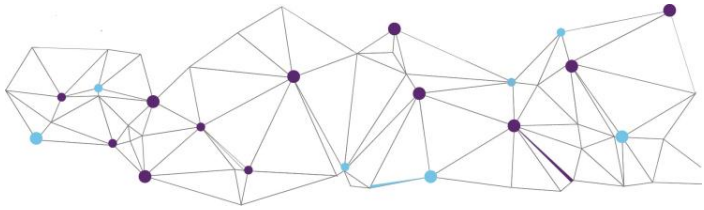

Synthesis: Community-engagement heatmap for Dimension IV: Students

Characteristics of engagement	Heatmap level					Heatmap levels criteria
	Lowest level				Highest level	
Authenticity of engagement						Lower: superficial; no evidence yet of mutual benefits Higher: authentic; tangible benefits for communities
Societal needs addressed						Lower: needs of labour market and industry Higher: 'grand challenges' (e.g. climate), social justice
Communities engaged with						Lower: well-resourced partners (e.g. business) Higher: low-resourced partners (e.g. schools, NGOs)
Institutional spread						Lower: only at one or two university departments Higher: across the entire institution
Institutional sustainability						Lower: engagement through short-term projects Higher: engagement institutionalised, adequate funding

[For each characteristic of engagement, mark with an X the heatmap level of the dimension as a whole, based on the findings of the mapping report. Insert a brief narrative explanation of the heatmap findings].

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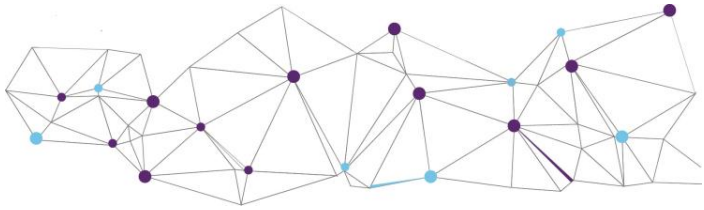

DIMENSION V. UNIVERSITY MANAGEMENT (PARTNERSHIPS AND OPENNESS)

Sub-dimension V.1. The university has a track record of mutually-beneficial partnerships with its external communities.

Levels of engagement	
The university has partnerships with external stakeholders through	
Level 1	... occasionally providing resources to community groups in need and through short-term collaborations relating to community needs.
Level 2	
Level 3	... agreements on continual areas of cooperation relating to community needs.
Level 4	
Level 5	... inclusion of community groups on university bodies that make key decisions about community engagement activities (steering groups, committees, etc).
Achieved level and conclusions *(300 words per sub-dimension)*	
Estimate of achieved level (1-5)	

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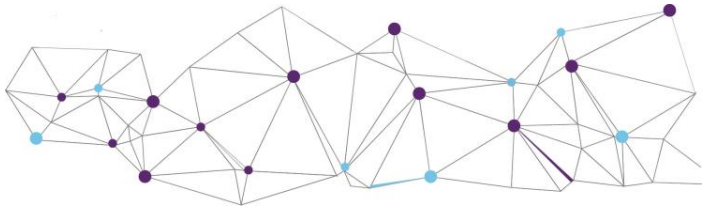

Sub-dimension V.2. The university makes learning and research resources accessible to its external communities.

Levels of engagement	
The university makes learning and research resources open and accessible to its external communities…	
Level 1	… by making educational materials open to the public via downloads and videos and by allowing open access to selected research.
Level 2	
Level 3	… by organising regular public events targeting the university's external communities (e.g. science festivals).
Level 4	
Level 5	… and can demonstrate that external communities make regular use of the university's educational/research resources.
Achieved level and conclusions *(300 words per sub-dimension)*	
Estimate of achieved level (1-5)	

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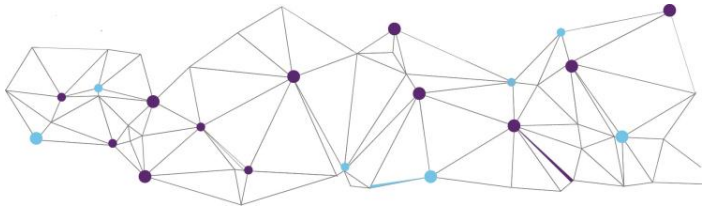

Sub-dimension V.3. The university has facilities and services that are jointly-managed and/or accessible to its external communities.

Levels of engagement	
The university has facilities and services that are	
Level 1	... accessible to the public, but rarely used by the non-university community.
Level 2	
Level 3	... accessible to the public, widely promoted and regularly used by community.
Level 4	
Level 5	... jointl -owned, shared, managed with relevant community groups and are regularly used by community-
Achieved level and conclusions *(300 words per sub-dimension)*	
Estimate of achieved level (1-5)	

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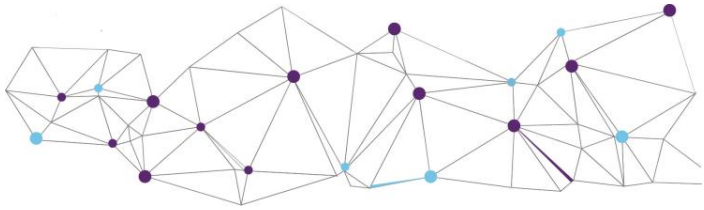

Synthesis: Community-engagement heatmap for Dimension V: University management (partnerships and openness)

Characteristics of engagement	Heatmap level					Heatmap levels criteria
	Lowest level				Highest level	
Authenticity of engagement						Lower: superficial; no evidence yet of mutual benefits Higher: authentic; tangible benefits for communities
Societal needs addressed						Lower: needs of labour market and industry Higher: 'grand challenges' (e.g. climate), social justice
Communities engaged with						Lower: well-resourced partners (e.g. business) Higher: low-resourced partners (e.g. schools, NGOs)
Institutional spread						Lower: only at one or two university departments Higher: across the entire institution
Institutional sustainability						Lower: engagement through short-term projects Higher: engagement institutionalised, adequate funding

[For each characteristic of engagement, mark with an X the heatmap level of the dimension as a whole, based on the findings of the mapping report. Insert a brief narrative explanation of the heatmap findings].

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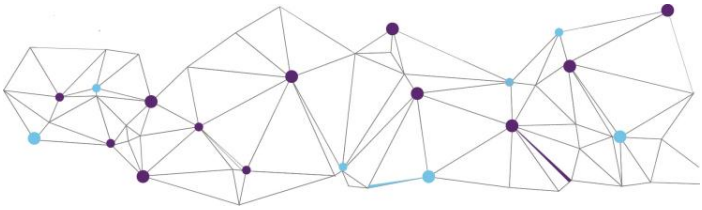

DIMENSION VI. UNIVERSITY MANAGEMENT (POLICIES AND SUPPORT STRUCTURES)

Sub-dimension VI.1. The university provides support and/or incentives for community-engagement achievements by its staff, students and external communities.

Levels of engagement	
The university provides support and/or incentives for community engagement …	
Level 1	… through occasional statements relating to the relevance of community engagement to the societal needs of universities' external communities.
Level 2	
Level 3	… regular and/or structured efforts to increase the visibility of achievements of the university's community engagement (via web sites, social media and/or through a dedicated office/body).
Level 4	
Level 5	… by providing formal recognition/awards for community engagement and/or through high-profile conferences or media promotion.
Achieved level and conclusions *(300 words per sub-dimension)*	
Estimate of achieved level (1-5)	

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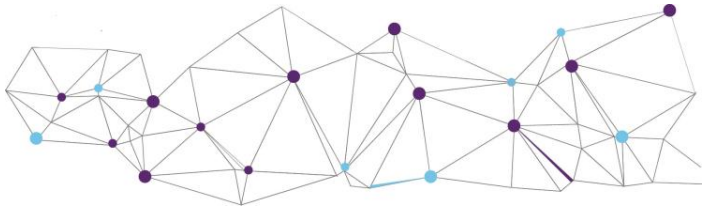

Sub-dimension VI.2. The university has a support structure (e.g. committee, office or staff) for embedding and coordinating community engagement activities at the university level.

Levels of engagement	
There is a university structure that addresses/ supports community engagement in the form of…	
Level 1	… a working group or advisory body that covers "university engagement" in its broadest sense (third mission, business engagement, civic role, etc.)
Level 2	
Level 3	… a university committee specifically focused on improving university-community engagement.
Level 4	
Level 5	… a high-level university body incorporating community partners to jointly oversee and plan community-engagement activities.
Achieved level and conclusions *(300 words per sub-dimension)*	
Estimate of achieved level (1-5)	

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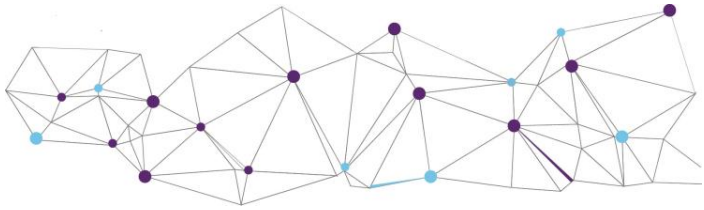

Sub-dimension VI.3. The university has staff development policies (e.g recruitment, tenure, promotion) that include community engagement as a criterion.[1]

Levels of engagement	
University policies relating to recruitment, tenure and promotion…	
Level 1	… do not yet include evaluation criteria specifically related to community engagement.
Level 2	
Level 3	… does include evaluation criteria specifically related to community engagement, although not within the evaluation criteria relating to the categories research and teaching.
Level 4	
Level 5	… prioritise community engagement by providing additional weights for community-engagement achievements in recruitment and evaluation processes, including within research and teaching.
Achieved level and conclusions *(300 words per sub-dimension)*	
Estimate of achieved level (1-5)	

[1] Assuming that the university is able to add complementary criteria to those that are set through national legislation.

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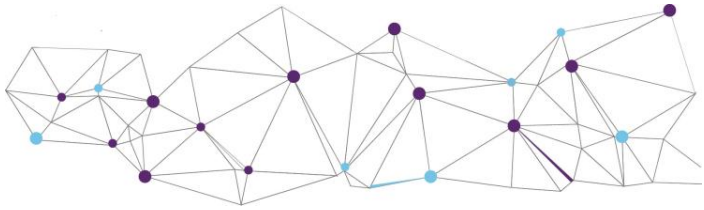

Sub-dimension VI.4. The university has a mission, strategy, leadership and (funding) instruments that specifically promote community engagement.

Levels of engagement	
The university's mission, strategy and leadership …	
Level 1	… indirectly support community engagement through a general reference to the university's role in addressing societal needs.
Level 2	
Level 3	… specifically emphasise the university role in addressing societal needs and serving the local community (without specifically mentioning community engagement).
Level 4	
Level 5	… explicitly prioritise community engagement as within its mission and have concrete engagement initiatives in place.
Achieved level and conclusions *(300 words per sub-dimension)*	
Estimate of achieved level (1-5)	

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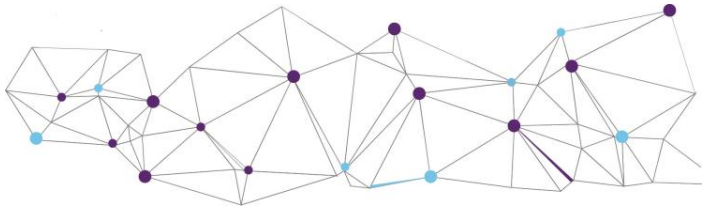

DIMENSION VII. SUPPORTIVE PEERS

Sub-dimension VII.1. The university has prominent academic staff members that have a strong track-record of community engagement and that advocate for its further advancement.

Levels of engagement	
Academic staff at the university play a prominent role in advocating and advancing community engagement and have a strong track-record of community engagement…	
Level 1	… in at least one university department.
Level 2	
Level 3	… at several university departments.
Level 4	
Level 5	… at most university departments.
Achieved level and conclusions	
Estimate of achieved level (1-5)	

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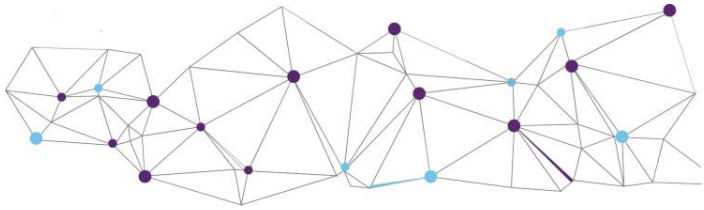

Sub-dimension VII.2. The university's academic staff are acceptive of the idea of university-community engagement and of the value and rigour of community-based teaching and research.

Levels of engagement	
Academic staff both within and outside the unit(s) where community-engaged activities are organised …	
Level 1	… have little understanding and/or express little support for community-based teaching or research.
Level 2	
Level 3	… express limited support for community-based teaching or research.
Level 4	
Level 5	… express strong support for community-based teaching or research and recognise the value and rigour of community-based teaching and research
Achieved level and conclusions	
Estimate of achieved level (1-5)	

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INSTITUTIONAL COMMUNITY-ENGAGEMENT HEATMAP

1	2	3	4	5

Dimensions of community engagement	Characteristics of community engagement: Authenticity	Societal Needs	Communities	Spread	Sustainability
I. Teaching and learning					
II. Research					
III. Service/knowledge exchange					
IV. Students					
V. Management (partnerships)					
VI. Management (policies)					
VII. Peer support					

Instructions: Using the Excel sheet template table (available upon request at iro@iro.hr), enter for each dimension and for each characteristic of engagement a value from a scale 1-5 corresponding to the colour selected from the 5-level colour scale in the mapping report. The colour of each cell will change depending on the value entered, but the actual values in the final table will remain hidden.

The heatmap is focused on the dimensions of community engagement activities. The dimensions that relate to the supportive environment for community engagement (Dimensions VI – Management/policies; and Dimension VII - Supportive peers) are only subject the 'Authenticity' characteristic of the heatmap since those dimensions relate to ensuring the institutional conditions for engaging with communities rather than on engagement activities.

TEFCE
Toolbox_institution

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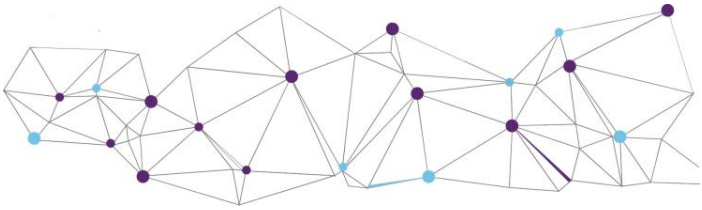

'SLIPDOT' ANALYSIS

Areas of **S**trength	Areas of **L**ower **I**ntensity	Areas with **P**otentia**l** for **D**evelopment
Areas where the university is doing particularly well in terms of community engagement.	*Areas of community engagement that are not highly developed at the university (due to it not yet being a priority, due to limited capacity or other reasons).*	*Areas of community engagement that the university could realistically improve in the future.*

Opportunities	**T**hreats
Internal: *e.g. Level of support among leadership and academic staff*	Internal: *e.g. Level of support among leadership and academic staff*
External: *e.g. Level of community support; in line with national policy; availability of funds and programmes (at the national and European level)*	External: *e.g. Level of community support; in line with national policy; availability of funds and programmes (at the national and European level)*

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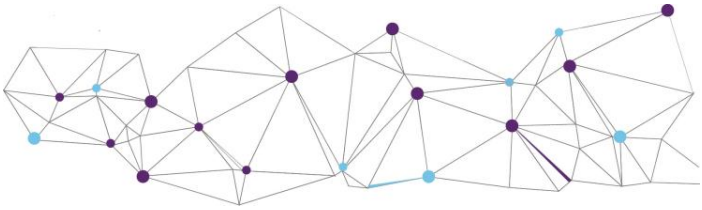
TEFCE

Towards a European Framework for Community Engagement in Higher Education



INSTITUTIONAL REPORT

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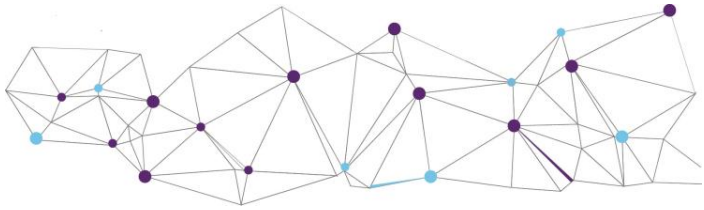
TEFCE
Towards a European Framework for Community Engagement in Higher Education



Title page

COMMUNITY ENGAGEMENT AT THE UNIVERSITY OF_____

RESULTS OF TEFCE TOOLBOX IMPLEMENTATION

LOGO OF UNIVERSITY

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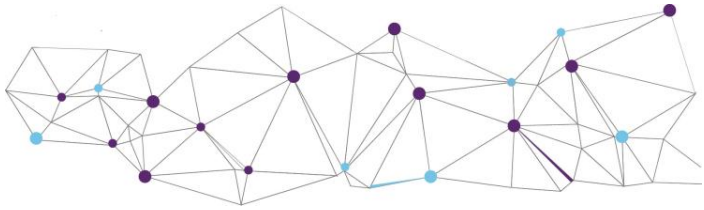

PREFACE

Consider the option for a senior management member to provide a preface supporting the conclusions of the report.

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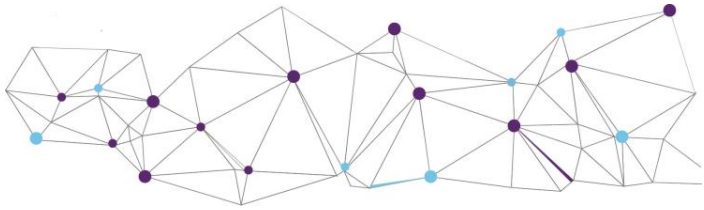

EXECUTIVE SUMMARY

One-two page summary of the report's main content with primary focus on the SLIPDOT recommendations.

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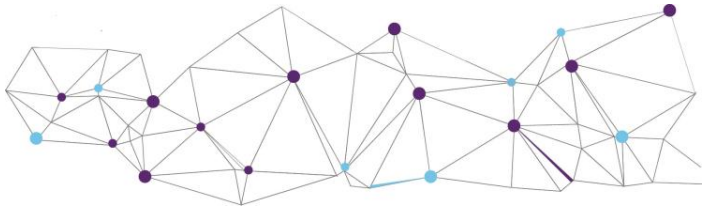

1. INTRODUCTION

Local team to provide more info below on how the TEFCE Toolbox was implemented.

About the TEFCE Toolbox for community engagement

The TEFCE Toolbox is both a reference tool to understand the dimensions of community engagement in a university context and a framework for universities to determine how well they perform according to each dimension and to identify define where they can improve. The TEFCE Toolbox allows universities to:

- **better understand** the different dimensions and levels of community engagement;
- **discover and map** their existing community-engagement practices;
- **identify and raise the visibility** of good practices of community engagement at the university;
- **reflect** upon how community-engaged the institution as a whole currently is by determining what kind of community engagement is taking place and its level of development;
- **plan** future improvements for furthering university-community engagement.

Community engagement in higher education refers to a wide variety of activities. The TEFCE Toolbox maps five thematic dimensions within which university-community engagement activities can take place:

- Teaching and learning
- Research
- Service and knowledge exchange
- Student initiatives
- University management (partnerships and openness).

The TEFCE project also identifies two dimensions of a supportive environment for community engagement:

- University management (policies and support structures)
- Supportive peers.

The TEFCE Toolbox is thus structured around a total of 7 thematic dimensions of community engagement (each with 2 to 4 sub-dimensions, thus resulting in with a total of 20 sub-dimensions).

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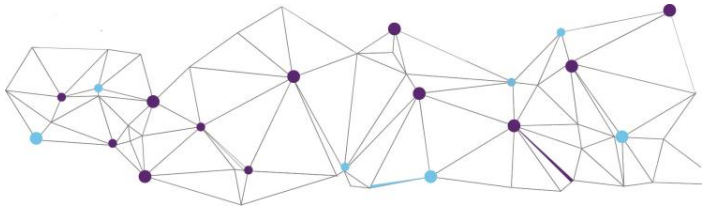

The Toolbox itself is applied through a series of steps to be undertaken by participating universities:

1. Quick scan	Initial discussion by university/community team on the type and extent of community engagement at the university.
2. Evidence collection	Collecting stories of community-engaged practitioners throughout the university.
3. Mapping report	Using a TEFCE Toolbox matrix to map the level of community engagement of the university and to identify good practices, resulting in a background report.
4. Participative dialogue	Open discussions among university management, staff, students and the community on strengths and areas of improvement.
5. Institutional report	Promoting good practices and impact, and critical self-reflection for planning improvements to university-community engagement.

Toolbox piloting methodology

Acknowledgements

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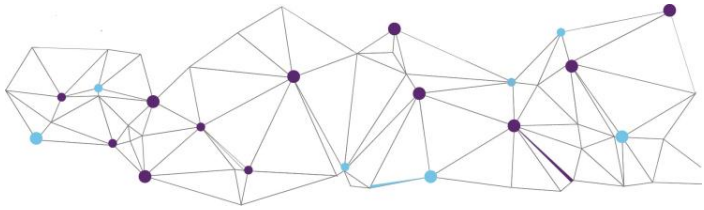

2. INSTITUTIONAL OVERVIEW

About the University of _____

Introduction to the university, its profile and its history of community engagement.

Selection of flagship community engagement practices

Selection of 3-4 practices from the case studies that illustrate different ways in which the university is community-engaged. These are not „best“ practices, just an illustration of the diversity of innovative practices that exist.

We recommend to place the content as separate boxes with content that can be copy-pasted from the „brief description“ section of the case studies included in the Annex.

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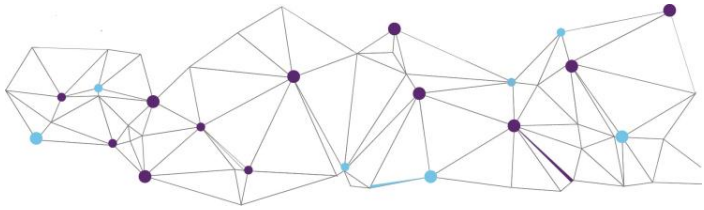

3. MAPPING PRACTICES

Main part of report. Copy-paste final version of Mapping Report completed in Stage 3 of the TEFCE Toolbox process, showing results dimension by dimension and the overall institutional heatmap.

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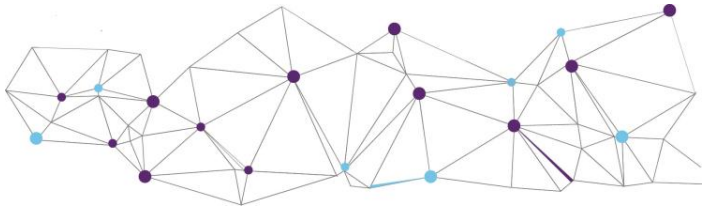

4. SELF-REFLECTION

Based on the mapping report prepared above, a series of workshops and structured discussions were organised with stakeholders at the University of ____ . The purpose of the discussions was to ascertain whether the mapping report captured the reality of community engagement at the University and to reflect upon both the achievements and the areas for improvement in terms of the University's community engagement.

The framework for the self-reflection was a so-called 'SLIPDOT analysis'. Developed by the TEFCE project, the SLIPDOT analysis follows the core structure of a SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) but replaces the term 'Weaknesses' by two categories: 'Lower Intensity' and 'Potential for Development'. It also re-frames Opportunities and Threats as not only being external (as in a SWOT analysis), but also as encompassing elements that are *internal* to the university, but that are outside the control of community-engaged practitioners (meaning that they mostly refer to university management).

Areas of **S**trength	Areas of **L**ower **I**ntensity	Areas with **P**otential for **D**evelopment
Areas where the university is doing particularly well in terms of community engagement.	*Areas of community engagement that are not highly developed at the university (due to it not yet being a priority, due to limited capacity or other reasons).*	*Areas of community engagement that the university could realistically improve in the future.*

Opportunities	**T**hreats
Internal: *e.g. Level of support among leadership and academic staff*	Internal: *e.g. Level of support among leadership and academic staff*
External: *e.g. Level of community support; in line with national policy; availability of funds and programmes (at the national and European level)*	External: *e.g. Level of community support; in line with national policy; availability of funds and programmes (at the national and European level)*

The participants of the SLIPDOT workshop were the following:

Local stakeholders	*International experts*
• …	• …

The conclusions of the SLIPDOT analysis are presented below and provide a basis for further discussions about how to improve the community engagement at the University of _____.

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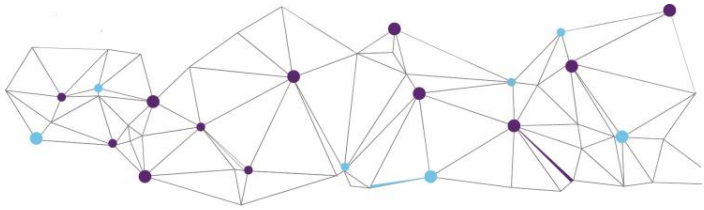

Strengths

- ...
- ...

Lower intensity

- ...
- ...

Potential for Development

- ...
- ...

Opportunities

Internal opportunities

- ...
- ...

External opportunities

- ...
- ...

Threats

Internal threats

- ...
- ...

External threats

- ...
- ...

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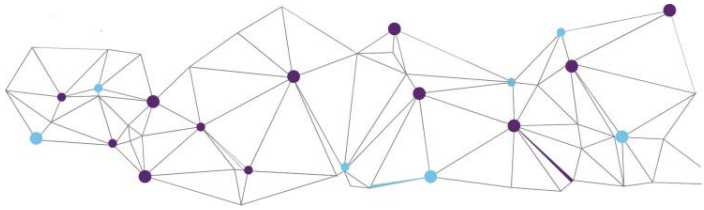

APPENDIX: CASE STUDIES

1. .....

Case study provided by: name, surname, institution

1. Description of community-engagement practice	
Brief description of practice *(Please use the sub-questions, if relevant.)*	
What are the main goals of the practice?	
What are the main activities?	
Who is organising the practice?	
Who initiated it?	
Web link	
How is the community/target group with which you engage involved in the implementation of this practice?	
2. Support for community engagement	
How does the university support this community-engaged practice?	
Does the organizer have a formal budget? Does the university provide facilities and/or administrative support?	
Does the practice fit in a broader strategy or framework of the organizer (the university)?	
Is it a continuous or a 'one-off' collaboration?	
Does the university give any form of recognition or promotion of the practice?	
How do partners from the community support and value this practice?	

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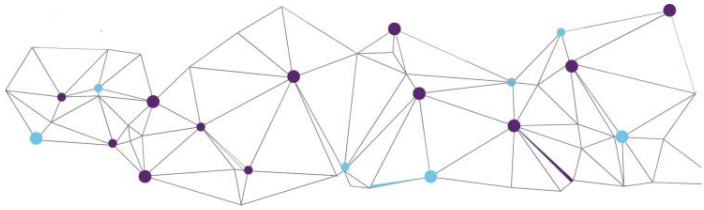

How do your peers (university staff and management) and students support and value this practice?	

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CS TRACK
Investigating Citizen Science

Horizon 2020 / Science with and for Society Programme
Grant agreement number: 872522

White paper: Themes, objectives and participants of citizen science activities

D4.2

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 872522.

The European Commission's support for this project does not constitute an endorsement of the contents, which reflect the views only of the partners, and the Commission cannot be held responsible for any use which may be made of the information contained.

Title of project	CS Track
Full title of project	Expanding our knowledge on citizen science through analytics and analysis
Title of this document	White paper: Themes, objectives and participants of CS activities
Number of this document	D4.2
Dissemination level	Public (PU)
Due date	31 March 2021
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Executive summary	With this summary, CS Track briefly summarises the main characteristics of the themes, objectives and participants of citizen science activities. This introduction to these topics will inform the development of policy recommendations and best practice manuals for the vastly expanding citizen science field.

Table of Contents

1. A short introduction to citizen science

In short, citizen science (CS) refers to the production of scientific knowledge by non-professionals, for example by amateurs who work as a part of a larger community (Leach et al., 2020). CS activities typically include gathering samples, classifying pictures, analysing data, discussing results or managing CS projects. The extent of amateur science is vast: for example, volunteers observe air quality in Helsinki's heavy traffic areas, locate invasive plant species in their backyards in Brussels and report symptoms of possible COVID-19 infections in Madrid. In short, the diversity of CS reflects the diversity of those who practise it and their societies. A classic example of citizen scientists are birdwatchers, whose efforts on tracking the movements of populations have been an invaluable part of our scientific understanding of birds throughout the 20th and 21st centuries. Indeed, through most of written human history, science has been practised and progressed by non-professional enthusiasts.

Originally, the term citizen science originated from two independent concepts: 1) CS as a tool for social justice, public engagement, equity and democratising science; and 2) CS as projects to which non-professional scientists voluntarily contribute scientific data. However, there is still no one agreed meaning for CS, and the terminology describing volunteer contributions to science is very diverse. Further study of the CS concept can be found in D1.1 (Strähle & Urban, to be published).

CS projects are helping us to further understand phenomena that are complex, labour-intensive and global. For example, with projects like Foldit (https://fold.it/), individuals can further their own and the science community's understanding of the structure of viruses like COVID-19 in an engaging game format. Projects like ISeeChange (https://www.iseechange.org/), provide a platform to report and share unusual local weather phenomena, thus helping to better combat the catastrophic effects of the climate crisis on human societies and on Earth's ecosystems. At its best, CS is a powerful tool that enables

humanity to use its diverse skills in thinking and observation to aid global and cross-species well-being.

In this paper, we introduce the main and emerging themes of CS (section 2), the objectives of CS projects (section 3) and the people involved in CS (section 4), based on existing literature and the grounding theoretical work conducted in CS Track (D1.1).

2. Main and emerging themes of European CS projects

In the last two decades, the use of CS has markedly increased, both in amount and the attention it has received from professional scientists and policymakers (Liu et al., 2017). The main CS project themes tend to be from agricultural, biological and environmental sciences, but there are a growing number of other disciplines in the field (Figure 1). An increasing number of projects are hosted virtually or have online components and technology implemented in them, which adds to the diversity of the field. Modern technology has not only increased the attention CS has received but also increased participation rates (Aristeidou et al., 2017).

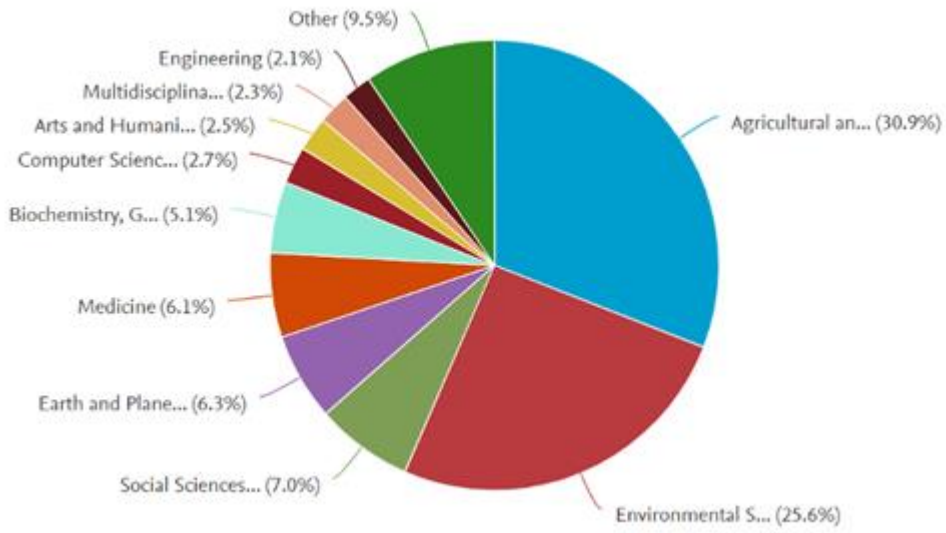

Figure 1: Thematic distribution of review articles in Scopus, as displayed in the D1.1 see subsection 4.4.2 Enablers, barriers, incentives, disincentives for the mainly involved persons by Lampi, Lämsä and Hämäläinen (to be published).

Some scientific fields are especially dependent on research by amateurs. For example, environmental sciences place a strong emphasis on the production of knowledge by amateurs, enthusiasts and hobbyists. The preservation of endangered large mammals, such as wolves, often rests on the information gathered by enthusiasts. Currently, there are simply insufficient financial resources available to collect the vast amounts of data needed without the help of unpaid citizen scientists (Kobori et al., 2016). Keeping this in mind, citizen scientists' work is a crucial link in the production of scientific knowledge, which may also be used to advise research-based policy decisions.

CS and CS activities have been boosted [or invigorated] by the widespread availability of smartphones and related technologies. Nowadays, CS often requires no equipment besides a smartphone. This ever-present device is a boon, especially in fields that benefit from reporting while on the move or for projects that utilise photos alongside GPS data. Accordingly, CS activities have diversified, and new project themes have emerged in addition to birdwatching and amateur astronomy, which have historically been at the forefront of citizen science projects. These emerging themes include applied sciences like engineering, medicine, and government policy-related fields (Leach et al., 2020; see Figure 1). For example, in healthcare, citizen scientists are teaching computer programs to recognise diabetes-related damage to the retina to prevent and diagnose this disability-causing condition. Citizen scientists are also reporting small, everyday things that support and uphold crucial public infrastructure, such as mapping potholes.

A survey conducted by CS Track in the first quarter of 2021 investigated citizen science activities in Europe and beyond. Preliminary results from this survey show that citizen scientists are working in emerging fields like engineering and in other multidisciplinary fields. For example, in the CitieS-Health project, citizen scientists are working to find out how pollution in their environment affects their health (https://citieshealth.eu/). In the CrowdWater project (https://crowdwater.ch/en/welcome-to-crowdwater/), citizen scientists are observing and logging data concerning floods and droughts to better understand their mechanisms and effects. Projects like these have benefited greatly from new platforms and

apps, which enable the gathering of data in unforeseen ways and quantities. Moreover, instead of being restricted to monodisciplinary CS projects, solving wicked problems (such as pandemics or climate change) requires multidisciplinary research collaboration. This multidisciplinary nature of research groups is also manifested in existing CS projects, as shown by the CS Track project's ongoing research (Manske, 2021).

Taking part in CS can also work as a low-barrier introduction to various fields of science that might otherwise be out of reach or difficult to approach. Doing CS in one's chosen field also indisputably contributes to lifelong learning, which has myriad benefits, including, but not limited to, social inclusion, active citizenship and possible professional competitiveness. In the following section, we discuss the objectives of CS projects from the viewpoints of different stakeholders.

3. Objectives of CS projects

CS has enormous potential for advancing and addressing complex social and environmental problems; it benefits society, communities and participants alike. Scientists are able to conduct time-consuming and expensive projects that cannot be done without the support of citizen scientists, and citizen scientists can gain a better understanding of scientific processes. This understanding of scientific principles might prove especially helpful in times when trust in scientific processes creates social unrest, e.g., in COVID-19 related misinformation and the anti-vaccine movements. Additionally, by taking part in science, citizen scientists can further develop their skills and competences and make an impact on society and political decision-making. Generally, CS projects address multiple and overlapping goals that vary from monitoring and research to education, public outreach, social justice and societal change.

The general objectives of CS can be considered from various different viewpoints. First, citizens are participants in CS projects, which can include anything from wildlife observation in one's local area to folding proteins in a gamified manner from the comfort of one's own home. Second, from the viewpoint of researchers and research institutions, both have a stake

in CS activists to produce, process and manage data that can later be used in scientific research. Third, the goals of societies, policymakers and local communities benefit directly and indirectly from the communication and mutual learning between lay and professional people. For a more in-depth discussion of CS, the reader is encouraged to consult D1.1 Framework Conceptual Model by Strähle & Urban (to be published).

3.1 Participants

To maximise the benefits of CS projects for all involved parties, it is vital to understand why people participate. For many people, the reasons are related to general interest in the theme or topic (e.g. environmental projects), a desire to help and personal growth. Additionally, meeting new people, engaging in a community and feeling like an integral part of a team or scientific process is an important motivating and engaging factor. Especially for projects that support participants' values, the opportunity for groups to come together and participate in collective change efforts can be empowering (see Table 1).

Interest in theme or topic	Desire to help	Social recognition
Monetary reward	Personal growth	Engaging in a community
Contributing to scientific research	Values	Fun and enjoyment
Benefit for career	Sharing existing knowledge with others	Possibilities to learn

Table 1. Common reasons for participating in CS projects (Lampi et al., 2020)

However, it is important to note that different people have different motivations for participating in CS; participants may hold many motivations at once, and the significance of different motivations varies across projects. Therefore, careful planning, designing and implementation of the project plays a major role in creating accessible, motivating projects that benefit everyone involved.

3.2 Scientists and research institutions

In recent years, professional scientists and research institutions have started to notice the great potential of CS at international, national and local levels (Liu et al., 2017). Using the help of citizen scientists is an opportunity to collect large amounts of information that would otherwise be costly, time-consuming or difficult to acquire. Advances in technology also allow more effortless interaction between professional and citizen scientists and enable new ways to analyse, collect and discuss ideas and practicalities related to the project. CS is also a way to enhance social interaction.

3.3 Society

Educational and outreach perspectives, which are often seen as major goals of CS programmes, are closely intertwined with societal changes and political decision-making. Goals could consist of creating data to provide evidence to influence politics, launch legal processes and advocate for local concerns, as the scope of CS can be broad enough to be relevant for issues such as conservation. Especially in the field of environmental sciences, engaging citizen scientists in research processes has often led to practical actions and positive impacts in local communities. From an educational perspective, some projects mainly aim to share knowledge or enhance informal science education.

4. People involved in CS

Science done by enthusiasts has historically been an integral part of increasing and improving scientific understanding. This holds true even in today's age of compartmentalised scientific disciplines and paid employment of professional scientists (Leach et al., 2020). Citizen scientists are not homogenous groups: they engage in CS activities for various reasons, motives and backgrounds (Ceccaroni et al., 2017), and it goes without saying that different themes, objectives and designs attract different types of people. However, understanding who participates in CS and who does not is important, as limited information restricts our understanding of the issues related to the opportunities, the barriers, the diversity and the welcoming aspects of CS.

Existing information on citizen scientists' demographics (e.g. age, gender, race, ethnicity and socioeconomic status) is very limited and hence inadequate for clear conclusions. Most studies have focused on a single project or programme, which may result in biased data: in astronomy projects, for example, an older male audience tends to be typical (Price & Lee, 2013). Moreover, some groups (such as youth) are underrepresented in the available data, which further biases the data (Pandya & Dibner, 2018). More research on the topic is much needed to better understand CS and those who take part in it.

Despite the limited research, the existing data indicates that well-educated, affluent participants seem to outnumber less affluent participants, and in many programmes male predominance has been observed. Typically, citizen scientists seem to be white, middle-aged, scientifically literate or generally interested in science or scientific topics (Blake et al., 2020; Curtis, 2018; Pandya & Dibner, 2018). At least in agricultural, biological and environmental science-based programmes, the participants have often been found to be scientists themselves, science teachers or students, conservation group members, backpackers or hikers or other outdoor enthusiasts – in other words people who enjoy nature (Cohn, 2008).

It is equally important to note who or which groups do not participate in CS. Even if projects are welcoming to everybody, certain societal or age groups may be missing from the projects – for example, the number of minority participants in CS projects is generally relatively low, making it less likely for them to reap the benefits of CS (Evans et al., 2005). Additionally, community and youth citizen science projects are underrepresented in the available data (Strähle & Urban, to be published).) Unfortunately, current data does not indicate how or if the project's scientific area is related to participant demography (Strähle & Urban, to be published).

Poor representation of genders, societal or age groups is not consistent with a democratic approach to science, and a limited diversity of citizen scientists might result in issues related to equity, diversity and inclusion (Pandya & Dibner, 2018). Obviously, the participants and who they are shape the ultimate outcomes of the project (Blake et al., 2020).

5. Conclusions

Citizen science is a complex, multi-layered phenomenon that offers a variety of opportunities for participants, scientists and societies. In addition, the CS field is equally diverse in its themes, objectives and the participants' socio-demographic backgrounds. Research into the participant demographics is crucial to maximise the potential and benefits of CS, as noted by Strähle & Urban (to be published). One of the many ways that CS track project remedies this is by conducting a survey to investigate the current state of CS and its participants in Europe and beyond. This online survey enables us to acquire much information from a large sample of people (n=1057), providing state-of-the-art knowledge about themes, such as citizen scientists' socio-demographic backgrounds. The survey results will be available in summer 2021. These results together with other CS track studies (e.g. vast data collections and analysis) will further illustrate the current state of the art regarding the themes, objectives and participants of CS activities.

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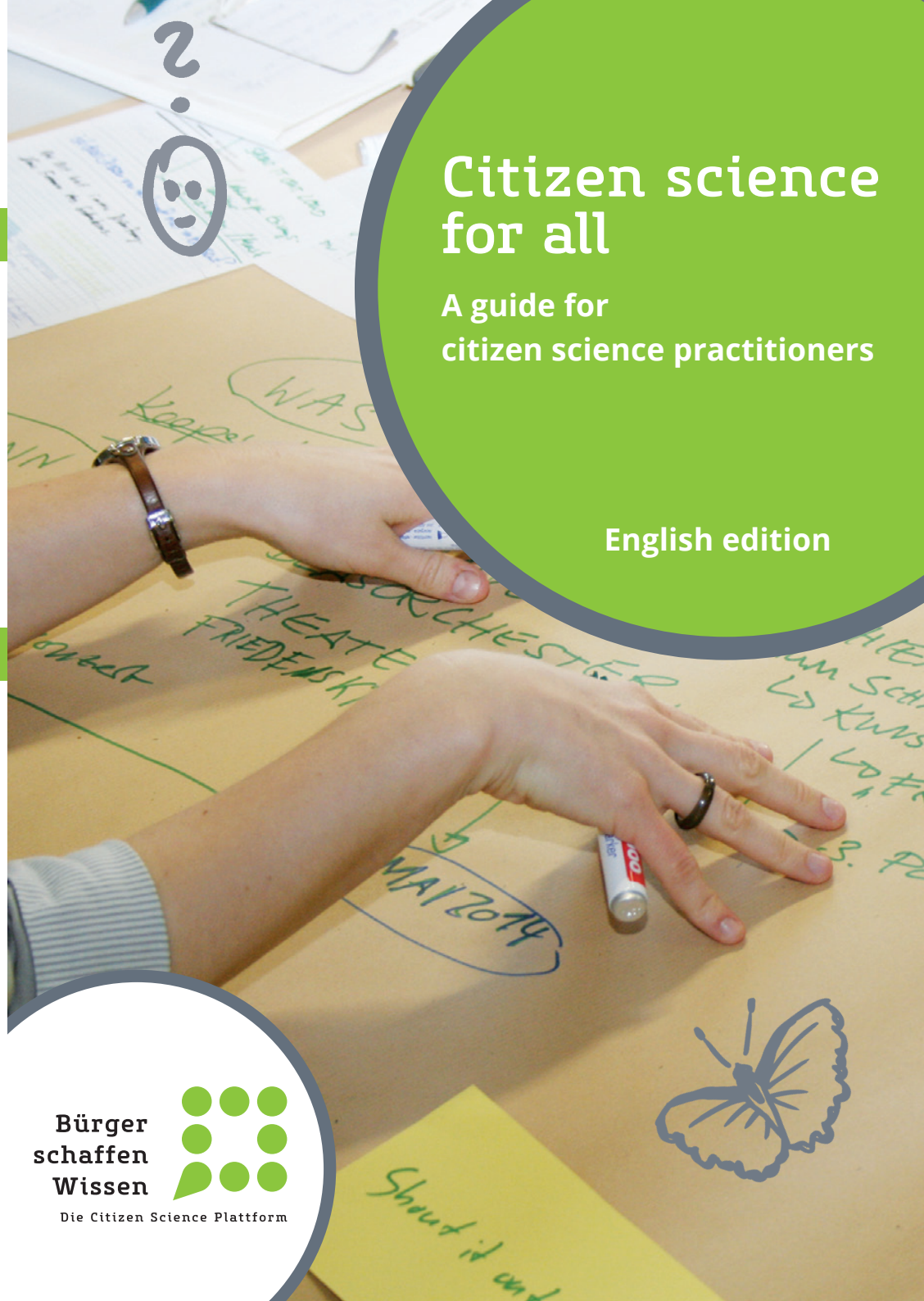

Citizen science for all

A guide for citizen science practitioners

English edition

Bürger schaffen Wissen
Die Citizen Science Plattform

Citizen science for all

A guide for citizen science practitioners

by
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GEWISS Programme

Citizens Create Knowledge – Knowledge Creates Citizens (BürGEr schaffen WISSen – Wissen schafft Bürger, GEWISS) is a capacity-building programme aimed at strengthening citizen science in Germany. The consortium project is led by institutes of the Helmholtz and the Leibniz Association with their university partners. Participating partner institutions are: the German Centre for integrative Biodiversity Research (iDiv) Halle-Jena-Leipzig together with the Helmholtz Centre for Environmental Research (UFZ) and the Friedrich Schiller University Jena; in collaboration with the Berlin-Brandenburg Institute of Advanced Biodiversity Research (BBIB) together with the Museum für Naturkunde – Leibniz Institute for Evolution and Biodiversity Science (MfN), the Leibniz Institute for Freshwater Ecology and Inland Fisheries (IGB), the Leibniz Institute for Zoo and Wildlife Research (IZW) and the Freie Universität Berlin. The Leibniz Research Alliance Biodiversity (LVB) and Wissenschaft im Dialog (WiD) are also proect partners. For more information, please go to **www.buergerschaffenwissen.de/en**.

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Disclaimer

This guide is meant to give support for the development and implementation as well as funding of citizen science projects. It draws on many years of participants' experience, discussions at GEWISS events and relevant literature in the German-speaking world. Views and opinions expressed in this publication do not necessarily reflect those of the organisations involved.

Foreword

Citizen science is a topic that is gaining attention and relevance both among practitioners and in the media. This guide describes how citizen science is practiced in Germany (Part 1: **Citizen science practice**) and how this participatory approach can be used in different research disciplines and issue areas – such as education, conservation or the arts and humanities (Part 2: **Citizen science landscape**). This guide is primarily intended for those initiating citizen science projects, but also for anyone participating in such projects. This includes scientists working in research institutions who would like to collaborate with citizens, as well as individuals and society-based groups such as independent scientific groups, associations or other NGOs.

This guide is the result of intense collaboration between a wide range of stakeholders in the citizen science community within the Citizens Create Knowledge (BürGEr schaffen WISSen, GEWISS) project. It is based on insights gained at our dialogue forums and other events. Some stories about projects were contributed from participants in our storytelling workshop and a storytelling session at the Citizen Science Forum in March 2016.

Citizen science will develop further and continue to diversify in the years ahead. We will more clearly define quality criteria and better understand how to realise citizen science projects and research with citizen science components that generate positive results for science and society. We hope to aid these efforts with our Citizen Science Wiki (**wiki.buergerschaffenwissen.de**, currently only in German). The wiki provides in-depth information on subjects that can only be touched upon here. Happy reading!

In the name of the entire GEWISS team,
Katrin Vohland and Aletta Bonn

Part I

Citizen science practice

1 What is citizen science?

This term describes an approach [2][1] where scientific insight is gained by individuals who do not work professionally in the relevant scientific field, with or without the support of professional researchers. In the dialogue process set in motion by the Citizens Create Knowledge (GEWISS) project, more than 700 individuals from over 350 organisations and a wide range of citizen science activities discussed this complex topic, resulting in the following definition of citizen science:

> Citizen science describes the engagement of people in scientific processes who are not tied to institutions in that field of science. Participation can range from the short-term collection of data to the intensive use of leisure time in order to delve deeper into a research topic together with scientists and/or other volunteers. Although many volunteer scientists do have a university degree, this is not a prerequisite for participating in research projects. However, it is important that scientific standards are adhered to. This pertains especially to transparency with regard to the data collection methodology and the open discussion of the results. [1], p. 13

Some citizen science is initiated by institutional scientists – giving citizens the opportunity to observe, for example, environmental phenomena or to analyse large datasets online. Citizen science projects are also increasingly launched by government agencies or practiced in schools. However, citizen science can also mean independent individual commitment as a volunteer, for example in independent scientific groups (Fachgesellschaften) that meet regularly on scientific topics such as amphibians or regional history, sharing information and generating new knowledge. There are also citizen science projects initiated by citizens or organised civil society who hope to use problem-focused research to transform their environment, who may involve professional scientists at different times [20].

1 All sources are cited alphabetically in the resource list and are referred to by number in the text.

All of these activities create scientific knowledge outside institutionalised science that can be fed back into the scientific community. In addition, citizen science seeks to strengthen exchange, increase access to knowledge and build common cause between science and society. This also includes open access and open science methods and the dissemination of research results to the public.

Terms such as public or civic science and amateur research are sometimes synonymous with citizen science, and terms such as do-it-yourself or DIY science, public history and transdisciplinary research share some of the characteristics of citizen science. In order to facilitate understanding including internationally, we stick to the term citizen science and use it in a wider sense to cover a wide, diverse range of activities.

Further resources

- ScienceCité hosts a Swiss platform on 'dialogue science': **www.science-et-cite.ch/en/projects/**
- The Austrian citizen science platform has many projects and further resources: **www.citizen-science.at** (GER)[2]
- The Austrian research ministry funds many citizen science projects, especially in schools: **www.sparklingscience.at/en**
- The Citizen Science Association in the USA has a variety of resources: **www.citizenscienceassociation.org**
- The German citizen science platform offers examples of projects and further information on citizen science: **www.buergerschaffenwissen.de/en**

2 Because this guide was originally written for a German-speaking audience, many of the resources here are only available in German. When possible, we provide English-language resources in this translation; those in German language are marked with '(GER)'.

2 Why citizen science? What are the advantages? What are the challenges?

Citizen science is an approach that allows public participation in science, which has many advantages [6]. It is often claimed that, depending on the nature of the project and participation, the following benefits can be achieved:

Benefits for Science	Benefits for Society	Benefits for Participants
• Inspires new research topics by inviting new ideas, questions, methods, and societal knowledge • Creates large datasets (spatially and temporally) that can be adapted to various uses • Allows diverse evaluation capacities including photos, scans and video sequences • Increases public acceptance of research results • Promotes public evaluation of research • Verifies the practical relevance and applicability of scientific results	• Generates and communicates socially relevant research topics • Allows co-creation of transparent research • Allows society to take on responsibility for research • Introduces all participants to new perspectives • Develops opportunities for societal transformation, e.g. towards sustainability • Promotes better transfer of research results into practice through early involvement of societal actors • Democratizes the discursive meaning of science • Strengthens civil society and government agencies	• Allows contributions to scientific discoveries • Improves understanding of science and sometimes advances scientific qualifications • Increases understanding of complex problems • Introduces innovative ideas into science • Facilitates participation in political decision-making through scientific contributions • Contributes ideas and suggestions for alternatives • Allows critical examination of scientific results • Promotes a better environment and a better society • Is fun and promotes sharing

Not all of these benefits have yet been realised, and it would be impossible to achieve all of these potential goals in a single project. This makes it even more important to think carefully about what goals are to be achieved in a planned project.

Citizen science is just one of many ways to include citizens in research. It may not be suitable or practical for all scientific purposes and may not always make sense for the research issues at hand. It is important as a project initiator to consider during project conception whether citizen science is the best approach. Before starting a project, the following questions should be addressed:

- Topic suitability: Who, apart from the research team, would be interested in the topic?
- Method suitability: Are the methods well suited to answering the question and compatible with citizen science?
- Special knowledge requirements: What do researchers and participants need to know and will they be able to learn this in the course of the project?
- Extra time requirements: What extra time is necessary for communication, coordination and training, including implementation of data protocols or use of apps? Are the required resources available?
- Equipment and infrastructure requirements: What resources and infrastructure are required? Are they available?
- Long-term commitment: What will happen when the project ends? How can collaborative relationships, new infrastructures and scientific results be used after the project is over?
- Legal and ethical requirements: Are there legal or ethical guidelines that need to be considered?
- Project evaluation: Who is responsible or interested in evaluating the project? What are the criteria for evaluation?

STORY

Integrating ceramics experts into an experimental archaeology project

Pottery production in the Antiquity and Middle Ages may have reached industrial scale. However, there are no reliable figures on kiln productivity and capacity. Such data would be necessary to make robust statements on the decline or survival of pottery over centuries. The Lab for Experimental Archaeology at the Romano-Germanic Central Museum (RGZM) has reconstructed working kilns of large Mayen potteries.

From the beginning, a small group of ceramics experts with experience in areas such as development aid, schools, vocational training and living history were involved in the project. For all, involvement in the project opens up opportunities for their professional training and personal education.

The technical requirements, the time commitment and personal objectives were discussed with each individual and communicated within the research group. It was important to understand that the individuals involved were not an unlimited human resource and that they should expect some benefit for themselves. It is also important to clarify the commitments that arise from the institutional setting. Although these are less exciting, they are important to understand for the project to run smoothly. In addition, knowledge of administrative issues helps ceramics experts act as the face of the institution when dealing with the public. The project has been largely successful in encouraging participants to represent the museum using their own words.

3 Initiating a citizen science project – choosing partners, methods and participants

Who can initiate a citizen science project? Anybody! All that is required is (at least) one person with an idea, a certain interest in research and enough motivation to promote the idea. This individual or group of individuals may be working as a scientist or be involved in civil society, working alone or as part of a larger team. The only prerequisite is that the idea has some scientific value.

The following points must be considered when planning a large project:

- Roles and responsibilities: Who should participate in the project and how? What part do participants play and who is responsible for what activities? Having clearly defined roles makes the project transparent.
- Clearly defined goals: What do you want to achieve with this project? It is important to define clear and concrete goals together with all participants at the beginning of the project. Having clear goals makes evaluation easier.
- Forms of participation: How many people should be involved, and how can they contribute to the project? What kind of commitment is required? Is equipment or training needed for initiators or participants?
- Clear research question: Careful consideration on the research objective in early stages prevents collection of unnecessary or unusable data.
- Legal requirements: What legal requirements for data protection, communication and the involvement of individuals or groups of individuals should be considered? Potential legal issues vary by jurisdiction and need to be clarified with a legal expert.
- Choice of methods: How will the data be collected, evaluated and published?
- Evaluation: What types of objectives should be reached and how should they be measured?

Tip: Methods

The choice of methods depends on the discipline and the research topic, as in all scientific research. A monitoring project, for example (e.g. **Butterfly Monitoring Germany**, p. 15) requires a standardised design for data collection and data storage, whereas evaluation algorithms and data infrastructures are the main concern in digital crowdsourcing projects (e.g. **ARTigo**, p. 36) . In any case, it is important to clearly describe the methods used.

STORY

BeachExplorer – an international project from the start

The idea of establishing a portal to record all beach findings in the Wadden Sea was born in winter 2006 at a meeting of the Wadden Sea education centres. The participating rangers from Denmark, Germany and the Netherlands compared notes on whale beachings and realised that there seemed to be no information exchange across borders. The idea of a trilateral Internet portal, where beached items and animals could be recorded, developed from there. The Wadden Sea Conservation Station took over the task of fundraising to put it into practice.

www.beachexplorer.org

Further resources

- Further guidelines for initiating citizen science projects can be found at: **www.citizen-science.at/citizen-science/wegweiser** (GER)
- The Centre for Ecology & Hydrology offers a best practice guide: **www.ceh.ac.uk/citizen-science-best-practice-guide**
- The Dialogic Change Model is a good resource for ensuring effective collaboration between diverse stakeholders: **www.stakeholderdialogues.net**

4 Data: Important issues for citizen science data

Citizen science projects often deal with large datasets, whether they are monitoring projects (**Butterfly Monitoring Germany**, p. 15), crowdsourcing projects (**ARTigo**, p. 36) or observational studies (**Landscape Change**, p. 32). It is important to decide before the start of a project which data can be collected, who should have which rights relating to the data and how they can be secured and made available in the long-term. Data management must be transparent at all times and comply with legal requirements. Data should be stored and managed in permanent infrastructures with availability and clarity in mind. This includes metadata (such as time, method or location of collected data). Sometimes, it is impossible to further use data without such information.

Legal framework

The following legal categories are important in connection with citizen science: copyright (especially for images/photos, text, video and audio) including the so-called 'freedom of panorama' related to property lines, sui generis database rights, freedom of information, federal and state legislation on data protection with provisions for personal data (in particular the right of informational self-determination), legislation relating to inspection of records (in particular passing on citizen science data to institutions with a statutory obligation to publish information), breach of the duty of care (e.g. in forum contributions) as well as the application of telecommunications and media legislation. Depending on the field of research, additional legislation may apply, (e.g. the Environmental Information Act or Nature Conservation Act). In addition, ethical questions such as the collection of participants' health-related data, must be considered and, where applicable, discussed in an ethics committee.

Data quality

Data quality includes validity in terms of how data reflect reality and whether they provide an answer to the research question **[14]**. A solid research design, based on a clearly formulated research question, is crucial. In practice, however, not every citizen science project begins with a clearly defined research question or is focused on data quality. Other objectives may be more important, such as scientific education or empowerment of participants.

In order to ensure scientific benefits, data quality and data protection issues must be addressed right from the start.

There are several ways to guarantee that good data are produced, included volunteer training, distribution of guidelines or manuals and development of other teaching materials. It may be critical to engage a sufficiently large number of data collectors in order to ensure that the data have sufficient resolution, both temporally and spatially. It may be beneficial to design data input protocols or data collection software that restricts data inputs (e.g. date, yes/no, numbers and pre-designed drop-down menus) in order to reduce excessive free text and resulting errors.

After data are entered, implementation of a consistency check can alert collectors of implausible or possibly faulty data and further improve data quality. Communication and feedback are important in the data revision process. Such downstream quality assurance is often carried out by experts, but mutual checks can also be carried out by all participants or automated programmes (e.g. to check for statistical outliers) [12].

Data availability and accessibility

Digital storage of data in databases is usually required in order to further use the data. Long-term data protection and storage, however, is a challenge, as storage media are constantly changing. It can be beneficial to connect larger databases to the IT infrastructure of organisations that have repositories to store and manage data for long periods of time. An overview of such repositories can be found at **www.re3data.org**.

However, availability does not necessarily guarantee that the data are usable. They must also be accessible, which means well documented and easy to interpret. Here, the use of recognised metadata standards can ensure that data with diverse structures and formats can be described in a way that ensures their long-term accessibility – and usability.

STORY

Transect mapping in Butterfly Monitoring Germany

In order to generate sufficient data on the development of common butterflies, researchers rely on the help of many volunteers. Luckily, butterflies are very popular thanks to their beauty and many naturalists are happy to give their time if it helps to protect these fascinating creatures. Citizen scientists come in all sizes and shapes: amateurs and entomologists, school children and pensioners. 'Taking a stroll for science' is the call heard by roughly 500 people who have participated in Butterfly Monitoring Germany.

In order to evaluate the data in a scientifically sound manner, it is important that they follow a common standard. A standard using line transect mapping was developed by Britain and the Netherlands, where butterflies have been counted since the 1970s or 1990s. Each participant receives detailed instructions for counting and is helped to get up to speed. The data collected are then compared with other European countries.

www.tagfalter-monitoring.de

Tip

Data quality and protection are extremely complex issues. More information can be found on the Citizen Science Wiki: **wiki.buergerschaffenwissen.de/w/Kategorie:Datensammlung_und_-verarbeitung** (GER)

Further resources

- A German report on data issues in biodiversity citizen science: Wahl, J., Wiebe, A., Grescho, Krämer, R., Schwarz, J. & Wedekind, S. (2016). *Lebendiger Atlas – Natur Deutschland: Workshop Dateninfrastruktur, Datenmanagement und Datenrecht am 10./11. März 2016 in Göttingen*. Helmholtz Centre for Environmental Research (UFZ) and German Centre for integrative Biodiversity Research (iDiv) Halle-Jena-Leipzig, Leipzig. Available online at: **www.ufz.de/lebendiger-atlas/** (GER)
- Results of a survey in Europe on the use of data by volunteers: **bookshop.europa.eu/en/survey-report-pbLBNA27920/**
- Information on the open licensing model Creative Commons: **www.creativecommons.org**
- More information on data issues in citizen science: Richter, A., Mahla, A., Tochtermann, K., Scholz, W., Zedlitz, J., Wurbs, A., Vohland, K. & Bonn, A. (2015). *GEWISS Dialogforum: Datenqualität, Datenmanagement und rechtliche Aspekte in Citizen Science*. Bericht Nr. 6. Helmholtz Centre for Environmental Research (UFZ), Leipzig; German Centre for integrative Biodiversity Research (iDiv) Halle-Jena-Leipzig, Berlin-Brandenburg Institute of Advanced Biodiversity Research (BBIB), Museum für Naturkunde (MfN) – Leibniz Institute for Evolution and Biodiversity Science, Berlin. Available online at **www.buergerschaffen wissen.de** (GER)

5 Communication and feedback

In coordinating collaborative work between different actors, it is critical to communicate well, both within the project and with the outside world. Communication can therefore take more time in citizen science than in other research projects. It is worth it to spend some thought on internal and external communication. Here, we summarise internal and external communication together, as they require similar considerations.

A communication strategy can be helpful and address the following points:

- Who are the main participants in the project? Who else is involved? Who communicates with whom? Are there specific coordinators for different working groups or tasks? Do researchers (both professional and volunteer) work independently or closely together?
- Who has the communication skills and resources to represent the project to the outside world? Can the team mobilise the support of professional science communicators (e.g. an organisation's press office or a journalist)?
- How is communication to take place? What channels are to be used, such as e-mail, workshops or regular meetings? Are there certain forms of communication or a special type of language, e.g. where teenagers or people with less formal education are involved? Are there best practice guides in the research area that could help to explain the topic to a wider audience?
- What information needs to be communicated and how often? Weekly newsletters for participants – or better monthly? Is there a helpdesk for participants to contact with questions? Does the project need a dedicated website and what functions and information should it have? Can social media reach selected target groups and how can people without Internet access be reached (e.g. through print media, radio and TV)?
- When and why should communication take place with which target groups? Is communication necessary to gain supporters or to raise funds? What exactly should be communicated and what should be left out?

How much needs to be invested in terms of time and personnel? This is often underestimated in citizen science projects.

Tip

Online tools have great potential for communication. A blog can be useful in keeping participants informed on the current stage of research. Wikis, etherpads and similar tools as well as instant messenger services (with appropriate data protection) can aid collaborative work. Offline tools can supplement digital approaches and reach people who do not have access to online media.

Citizens who freely commit their time and talents, whether to civil society or citizen science, rightly expect their efforts to be recognised. This includes giving feedback, which can take many forms. Existing projects can inspire or advise newer projects. Successful citizen science project communication means treating citizens, the media and other multipliers as equals. Here are some examples of how to promote good feedback:

- Collective publication of results (open access and in scientific journals)
- Links to national and international citizen science networks
- Naming participants in acknowledgements or as co-authors
- Sending newsletters with scientific results
- Organising events (talks, educational programmes, parties)
- Communication training for participants to share results

It is crucial in all communication efforts in a citizen science project to make it clear how the content of the project relates to citizens. What are they interested in, what makes them tick? Narratives (storytelling) may be helpful in communicating scientific content in a simple, but not simplistic, manner. Sometimes such tools have become all but indispensable in citizen science.

Press interviews and media partnerships can also be helpful in spreading news about the project and related activities. A good media partnership should find suitable interview candidates, prepare information about the project and provide suitable images. It is also important to identified a contact person for the press. Who can be press officer for what issues and who has a good media presence?

Tip

Generally, a project website is a first port of call for newcomers to a project. This means it should be clearly structured and easy to navigate. Answering the following questions can give you a head start when building your website: What is the project about? What people and institutions are involved? How can citizens participate? What will happen to the data collected? What are the benefits for participating? Who is the contact person?

Further resources

- Fundamentals of science communication: **www.aaas.org/page/communication-fundamentals-0**
- Guidelines on good public relations (PR) in science: **www.wissenschaft-im-dialog.de/trends-themen/blogartikel/beitrag/finale-version-der-leitlinien-zur-guten-wissenschafts-pr-veroeffentlicht/**
- How to carry out a usability test: **www2.bui.haw-hamburg.de/pers/ursula.schulz/webusability/quicktest.html**
- Information on storytelling methods: Pettibone, L., Grimm, M., und Ziegler, D. (2016): *Storytelling für Citizen Science: Tipps zur erfolgreichen Konzeption und Durchführung eines Storytelling-Workshops*. GEWISS-Trainingsbericht Nr. 1. Helmholtz Centre for Environmental Research (UFZ), Leipzig; German Centre for integrative Biodiversity Research (iDiv) Halle-Jena-Leipzig, Berlin-Brandenburg Institute of Advanced Biodiversity Research (BBIB), Museum für Naturkunde (MfN) – Leibniz Institute for Evolution and Biodiversity Science, Berlin. Available online at **www.buergerschaffenwissen.de** (GER)

STORY

Successful media cooperation – Foxes in the City

An increasing number of wild animals lives in the city. In addition to rabbits and wild boar, Berlin has many foxes. The project 'Foxes in the City' is run by a team of scientists at the Leibniz Institute for Zoo and Wildlife Research (IZW) to find out where and how foxes live in Berlin. The project uses not only traditional research methods such as recording movement patterns using GPS collars, but also asks citizens to take part. How do they learn about the project? The Berlin-Brandenburg public radio station (rbb) was an important supporter from the beginning. It acted as the interface between scientists and the public, sharing information and receiving fox siting reports and ideas from the public. Since spring 2015, the station has reported several times on the project on radio and TV. These efforts have reached about 320,000 viewers and listeners. Citizens can upload photos and videos and send in reports relating to the daily life of foxes in the city. Approximately 1,500 contributions have already been received and since June 2016 citizens have been able to participate in the progress of the project online on an interactive map of Berlin. **www.rbb-online.de/fuechse**

6 Evaluating citizen science projects

What makes a citizen science project a success? This sort of question is often asked as part of an evaluation process. It is important for both funding institutions [21] and organisers of citizen science projects [19] that projects meet certain quality criteria.

Still, evaluating citizen science projects poses its own challenges. Participants may have different objectives from project organisers or funders, which must be considered in the evaluation process. The types of goals pursued in existing citizen science projects often include:

- the project's scientific output
- how citizens are engaged in the research process
- educational outcomes, e.g. scientific literacy or environmental education
- increased awareness of socially relevant issues

In addition, citizen science projects must often fulfill additional requirements, such as:

- project transparency, including communicating various tasks, functions and roles in the project and the use of results
- data quality, security and privacy measures
- long-term outlook, sustainability of project outcomes and data management

In the end, participants must decide how they want to attain which objective levels. It is particularly important to communicate these objectives within and outside the project organisation. Typical steps in an evaluation process involve:

- Defining project objectives: This is best done at the beginning of the project and should important stakeholders and participants.
- Planning the evaluation: This include means clarifying the evaluation team, duration, depth, available resources, methodology, schedule and procedure (e.g. ex post or iterative evaluation). It is often helpful to evaluate a project according to criteria defined at the start of the project.
- Conducting the evaluation and analysing results
- Implementing results, potentially by adapting the project

Further resources

- Evaluation criteria for Austrian citizen science projects: Kieslinger, B., Schäfer, T., & Fabian, C. (2015). *Kriterienkatalog zur Bewertung von Citizen Science Projekten und Projektanträgen*. Im Auftrag des BMWFW. Available online at: **www.zsi.at/object/publication/3864/attach/Kieslinger_Schaefer_Fabian_CS_Kriterien_2015.pdf** (GER)
- General thoughts on citizen science evaluation: Ziegler, D., Brandt, M., & Vohland, K. (2015). Workshop: (Weiter)Entwicklung von Kriterien und Indikatoren für Citizen Science in der Forschung. In: Pettibone, L., Ziegler, D., Richter, A., Hecker, S., Bonn, A. & Vohland, K., Hrsg. *GEWISS Dialogforum: Forschungsförderung für Citizen Science*. GEWISS Bericht Nr. 7. Helmholtz Centre for Environmental Research (UFZ), Leipzig; German Centre for integrative Biodiversity Research (iDiv) Halle-Jena-Leipzig, Berlin-Brandenburg Institute of Advanced Biodiversity Research (BBIB), Museum für Naturkunde (MfN) – Leibniz Institute for Evolution and Biodiversity Science, Berlin. pp. 7–10. Available online at **www.buergerschaffenwissen.de** (GER)

7 Funding instruments

There are various options for funding a citizen science project. These include tailor-made citizen science funding programmes, such as the recently released call for bids *Richtlinie zur Förderung von bürgerwissenschaftlichen Vorhaben* (Citizen Science) by the German Federal Ministry of Education and Research (BMBF), and hybrid funding combining complementary elements from a wide range of programmes. In addition to project funding, individuals can be supported through measures such as training, taking part in workshops and being given access to infrastructure. Citizen science may also be funded in the context of other science policy initiatives, such as Responsible Research and Innovation (RRI). BMBF's budget for citizen involvement and the Preservation Nation initiative by the National Trust are other possibilities here. Here, funding decisions are made based on the project's or initiative's creativity and ability to foster innovation and creativity, regardless of issue area.

However, before searching databases for funding calls and relevant foundations, it is important to determine which parts of the project need funding. Is more staff needed to develop and manage the project, to collect data or for communication purposes? Is training required? Is more space needed? Does project infrastructure need additional resources, such as computers and lab equipment? A particular funding source may only covers specific aspects of a project's needs.

Funding options for citizen science projects

Existing funding for citizen science projects in Germany and internationally is very divers – there is a range of funding bodies. At the European level, numerous Horizon 2020 calls for project proposals that involve citizens directly or, more indirectly, help to develop methodology or social transformation. The German Federal Environmental Foundation (DBU) recently published new funding guidelines relating to citizen science projects. Other foundations support citizen science activities in specialised areas of research. Crowdfunding is also an option (e.g. through Science Starter).

Citizen science can also be funded through membership fees (e.g. **Casualty Lists in World War I**, p. 43). Other projected were kick-started by university funding (e.g. **KLEKs**). In many cases, federal and state governments, BMBF, the German Research

Foundation (DFG) or the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) can provide funding. Funding through lottery money, businesses and charities have not yet played a major role in the German-speaking world, with some exceptions: the Swiss project Flora at the Canton Zürich, **FLoZ**, is funded by lottery money (**www.floz.zbg.ch**). Cities and townships are additional potential funding sources.

How existing initiatives support citizen science

Citizen Science is increasingly seen as an important approach to knowledge transfer. By involving citizens in ways beyond traditional forms of science communication, it encourages innovation. Thus, citizen science is now mentioned within the framework of BMBF funding for sustainability research (FONA) and by the Austria's research ministry's (BMWFW) TOP Citizen Science programme.

Further resources

- Current areas receiving funding from the Deutsche Bundesstiftung Umwelt (DBU): **www.dbu.de/index.php?menuecms=2505**
- FONA, BMBF's programme for sustainability research: **www.fona.de**
- Horizon 2020, the EU Framework Programme for Research and Innovation: **ec.europa.eu/programmes/horizon2020/**
- Science Starter, a crowdfunding platform for scientific projects: **www.sciencestarter.de**
- TOP Citizen Science, run by the Austrian BMWFW, which also funds citizen science through Sparkling Science and FWF (Fonds zur Förderung der wissenschaftlichen Forschung) programmes **www.fwf.ac.at/de/forschungsfoerderung/fwf-programme/foerderinitiative-top-citizen-science/** (GER)

STORY

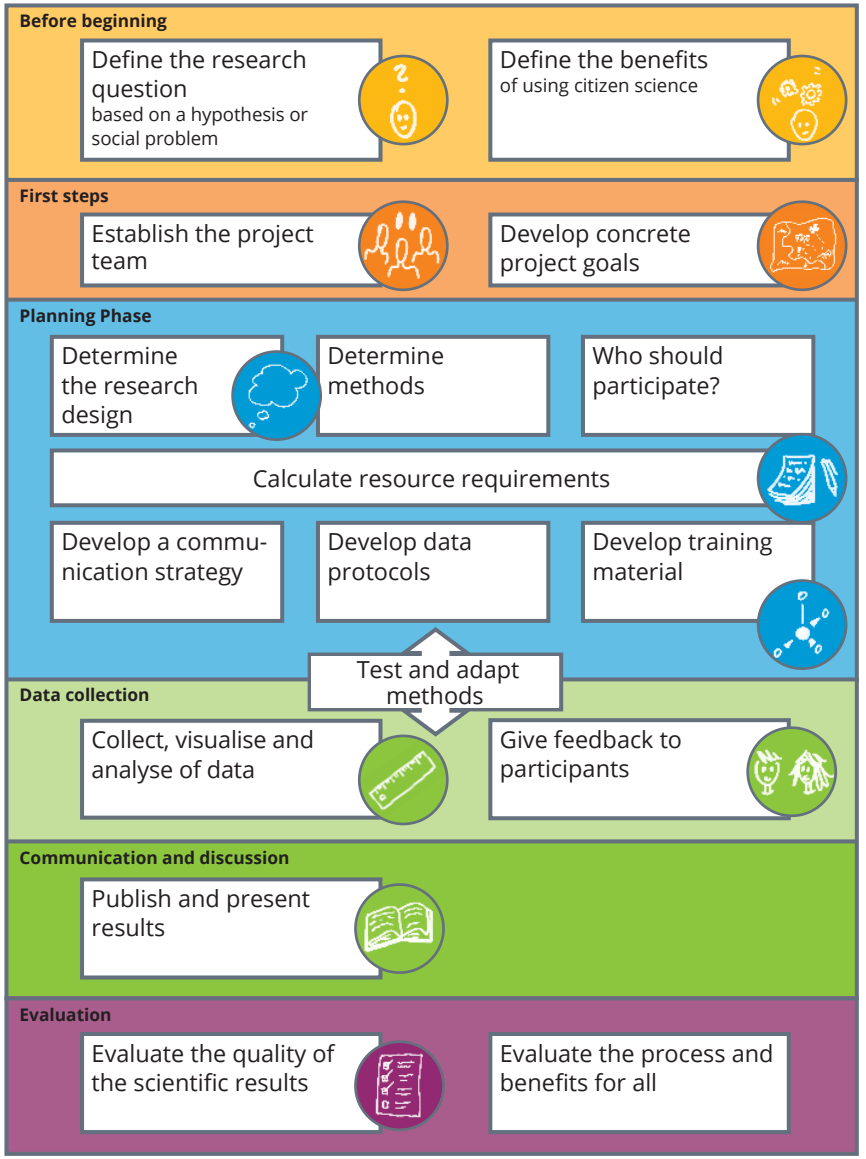
Multi-disciplinary cooperation in the Expedition to Peace project

On the 100th anniversary of the beginning of World War I, the project 'Expedition to Peace' was launched. Coordinated in collaboration with the Historisches Seminar, Lehrstuhl für Neuere und Neueste Geschichte (Chair for Recent and Modern History) and the Arbeitsstelle Forschungstransfer (AFO) at the Westfälische Wilhelms-Universität Münster (WWU), the project aimed to familiarise the interested public and students with events from World War I. It uses methods different from conventional politics and memory-driven approaches, combining art and scientific research in a very distinctive manner.

The project was conceived and organised in cooperation with academic experts from various disciplines, students, pupils and citizen researchers. In the course of the two-year project, nine events were held in five locations. "Ich sehe, was du nicht siehst" (I see what you can't see) focused on the former prisoner of war camp Haus Spital and above all what has become invisible over time. In collaboration with students and academics at the WWU, secondary school pupils took the preliminary results of their World War I history project further and showed the public where exactly the forgotten camp had been. They created an artistic memory lane on the grounds of the erstwhile camp, bringing history to life. **http://go.wwu.de/3you6**

8 How to plan a citizen science project – from start to finish!

Project task



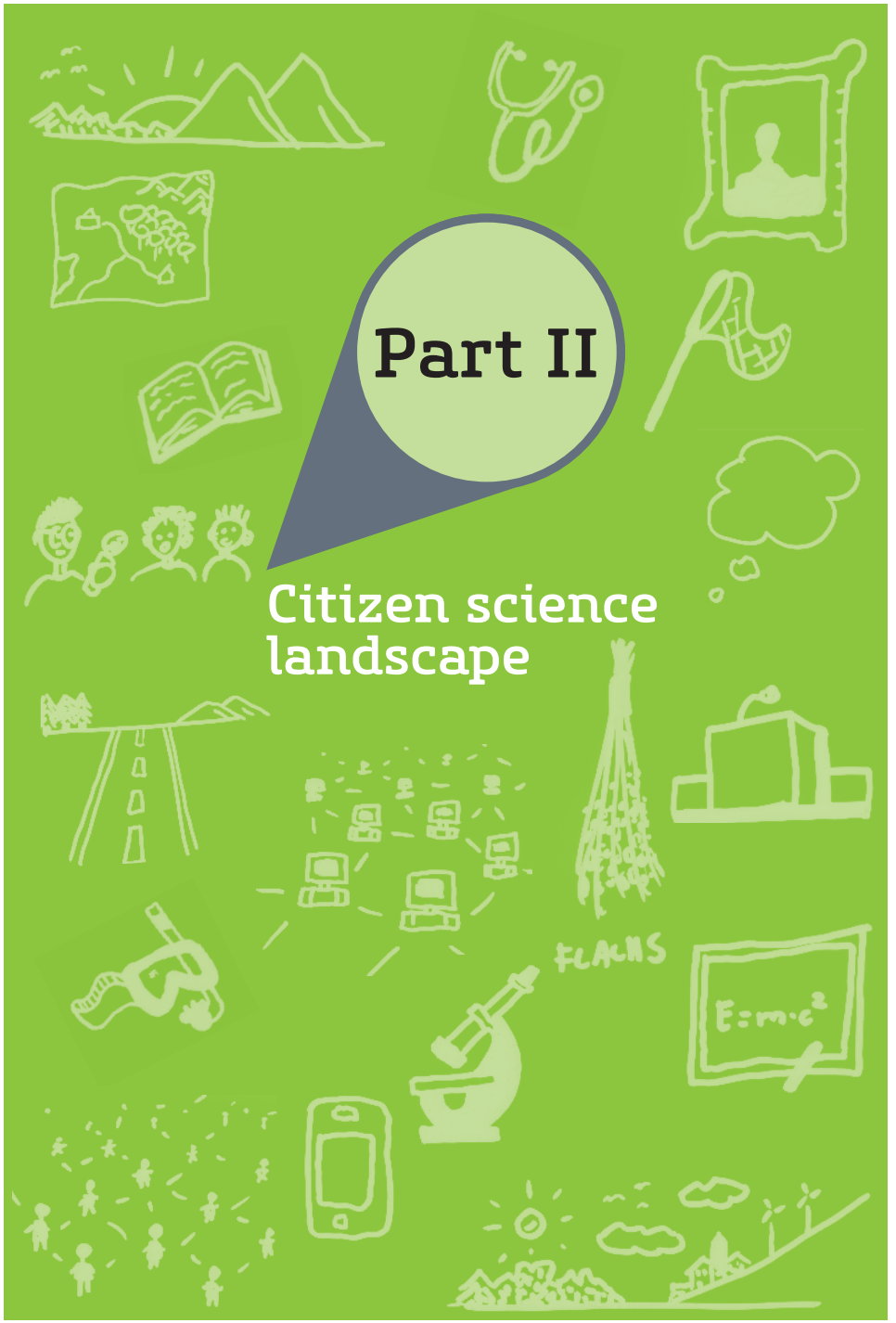
Checklist

Is there a clear research question?	☐
What is the advantage of using a citizen science approach?	☐
Are the necessary skills and interests represented?	☐
How long should the project take?	☐
What resources are required?	☐
How can participants be motivated? What are the benefits for participants?	☐
Do participants need training and if so, how?	☐
How will the project be evaluated?	☐
What infrastructures are required?	☐
Where and how will data be (permanently) stored?	☐
What licences will be used for data/ photos/reports?	☐
Who is responsible for communicating with participants?	☐
How will the results be published and what is the target audience?	☐
How can participants' role be made visible?	☐
What criteria must be fulfilled so that the project can be considered a success?	☐

A citizen science project requires resources and especially time. It makes sense to think about the whole project, from concept development, to identification of partners right through to publishing the results, early in the process. Diagram modified from [15].

Part II

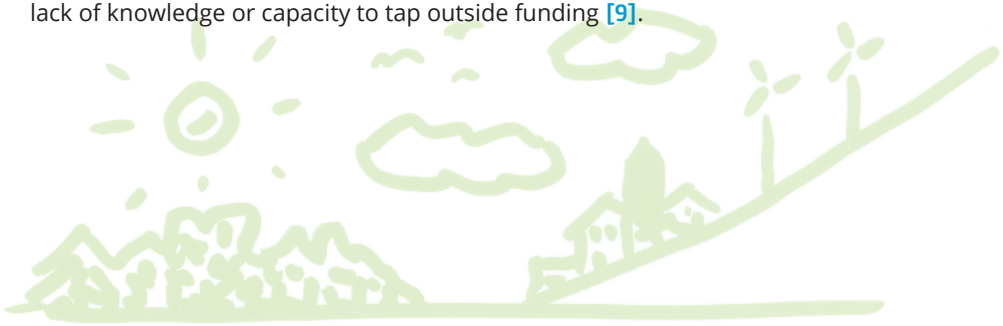
Citizen science landscape



9 Citizen science in nature conservation

Citizen science has been practised successfully in nature conservation projects in Germany, monitoring the long-term development of individual species populations and ecosystems to find out what effect environmental changes have on habitats [13]. These insights lead to recommendations for the protection and care for species, which can lead to the development of concrete policy measures and care programmes that can be implemented by the relevant authorities (e.g. nature reserves, conservation authorities and landscape management groups). Species and ecosystem data are important both in developing new recommendations and evaluating existing care and protection measures at both local and regional levels. In addition, long-term monitoring of selected species and habitats can answer more general questions, such as how climate change effects specific ecosystems or what mechanisms effect the spread of invasive species in different landscapes. Much of the data on biodiversity and the effects of biotic and abiotic factors is collected by volunteer scientists, in particular data relevant to planning for conservation of endangered species.

The large nature reserves in Germany – National Natural Landscapes – particularly biosphere reservations and national parks, serve two primarily purposes. They function as educational centres, with an education for sustainable development (ESD) and environmental education remit. At the same time, they are dedicated to the exploration and observation of nature. Their research activities, as in institutional research, can be exploratory or hypothesis-driven. Depending on the protection area and the relevant authorities, research projects may be carried out in-house or outsourced to third parties, e.g. in the form of expert assessments. The scope and depth of research are hampered by the National Natural Landscapes' insufficient financial resources, lack of knowledge or capacity to tap outside funding [9].



Citizen science can be a useful approach to tackle these challenges. A major task of citizen science projects in conservation areas is motivating and supporting volunteers with the help of professional volunteer coordinators. The volunteer programme in the National Natural Landscapes is called 'Honoring Nature – Volunteers in Parks' (*Ehrensache Natur – Freiwillige in Parks*) and has an online directory that seeks to activate volunteers for nature observation in national parks, nature reserves and biosphere reserves. Participants often ask for visualisations of the collected data. Here, the quick communication of results to participants and collaborating universities and scientific institutions is invaluable.

It is important to be aware of the different legal positions of volunteer activities in contrast to data collected for government purposes when working on private land. For example, entering forests off the main paths must be authorised by owners, users or the reserve management. The general rule is that leaving the main paths is permitted for recreational purposes only, but not for scientific work.

STORY

Remembering the countryside with Landscape Change

Can you still remember the countryside of your childhood? Rural landscapes undergo constant change, becoming increasingly homogenous, but we often don't notice. Landscape Change is a citizen science pilot project that captures the imagination of participants by recreating a collective memory of the countryside. People are asked to look through their family photo albums to find old photographs of rural landscapes and then take a new photograph from the same angle in the same spot. Citizens are also asked to decide whether the changes have been for the better or the worse, and what types of environmental change are likely to result. Scientists from the Leibniz Institute of Ecological Urban and Regional Development (IÖR) and other partner institutions will connect the landscape changes with biodiversity data to find out if there is a connection. In the test region of Saxon Switzerland, everybody got involved: old and young, experienced photographers and amateurs. We were able to reach out to a large section of the population and inspired them to contribute. The countryside seems to be something that people can relate to, something they can understand and that affects their lives. We hope to roll out our project all over Germany.

www.landschaft-im-wandel.de

STORY

Recreational divers and conservationists work together to make our lakes cleaner

Working together to protect nature is something that cannot always be taken for granted. Divers and conservationists have different, sometimes conflicting, interests. Divers often feel that conservationists want to restrict their activities. At the same time, environmentalists worry that recreational divers put their own enjoyment before conservation. The project 'Diving for Conservation' (Tauchen für den Naturschutz) has helped to change this. It enables recreational divers to assess the ecological state of the lakes where they dive. In a unified approach, divers help to record rare and threatened submerged plants and collect data about the state of their lakes, which can then be compared.

Divers benefit from the collaboration with committed conservationists. Their dives become more interesting and they become more aware of the differences between the waterbodies they dive in. The cooperation with recreational divers also aids conservation, as it provides a much more comprehensive picture of the state of the lakes than professional mapping by scientific diving teams could. There are 5,000 lakes in Brandenburg and Mecklenburg-Western Pomerania alone, 80% of which are in a sorry state. Only through cooperation can this trend be reversed.

Further resources

- A manual for citizen science nature conservation: Schierenberg, A., Richter, A., Kremer, M., Karrasch, P., & Bonn, A. (2016). *Anleitung zur Entwicklung von Bürgerwissenschafts-Projekten – Citizen Science in den Nationalen Naturlandschaften*. EUROPARC Germany, Berlin, Helmholtz Centre for Environmental Research (UFZ), Leipzig; German Centre for integrative Biodiversity Research (iDiv) Halle-Jena-Leipzig, Leipzig. Available online at: **www.buergerschaffenwissen.de** (GER)
- Volunteer programme in the German national parks *"Ehrensache Natur – Freiwillige in Parks"*: **www.ehrensache-natur.de** (GER)

10 Citizen science and education

Education and citizen science are intertwined in many ways [4, 10, 11]. Citizen science can often complement existing education frameworks such as Education for Sustainable Development (ESD). It can also be used to attain other educational objectives such as civic engagement or scientific literacy. Many citizen science projects and initiatives educate participants by promoting understanding of scientific inquiry, the research subject, the scientific method or responsible action. Citizen science's educational potential includes individual, social and institutional levels. Citizen science works along the axes of science, education and civic engagement [20].

Citizen science can make a significant contribution to the development of subject competence in citizens, i.e. lifelong learning. Projects should be planned with benefits for **all** participants in mind.

STORY

Education as empowerment in the Lesach Valley

The project 'Landscape and You-th' highlights the connection between regional experiences and cultural landscapes, focusing on flax as a crop in the Lesach Valley in Carinthia, Austria. Pupils aged between 10 and 21 record and re-enact the practical knowledge of contemporary witnesses about traditional methods of growing and processing flax. They share this knowledge through a blog, a documentary and science slams. Their research in the project familiarises pupils with scientific methods and nurtures their empathy for an older generation. The inter-generational dialogue encourages all participants to develop the project further and to engage with cultural landscapes beyond the duration of the project. **www.lesachtalerflachs.wordpress.com**

Further resources

- An education approach that promotes civic empowerment: Levinson, M. (2012). *No citizen left behind*. Cambridge: Harvard University Press.

11 Digital citizen science

Over the past decade, use of the Worldwide Web has changed dramatically, providing huge potential for citizen science. What was known as Web 1.0 relied on top-down information flows; users were rarely given the opportunity to generate content themselves [17]. The transition to Web 2.0 is driven by technological advances that allow everyone – both developers and users – to process, evaluate and share content. These changes go hand in hand with a different use of the Internet that includes a philosophy of sharing and networking.

The current popularity of citizen science can be partly explained by the availability of new technology and the new philosophy of sharing. Web 2.0 opens up new avenues of communication, collaboration and interaction for citizen science. The tools and platforms of the social web in particular have become increasingly part of academic life and revolutionised the way we communicate, collaborate and interact, leading to participation and open discourse. Wikis and blogs are widely used to communicate research ideas and even research results. Virtual research environments are being appreciated as useful workspaces.

Many successful citizen science projects in diverse subject areas – from genealogy to environmental monitoring – take place in the digital world. Projects use a wide range of approaches, from simple smartphone apps with data entry functions to serious games, where users may be unaware of the scientific purpose.

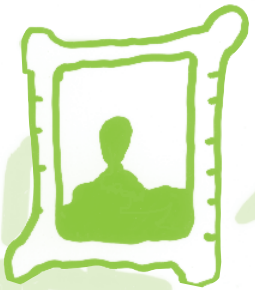
It is important for digital citizen science projects not only to use the potential of the Internet, but also to ensure that applications are suited to the project and that data collection and data use conform to data protection laws.

STORY

ARTigo: Informatics and (digital) art history

ARTigo aims at developing a semantic search engine for digitised works of art. The low quality of current automated methods of art recognition means that human image recognition systems remain critical even in digital databanks. Using paid experts or non-experts is cost-prohibitive, which led to the development of an online platform that offers several games to promote art recognition. Through these short games, players (citizen scientists) describe the content of artwork with keywords. These keywords are then used to develop a semantic search engine. The different games on the ARTigo platform allow the collection of a wide range of keywords, thus enhancing search functionality and making it possible to answer complex research questions.

The tagging of artwork by non-experts relies on the wisdom of the crowd. By aggregating many sets of keywords produced by players, it is possible to generate high-quality results. The idea is to reach out to as many people as possible, which can best be achieved via the Internet. **www.artigo.org**



STORY

Roadkill, developed as a student project

Roads run right through wildlife habitats, including the homes of red deer, wild boar, roe deer and smaller animals such as frogs and lizards. Because of these incursions into natural habitats, many animals are run over and killed at road crossings. The 'Roadkill' project seeks to reduce the number of animals killed by vehicles. It does so by asking citizens to report roadkill on their daily commute via a smartphone app or an online form. These data provide an overview of the number, species and distribution of animals killed on roadways.

Roadkill began as a pilot project with students at the University of Natural Resources and Life Sciences, Vienna to see if it was appropriate for the larger public. The pilot yielded several benefits. The project was evaluated before a wider launch, which led to revision of the recording protocol. Participating students learned at an early stage how to be actively involved in a scientific research project, gaining them practical experience in applying scientific methods. In addition, the pilot led to increased interest in the topic of roadkill and the challenges it posed. The project was first adapted iteratively to the students before being successfully introduced to the public. **www.roadkill.at**

12 Citizen science in the social sciences

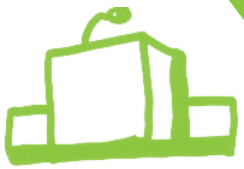
The equitable inclusion of people without academic training in the empirical social sciences and health research has been discussed since the early 20th century. Different traditions and schools of thought developed in different countries, including action research, community-based participatory research, cooperative inquiry and appreciative inquiry. Due to this particular history of participatory approaches both nationally and internationally, the term citizen science is rarely used in the social sciences. The following approaches are widely used and have similarities to citizen science:

- Participative research or action research – an approach that includes the interests of minorities and other disadvantaged groups in order to improve their living conditions [16].
- Transdisciplinary research – research that involves various disciplines and introduces societal inputs in all phases of a research project [5].

Unlike other disciplines, social science research faces the challenge of studying social systems and processes. This means that ordinary people are often involved in research projects, for example as interviewees or survey respondents. Confusingly, many such empirical social research projects are considered participatory because of the qualitative or performative methodology. These, however, must be distinguished from the approaches mentioned above because they are not compatible with the concept of citizen science and active participation in the research process.

The term citizen science has been increasingly used in urban and rural planning projects, such as those interested in guiding development processes or preserving local history and stories in wikis [7]. These projects are often individual experiments and it is difficult to derive generalizable characteristics for citizen science in this diverse field.

STORY



Education in economics and scientific research

The project 'YES! – Young Economic Summit' is a schools project under the patronage of the German Minister for Economic Affairs Sigmar Gabriel. Pupils work in project groups under a teacher's supervision. Each group focuses on an urgent research topic for six months. The aim is to find a concrete solution for a global economic, ecological or social problem. Through training in information collection and the media, young people are taught the basics of academic research. The direct exchange with academics makes science tangible to pupils and allows valuable knowledge to be passed on. Pupils learn that they can shape their economic reality instead of playing an entirely passive role. YES! gives participants a platform to voice their concerns and encourages them take responsibility in helping to shape a future worth living in.

www.young-economic-summit.org

Further resources

- An overview of transdisciplinary methods: Bergmann, M., Jahn, T., Knobloch, T., Krohn, W., Pohl, C., & Schramm, E., Eds. (2010). *Methods for transdisciplinary research: A primer for practice*. Frankfurt a.M.: Campus.
- Participatory methods in the social sciences: Niederberger, M, Eds. (2014). *Methoden der Experten- und Stakeholdereinbindung in der sozialwissenschaftlichen Forschung.* Reihe Qualitative Sozialforschung. Springer. (GER)

13 Citizen Science in health research

Similar to social sciences, health research also developed its own concepts for participation of people without academic training. Again, this is why there are only very few projects that would consider themselves to be citizen science. Some such examples are the participation of patients or parents in online platforms such as **Migraine Radar** (**www.migraene-radar.de**) or the project **Discuss with Us** (*Reden Sie mit*) by the Ludwig Boltzmann Association in Austria, which allows interested members of the public to participate in scientific inquiry by suggesting new study topics on mental health issues. Participatory projects are commonly called participatory health research (PHR), a term coined by the International Collaboration for Participatory Health Research (ICPHR) and the German Network for Participatory Health Research (*Netzwerk Partizipative Gesundheitsforschung*, PartNet). Both networks share a platform to outline common basic principles, quality criteria and guidelines for PHR.

PHR is a neutral umbrella term that summarises projects with a variety of methodologies and practical objectives. The common elements of participatory health research projects lie in the empowerment of non-academic co-researchers and a dual purpose – not only research, but also action is required in order "not only to understand but also change social reality" **[16]**, p. 35.

There are similarities in the concepts of PHR and citizen science, as seen by the German network's recently adopted definition, developed in a multi-step participatory process: Participatory health research is a scientific approach that understands research as a process of co-production by different actors. The research process is organised in partnership by all participants and constantly reviewed with respect to power structures. Throughout the whole research process, co-determination by those whose lives are studied must be maximised. Participants include those individuals whose lives are studied, specialist scientists and decision-makers in health care, social science or education, as well as representatives from organised civil society and scientific organisations. PHR aims at gaining new insights and initiating changes that promote equal opportunities in health" (*Netzwerk Partizipative Gesundheitsforschung* 2015).

Further resources

- A good introduction to participatory health research: von Unger, H. (2013). *Partizipative Forschung: Einführung in die Forschungspraxis*. Reihe Qualitative Sozialforschung. Wiesbaden: VS Verlag. (GER)
- The German network for participatory health research provides resources and offers methods workshops: **www.partnet-gesundheit.de** (GER)
- The Ludwig Boltzmann Association's platform: **www.openinnovationinscience.at** (GER)

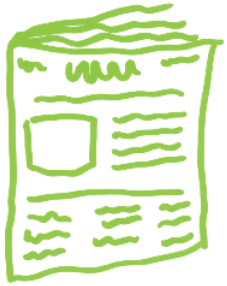
14 Citizen science in the arts and humanities

Many successful citizen science activities take place in the arts and humanities [8]. Volunteer work is often coordinated by independent scientific groups such as the Club for Computer Genealogy (*Verein für Computergenealogie e. V.*, CompGen), which focus national and regional history and family history. The German umbrella organisation for genealogical associations (*Dachverband Deutsche Arbeitsgemeinschaft genealogischer Verbände e. V.*, DAGV) connects over 60 genealogical and heraldic associations in Germany, while the collective *Gesamtverein der deutschen Geschichts- und Altertumsvereine* is an association of 200 historical societies, historical research committees regional historical institutes and working groups. Some German Länder have centres for coordinating preservation issues (e.g. the Bavarian office for monument preservation, the *Bayerisches Landesamt für Denkmalpflege*) that collaborate with local historians and historical groups. The German Society for Pre- and Protohistory (*Deutsche Gesellschaft für Ur- und Frühgeschichte e. V.*) involves citizens interested in archaeology in its work. In addition, public history is an approach firmly rooted in societal engagement that gained popularity in academic research and science communication circles.

Methodical approaches vary widely, from pure crowdsourcing (ARTigo, p. 36) to communicative approaches that include citizens in developing the methodology and research questions (Landscape and You-th, p. 34), as well as largely independent scientific groups. CompGEN makes a data entry system (DES, p. 43) available that gives access to historically valuable resources such as address books, registry records or casualty lists, which have been transcribed and are now available to the public as references. The society collaborates with public archives and regional genealogical societies. Historic preservation authorities often provide in-depth workshops for volunteers before they start work on their own initiative with regular feedback. The association of local historical group in Lower Saxony (*Niedersächsische Heimatbund*) includes many private individuals in its network, many of them local historians with very specific expert knowledge that they share with the public through publications. The association brings together interested citizens and members of the academic community. Finally, we would like to highlight historical re-enactment (see Lab for Experimental Archaeology, p. 10) as an important approach where volunteers explore historical details in order to reproduce historical artifacts and their means of production.

Here is where citizen science projects in the arts and humanities reach their limitations. It is not only difficult to stimulate equitable communication between citizen scientists and academia, but also connections between various disciplines. A project's long-term success requires not only sharing results and methods with the public, but also exchanging experiences with associations and umbrella organisations as wells as other projects and approaches.

STORY



Casualty lists from World War I

*Public archives in towns or regions, universities or churches and public libraries contain hundreds of kilometres of historically valuable sources that are handwritten, typed or printed. Archival records from the 19th century and earlier is printed in black letter, typefaces difficult for automated digitalisation programs to decode. Digitising sources such as church and registry records, lists of war graves or historical address books facilitates the transfer of their contents into databases. The Association for Computer Genealogy (*Verein für Computergenealogie e. V., *CompGen) has developed a Data Entry System (DES) to manage the digitalisation of important historical records by volunteers.*

One crowdsourcing project by CompGen indexed the casualty lists of World War I. This made over 8.5 million records available to DES that can be used in academic and private research.

wiki-de.genealogy.net/Verlustlisten_Erster_Weltkrieg/Projekt

Culture in the Corridor STORY

*Small monuments and landmarks, often referred to – based on their Catholic origins – as Marterl, often have a very special meaning for people. The project 'Culture in the Corridor' (*Kultur in der Flur*) shows these small monuments online, including information gathered by interested amateurs and experts – free of charge and supplemented with images. The online platform lets users locate monuments on Google maps, write comments or post links on social networks. There are also viewing suggestions for similar monuments or monuments nearby. For a small fee, users can have the comments verified by experts from the lower Austrian education and cultural history association* Bildungs- und Heimatwerk Niederösterreich (BHW) *and get an expert seal of approval.*. **www.marterl.at**

Further resources

- A good introduction to citizen in the arts and humanities: Smolarski, R. & Oswald, K., Eds. (2016). *Bürger Künste Wissenschaft. Citizen Science in Kultur und Geisteswissenschaften* (Band zur gleichnamigen Tagung, 21.–23.09.2015, Universität Erfurt). Computus Verlag, Gutenberg (in Druck, vsl August 2016). See also [8]. (GER)

15 Citizen science internationally

Citizen science is currently experiencing great popularity in Germany and internationally, which is reflected in a surge in projects and the consolidation of initiatives and emergence of networks. This also includes the creation of dedicated citizen science associations at the international level, which seek to increase professionalism in the field of citizen science [3].

The extension and expansion of pilot projects is a sign that citizen science is becoming more organised. The British Open Air Laboratories (OPAL) programme is a good example. The project began as a biodiversity and environmental monitoring programme in England and has expanded in recent years into Scotland, Wales and Northern Ireland, reaching roughly 800,000 participants. MicroPasts and the Portable Antiquities Scheme are both long-term projects run by the British Museum that allow citizens to take an active part in the transcription and placement of historical sources and findings or locating and entering information relevant to cultural monuments into a common, open database. Benefits include not only the large number of people taking part in making Britain's cultural heritage accessible, but above all the growing appreciation for the work of archaeologists and historians.

We are also seeing an increase in collaborations between citizen science practitioners. Numerous different fields, such as environmental monitoring (e.g. the British Ecological Society and Cornell Lab of Ornithology), open science (e.g. Citizen Cyber Science Center and Zooniverse) and social science-based action research, are well represented. Subject networks often develop along thematic fields or based on cross-disciplinary issues, which highlights the importance of citizen science inter- and transdisciplinary research [18]. More recently, networks have begun to cooperate beyond thematic or disciplinary areas at national and even European level. In the German-speaking world in particular, national citizen science coordination sites and projects have developed, connecting local citizen science practitioners and projects, coordinating PR and answering questions from interested members of the public and stakeholders. Beyond "Citizens create knowledge" (GEWISS) in Germany, Austria and Switzerland also host various citizen science networks, web platforms and national conferences. In Austria, the Ministry for Science, Research and Economic Affairs has funded several calls related to citizen

science and the independent platform "Austria researches" (*Österreich forscht*) **www.citizen-science.at**, coordinated by the Institut für Zoologie at the Universität für Bodenkultur Wien (BOKU), is home to over 30 projects and organised the Austrian citizen science conferences in 2015 and 2016. In Switzerland, Science et Cité is a foundation that fosters dialogue between science and society and spearheads the Citizen Science Switzerland network founded in 2014.

At the European level, the European Citizen Science Association (ECSA) is the umbrella organisation that supports citizen science by building networks, promoting exchange, expanding capacity and conducting research. ECSA was registered as a charity in Berlin in 2014 and has its headquarters at the Museum für Naturkunde Berlin. The association supports organisations and individuals that carry out citizen science projects, referred to as citizen science practitioners. The association also carries out research on citizen science. ECSA has published its good practice guide for citizen science in 20 languages, making a significant contribution to the development of the field and its acceptance in the European science policy arena.

STORY

iSPEX: Local coordination of an international project

Athens, Barcelona, Belgrade, Copenhagen, London, Manchester, Milan, Rome and Berlin – all are exciting European cities that are popular for different reasons. Between 1 September and 15 October 2015, particulates were measured all these cities. The iSPEX project is planning to form a widespread, flexible network for collecting particulate data and carrying out highly targeted geographic analyses. The iSPEX add-on is a mechanical spectrometer and polarisation meter in a plastic case that can be attached to a smartphone. It measures the refraction and polarisation of sunlight and thus local particulate pollution. The many recorded images facilitate concentration estimates, chemical composition and distribution of particulate size at a given time. In Berlin, the project is coordinated by the non-profit MINT Impuls in collaboration with the Institute for Meteorology at the Freie Universität Berlin. The European-wide project is coordinated in other countries by institutions including the National Observatory in Athens, ICFO and CREAL In Barcelona, the Institute for Physics in Belgrade, the Danish Environmental Protection Agency in Copenhagen, Institute of Physics in London, the Italian Aerosol Society and Citizens for Air in Milan as well as ISAC-CNR in Rome. **www.ispex.nl/en/**

Further resources

- Austrian Centre for Citizen Science: **www.zentrumfuercitizenscience.at** (GER)
- Austrian citizen science platform: **www.citizen-science.at** (GER)
- Citizen Science Association (CSA) website: **www.citizenscience.org**
- European Citizen Science Association (ECSA) website: **www.ecsa.citizen-science.net**
- German citizen science platform: **www.buergerschaffenwissen.de**

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Glossary of English and German terms

Note: In cases describing German-language terms, the original term is noted in italics.

Term	Definition	Sources and examples
Amateur science, popular science *(Amateurwissenschaft, Populärwissenschaft)*	Amateur science describes the scientific activities of citizens who do not earn their living as scientists (→ *Laienforschung*). Although the word "amateur" is derived from amare – to love – these terms are often considered derogatory.	Finke, 2014; Mahr, 2014
Citizen science and *Bürgerforschung*	*Bürgerforschung* is the literal German translation of "citizen science". In German, it includes the long research tradition of independent scientific societies.	Irwin, 1995; Finke, 2014
Co-creation / Co-design / Co-production	These terms are used to describe the cooperative development (and implementation) of research and innovative projects involving scientists and other members of society. → transdisciplinary research	
Crowdsourcing / Crowd science	Crowdsourcing entails the mobilisation of large groups of individuals from outside of research, government or business, usually to perform clearly defined tasks, often in digital projects. In crowd science, such tasks are connected to science projects and typically involve collecting or analysing data (e.g. through pattern recognition, photo tagging or digitisation of handwriting).	(Bücheler & Sieg, 2011; Franzoni & Sauermann, 2014
DIYBio / BioHacking	DIYBio is a special branch of DIY in biological science, where private individuals who often own expensive equipment, look into biological problems.	
DIY science	Do-it-yourself or DIY science is used as an umbrella term for community-based initiatives dealing with scientific and technological issues. The term has recentlybeen in the spotlight in the context of the maker or hacker culture. → FabLabs serve as spaces for DIY science.	Charisius, Karberg & Friebe, 2013; Seyfried, Pei & Schmidt, 2014
FabLabs, open laboratories	FabLabs is an artificial word derived from Fabrication Laboratories that describes open spaces where conventional and/or digital tools are used to produce objects or machines, often in collaboration with scientific institutions and independent groups. → DIY science	Lange, 2015

Term	Definition	Sources and examples
Independent or volunteer scientific groups *Fachgesellschaften*	*Fachgesellschaften* is a difficult term to translate outside of the German context, but means roughly independent volunteer scientific groups. These groups are generally organised within scientific disciplines; their members may be professional scientists or experienced amateurs often with decades of accumulated knowledge and expertise, who earn their living in other ways.	[12]
Lay or hobby research *(Laienforschung; Hobbyforschung)*	Laienforschung, literally "lay research", describes the research activities of citizens who do not earn their living as scientists (amateur science). A lay person can be seen as inferior to experts in terms of (scientific) knowledge and the term is thus sometimes considered derogatory.	Finke, 2014
Mode 2 science	Mode 2 science is a term coined in the 1980s to describe a change in the organisation and epistemology of knowledge generation. It is characterised by an increasing importance of socially relevant research and the participation of societal actors in knowledge-generation processes. This critical approach is often used as to support the demand for transdisciplinary research.	Nowotny, 1999
Open innovation	Open innovation is a strategic opening of innovation processes in research institutions and companies to external knowledge and the exchange of knowledge between different organisations in order to promote innovation.	Bücheler & Sieg, 2011; Franzoni & Sauermann, 2014
Open (digital) science	Is the successor term of Science 2.0 and includes use of the Internet and social media for science and innovation, a strategy currently favoured by the European Commission.	Bücheler & Sieg, 2011; Franzoni & Sauermann, 2014
(Participatory) action research	Action research was developed in response to purely experimental research with a practical orientation in order to resolve real-world problems. Participatory action research includes citizens in research work. It was developed in the 1940s in social psychology as an alternative to mission-free science considered alienating to theory and practice.	
Participatory (health) research	Participatory research includes the participation of various groups in the research process and can be considered an umbrella term. It is often used in health research..	[16]; Wright, 2013 → S. 40

Term	Definition	Sources and examples
Post-normal science	Post-normal science is a participation-based methodology for scientific research that takes into account uncertainty, decision pressures and contested values. The approach looks at increasing knowledge requirements for political decisions and works from the hypothesis that modern societies experience increased risk and uncertainty as natural outcomes of scientific and technological progress (e.g. Beck, 2015). Against this background, a case is made for the inclusion of societal groups.	Ravetz, 2006
Reallabore	Reallabore is a German term for institutions where scientists are involved in real processes of change, such as urban renewal or new mobility or energy schemes. From the onset, individuals that do practical work in local authorities, social and environmental organisations are included in the research project. New knowledge is generated in an open process, focused on practical results. The term originates from transformation research and points to places and institutions that are linked to real-world experiments.	Schneidewind, 2014
Responsible Research and Innovation (RRI)	Responsible Research and Innovation (RRI) is currently championed mainly by EU research funding. It refers to the inclusion of all citizens in research and innovation processes. It can entail a transdisciplinary research approach or enhanced science communication. RRI rests on the following pillars: public engagement, open access, gender equality, ethics and science education.	Hennen & Pfersdorf, 2014
Science 2.0	Science 2.0 is used to summarize changes in scientific work through modern information and communication technology, particularly the Internet and social media. Like its predecessors Cyberscience, eScience and digital humanities, it describes not only changes in scientific publication (e.g. open access), but also the increased interactivity and accessibility of research and researchers in the age of the Internet. Citizen science projects, especially Citizen Cyberscience and crowdsourcing can be considered related phenomena to Science 2.0.	Bücheler & Sieg, 2011 → S. 35

Term	Definition	Sources and examples
Transdisciplinary research	Transdisciplinary research describes not only the inclusion of different disciplines in the research process (often referred to as multidisciplinary or interdisciplinary research) but also the further inclusion of various stakeholders from outside academia, e.g. in industry, politics and civil society. In contrast to citizen science, transdisciplinary research sees such participants as stakeholders, whose opinions and interests must be considered for research to be relevant. The term is often used in sustainability research.	[5]; [7]
Volunteer research *Ehrenamtliche Forschung*	Volunteer research signifies a long tradition of largely research-supporting activities, in particular data collection, conducted by volunteers.	

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Notes

Notes

GEWISS Consortium

iDiv Deutsches Zentrum für integrative Biodiversitätsforschung (iDiv) Halle-Jena-Leipzig

BBIB Berlin-Brandenburgisches Institut für Biodiversitätsforschung

HELMHOLTZ ZENTRUM FÜR UMWELTFORSCHUNG UFZ

museum für naturkunde berlin

Freie Universität Berlin

Friedrich-Schiller-Universität Jena

IGB Leibniz-Institut für Gewässerökologie und Binnenfischerei

Leibniz-Institut für Zoo- und Wildtierforschung IM FORSCHUNGSVERBUND BERLIN E.V.

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EDITORIAL
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Editorial: Citizen Science and Social Innovation: Mutual Relations, Barriers, Needs, and Development Factors

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Keywords: citizen science, co-creation, co-production, open science, participatory research, social innovation

Editorial on the Research Topic

Citizen Science and Social Innovation: Mutual Relations, Barriers, Needs, and Development Factors

OVERVIEW

The presented Research Topic explores the potential of citizen science to contribute to the development of social innovations. It sets the ground for analysis of mutual relations between two strong and embedded in the literature concepts: citizen science and social innovation. Simultaneously, the collection opens a discussion on how these two ideas are intertwined, what are the significant barriers, and the need to use citizen science for social innovation.

As described by the Organisation for Economic Co-operation and Development and Eurostat (2018), social innovation refers to some new idea, new solution, or new design that makes a social impact in terms of conceptual, process, product, or organizational change, which aims to improve the lives of individuals and communities. This conceptual perspective lays a background for this Research Topic. It is possible to consider citizen science as social innovation. As emphasized by Butkeviciene et al. (2021), the relationship between citizen science and social innovation might be two-fold: citizen science as a novel practice might be considered as social innovation in the realm of the traditional research process, and citizen science might be treated as a vehicle to foster social innovation. These two approaches are present in theoretical debates and coherently intertwined in this collection. On the one hand, articles analyze methodological issues and the novelty of such methods as design thinking or action research. On the other hand, papers also investigate the factors such as translation specifics in citizen science, ecosystems of citizen science, or new learning environments that are supporting the development of social innovation.

The presented Research Topic includes seven articles prepared in total by 34 authors from the following countries: Australia, Austria, Czechia, Estonia, Finland, Germany, Ireland, Italy, Japan, Netherlands, Portugal, Singapore, Switzerland, and United Kingdom. Five journals were related to this Research Topic: "Frontiers in Sociology," "Frontiers in Research Metrics and Analytics," "Frontiers in Communication," "Frontiers in Environmental Science," and "Frontiers in Political Science." This collection contains five types of articles covering: two original research articles (Goi and Tan; Heinisch), one perspective article (Roche et al.), two conceptual analysis articles (Eckhard et al.; Roche et al.), one review article (Scheibner et al.), and one methods article (Coulson et al.).

This Research Topic covers papers that critically evaluate the existing social innovations and citizen science initiatives. The articles are organized according to three themes.

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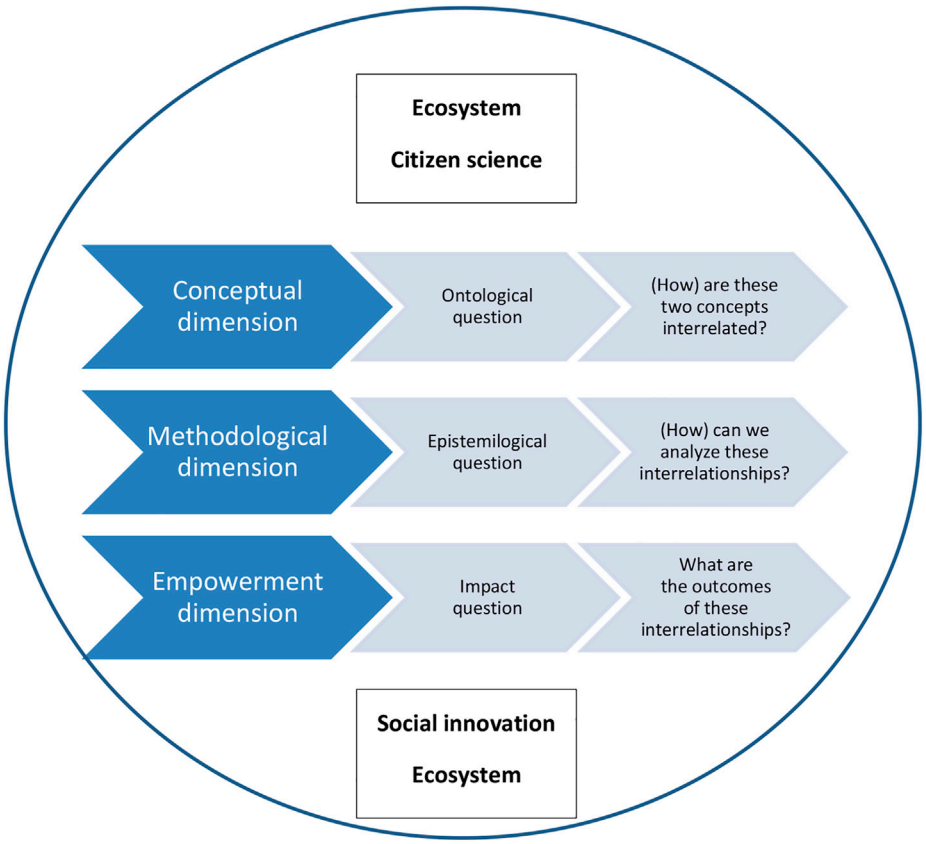

FIGURE 1 | Analytical dimensions of relation between citizen science and social innovation. Source: own elaboration.

THEME I: CONCEPTUAL RELATIONS BETWEEN CITIZEN SCIENCE AND SOCIAL INNOVATION

Until recent years few papers emphasized the relation between citizen science and social innovation. In the presented collection, the team of Eckhardt et al., in their paper, goes further and points that ecosystem of co-creation is an essential feature of citizen science and introduces a form of collaborative scientific work with society. Included results from the H2020 SISCODE project show that co-creation is located inside and between various sectors of society. The subsequent study by Heinisch presents the role of translation in citizen science to foster social innovation. It examines the role of translation and terminology used in citizen science projects and how translation can support (or impede) social innovation through citizen science activities.

THEME II: LEARNING ENVIRONMENTS FOR CITIZEN SCIENCE AND SOCIAL INNOVATION

The second part of this Research Topic contains contributions to studies focused on relations between teaching, learning, citizen science, and their potential relation to social innovation. The study by Roche et al. identifies challenges for successful integration of citizen science into mainstream education systems that also serve as signposts for possible synergies and opportunities. Another paper by Roche et al. continues the topic with a focus on Ireland's rich history in public engagement with science. This study explores several aspects of citizen science in Ireland to assess its development and better understand potential opportunities for the field.

THEME III: METHODOLOGICAL ISSUES IN USAGE AND DEVELOPMENT OF CITIZEN SCIENCE AND SOCIAL INNOVATION

The third theme opens the area to discuss methodological issues. It starts with the article of Goi and Tan, where the authors focus on methodological issues in using citizen science for the development of social innovations, in particular focusing on design thinking is an appropriate approach to be used by the community for future projects. Next, the article of Coulson et al. discusses citizen sensing as social innovation, where authors present data from their 2-year pan-European project. Finally, the paper by Scheibner et al. tackles ethical issues with using Internet of Things devices in citizen science studies.

CONCLUSION

In this Research Topic, the editors wanted to open theoretical as well as empirically-based discussion, including examples, practices, and case studies of at least three types of relations between citizen science and social innovation: 1) domination of the citizen science features over social innovation aspects; 2) domination of the social innovation features over the citizen science aspects; and 3) the ways to achieve balance and integration between the social innovation and citizen science features. Each of these relationships highlights factors that influence the development of the primary scales of sustainability of innovations in the practice (**Figure 1**).

Moreover, the research results presented in the articles of this Research Topic allow the formulation of five directions for further research. These are: 1) dynamics of peer learning and organizational culture in citizen science and social innovation projects; 2) the personal capacity of social entrepreneurs, public managers, citizen scientists, and researchers; 3) design, evaluation, communication, and dissemination of results of the citizen science and social innovation initiatives; 4) digital social innovation and citizen science; and 5) co-creation and co-production processes and their impact on stakeholders (see also Schäfer and Kieslinger 2016; Anderson et al., 2020; Perelló et al., 2021). The editors hope this collection will be an inspiring introduction to studying both identified and yet unnoticed relations between citizen science and social innovation.

AUTHOR CONTRIBUTIONS

The lead author of this editorial is AK. AK outlined and drafted the editorial. EB and MK contributed by reviewing and revising the editorial's manuscript. AK, EB, and MK led editorial work on all manuscripts included in this Research Topic. All authors of the papers listed have made a substantial, direct, and intellectual contribution to the work as well as approved their papers for publication.

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Perelló, J., Klimczuk, A., Land-Zandstra, A., Vohland, K., Wagenknecht, K., Narraway, C., et al. (2021). "The Recent Past and Possible Futures of Citizen Science: Final Remarks," in *The Science of Citizen Science*. Editors K. Vohland, A. Land-Zandstra, L. Ceccaroni, R. Lemmens, J. Perelló, M. Ponti, et al. (Cham: Springer International Publishing), 517517–552929. doi:10.1007/978-3-030-58278-4_26

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CS TRACK
Investigating Citizen Science

Horizon 2020 / Science with and for Society Programme
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Framework Conceptual Model

D1.1

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Title of project	CS Track
Full title of project	Expanding our knowledge on Citizen Science through analytics and analysis
Title of this document	Framework Conceptual Model
Number of this document	D1.1
Dissemination level	Public (PU)
Due date	November 2020
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Authors	Michael Strähle & Christine Urban, Wissenschaftsladen Wien - Science Shop Vienna (editors) Marinos Anastasakis & Katerina Kikis-Papadakis(editor), Foundation for Research and Technology - Hellas (FORTH) Miriam Calvera Isabal & Patricia Santos, Pompeu Fabra University Emilia Lampi, Joni Lämsä & Raija Hämäläinen, University of Jyväskylä Julia Lorke, Wissenschaft im Dialog Reuma De-Groot, Yaela Golumbic & Raul Drachman, MOFET Institute Ulrich Hoppe, Nils Malzahn & Sven Manske, Rhine-Ruhr Institute for Applied Systeminnovation (RIAS e.V.)
Executive summary	This deliverable contains a literature review of citizen science-related topics, situates citizen science in a historical context, discusses various conceptualisations of citizen science, and analyses existing categorisations and typologies of citizen science activities. It then presents a scheme of how citizen science can be categorised and characterised according to a broad range of relevant dimensions which can be used in Work Packages 2, 3 and 4, but also in future research, as no single endeavour may be able to take them all into account. Furthermore, it includes a short overview of the conceptual models for computer analytics that will be presented with all required detail in D1.2.

	Citizen science activities, especially crowdsourcing, are nothing new, and so are not initiatives in public engagement in science. An introductory chapter puts citizen science into a historical context by critically analysing the claims some citizen science advocates make when referring to the origins of citizen science. Another chapter is dedicated to some prominent conceptualisations of citizen science, which are related to each other and critically assessed. The ongoing debates about terminology in citizen science and about defining citizen science in general are presented and their issues are analysed. Concepts of citizen science and terminology issues are closely linked to issues of typologies and categorisations. Since categorisations and typologies are elaborated to get an overview of what the various forms of citizen science, prominent categorisations and typologies of citizen science are critically evaluated in a chapter of its own. The literature review addresses issues of actual, potential and claimed benefits brought by citizen science for the science system, ethical and integrity issues, caveats and potential pitfalls. Issues of participation in citizen science that are discussed in this report include participation patterns (as far as they are known), demographic and gender aspects, and barriers, enablers, incentives and disincentives for scientists and volunteers participating in citizen science. The chapter on education and citizen science discusses aspects of informal and formal, school and after-school, and online education. Furthermore, the visibility of citizen science activities and economic aspects of citizen science such as potential cost benefits, as they are presented in scientific literature, are assessed. The empirical basis for all this is relatively thin because not many systematic studies have been carried out. To support Work Packages 2, 3 and 4, categorisations of citizen science activities were broken down into the Activities & Dimensions Grid of Citizen Science and a checklist for characteristics was developed that builds upon the explanation of citizen science in the Science with and for Society Work Programme 2018 - 2020. The chapter on conceptual models for computer analytics describes the role and context of computational analytics in CS Track, building blocks for computational representation and analytics, and the specific methods to be applied in Work Package 3.

Table of Contents

1 Concept and rationale

Michael Strähle & Christine Urban

This report is Deliverable D1.1 of the research project CS Track which is funded by the European Commission under the Science with and for Society Work Programme. The aim of CS Track is to broaden the knowledge about citizen science and the impact citizen science activities can have. This overall objective is achieved by understanding and characterising citizen science activities so that one can say how they can be improved in terms of maximising their benefit for all participants and stakeholders, citizen and professional scientists, policymakers and funders, while meeting scientific standards of validity and reliability, paying attention to caveats and potential pitfalls, and respecting research integrity and ethics. The CS Track consortium investigates a large and diverse set of citizen science activities, discusses good practices and formulates knowledge-based policy recommendations in order to maximise the potential benefit of citizen science activities on individual citizens, organisations, and society at large.

What the term "citizen science" refers to depends, among other things, on science cultures, research orientations, fields of research and the kind of citizen participation in the respective research activities (Eitzel et al., 2017; Kullenberg et al., 2016; Riesch et al., 2013; Heigl & Dörler, 2017). As Eitzel et al. (2017) state: "In our collective experience with citizen science projects, no single term is appropriate for all contexts" (p. 1). Just to give a few examples: It can refer to crowdsourcing activities such as collecting weather data, to spotting animals in an online video, deciphering handwritten historic documents, solving scientific puzzles or making experiments in your garden, but also to formulating research questions and even to setting research agendas, developing robotic prototypes or conducting practical science projects in schools. The disagreement on what the term actually refers to, is puzzling. In 2014 a definition of citizen science was added to the Oxford Dictionary (OED, 2014) that narrows down its broader use. For the purpose of the Science with and for Society Work Programme the European Commission offers a description of citizen science that includes activities ranging from school education through citizen participation in scientist-led research projects to fab labs and citizen engagement in science policy. It is this broad use of the term "citizen science" that makes it difficult for experts, funders and policymakers to discuss its potential, caveats and strategies to maximise its benefit. Nevertheless, in the framework of CS Track the consortium uses the explanation of citizen science the European Commission gives in the Science with and for Society Work Programme 2018-2020:

> *(…) citizen science should be understood broadly, covering a range of different levels of participation, from raising public knowledge of science, encouraging citizens to participate in the scientific process by observing, gathering and processing data, right up to setting scientific agenda and co-designing and implementing science-related policies. It could also involve publication of results and teaching science.* (p. 41)

A second issue making it difficult to maximise its benefit is that, despite the hopes put into citizen science, there are only few systematic reviews of its benefit for scientific research, policymaking and education, which are limited to certain aspects such as data quality and fields such as marine conservation, particularly environmental sciences (e.g. Abourashed et al., 2021; Bedessem & Ruphy, 2020; Houllier et al., 2017;

Kankanamge et al., 2019; Kelly et al. 2020; König et al., 2021; Kelly et al., 2020; König et al., 2021; MacPhail & Colla, 2020; Mäkipää et al., 2020; Peter et al., 2019; Rathnayake et al., 2020; van de Gevel, 2020; Wolff, 2021; Young et al., 2019). Scientific literature on citizen science mostly consists of case studies, systematic reviews are scarce. From a perspective informed by the philosophy of science a general benefit for the sciences can be concluded (Elliot & Rosenberg, 2019). However, in other scientific literature this benefit is often only claimed - mostly in introductory remarks to case studies - but not elaborated and insufficiently demonstrated.

A literature search in Web of Science, Scopus, PubMed and Google Scholar shows that thousands of studies on citizen science projects have been conducted already. However, most of these are individual case studies; comparative studies aiming at a typology of citizen science projects are still scarce, studies aiming at a comparison across disciplines are even scarcer. Some efforts were made to develop a categorisation of citizen science projects. Generally, such typologies categorise citizen science activities into clusters of scientific disciplines (Kullenberg & Kasperovski, 2016), levels of engagement and types of activity (Haklay, 2015; Serrano Sanz et al., 2014), tasks performed by participants and overall project goals (Wiggins & Crowston, 2012; Wiggins & Crowston, 2011; Liu et al., 2017), and different strategies used to encourage volunteer contributions (Tinati et al., 2017; Reeves et al., 2017; Den Broeder et al., 2018). Other examples of comparative research on citizen science focus on the motivation for participation (Alender, 2016; Geoghegan et al., 2016; Jennett et al., Y, 2016; Rotman et al., 2012), quality criteria for citizen science and typologies of the different forms how citizens are involved in citizen science projects (e.g. Bonney et al 2009; ECSA 2015; Pettibone et al. 2016; Seymour & Haklay, 2017; Scheliga et al., 2016; Strähle & Urban 2017; University of Zurich 2015, Wiggins & Crowston, 2011) and science learning (Masters, 2016). Studies on citizen science projects rarely have a broad cross-disciplinary perspective; they mostly focus on a single discipline or a rather limited range of disciplines such as ecological research (e.g. Dickinson et al., 2010), ornithology (Bonney et al., 2009), geographic information research (e.g. Haklay, 2013), health research (e.g. Wright, Gardner, Roche, Unger & Ainlay, 2010), and history (Williams et al., 2014), but rarely on transdisciplinary research (Jahn, Bergmann & Keil, 2012). Accordingly, there is already a body of knowledge on participation patterns in citizen science, on various types of activities conducted, on challenges faced by citizen scientists, on enablers and barriers to participating in citizen science, on ways to attract citizens and on other important issues, however, mostly limited to research on specific citizen science projects, programmes and initiatives. An overview of the aforementioned issues across a broader range of citizen science projects is still missing.

In view of a body of literature that goes into thousands, the broad working definition and the dynamics of the field, this report can only offer a glimpse of the topics listed above, albeit a structured one. The authors hope that this report offers a concise presentation of the most important aspects of these topics and some new perspectives on the complexity of citizen science.

The Science with and for Society call topic under which CS Track received a grant, and particularly the rationale of CS Track, aim at an integrated investigation of participation patterns; societal, democratic and economic benefits of citizen science; incentives, disincentives, barriers and enablers to involving and engaging citizens and scientists in citizen science activities. Equal access and absence of discrimination are important desiderata for this endeavour. This brings in the questions of social conditions for access, gender equity, and world-wide accessibility. However, in current research on citizen science a broader geographical perspective, especially in respect to the

global south, and a perspective on the gender dimension of citizen science are rare. Among other authors, Ordóñez Vela et al. (2017) remind us of the problems to transfer citizen science to social environments different from those in the global north where it originated without taking care of contexts. Otherwise, citizen and professional scientists may encounter new forms of scientific dependence, without contributing to the quality of life of those who carry out the studies. In the case of weather observation, other researchers raise the question whether citizen science is a male-dominated activity (Gharesifard et al., 2017; Endfield & Morris, 2012). CS Track addresses the issues of equity and accessibility regarding social conditions in a world-wide perspective. Especially, the consortium pays attention to them by investigating gender equity and gender distribution in citizen science activities and by investigating to what extent citizen science activities take gender and diversity issues into account.

The basic assumption is that for understanding citizen science and its benefits we have to understand how citizen science is conceptualised and what the different forms of citizen science are. For a further investigation of citizen science, it is necessary to categorise different citizen science activities according to the concrete tasks citizens fulfil and the roles they play, the (research) methods they use, the impact they may have (not) on the research objects and many more. Each type of activity needs separate assessment, because benefits, risks, barriers, enablers, need for specific training, ethical issues, etc. are likely to differ between - to give a few examples - investigation of the space, searching for rare butterflies or participating in online experiments. Specificities have to be related to gender, geographical and socio-economic differences.

The overall objective of Work Package 1, of which this report is a deliverable, is to investigate and consolidate the existing knowledge on citizen science by

- comparing and analysing various efforts that have already been made to categorise citizen science activities;
- identifying knowledge gaps, respectively open questions in relation to incentives, disincentives, barriers and enablers to the involvement of citizens and scientists; the types of activities conducted; participation patterns in citizen science; societal, democratic, economic and scientific benefits and potential caveats of citizen science;
- creating a conceptual framework for analytical tools and assessment procedures that consider the project objectives in relation to activities, size/ scale, funding, technical requirements (equipment) and visibility;
- generating basic conceptual models for analyses to be conducted in Work Package 3;
- and identifying exclusion criteria for the selection of citizen science activities that are further assessed in Work Package 2.

Moreover, Work Package 1 puts citizen science in EU Member States and Associated Countries into global and historical contexts.

For achieving the overall objective of Work Package 1 CS Track reviews scientific literature on citizen science, conducts expert interviews and analyses already existing ways/attempts to categorise citizen science activities. Based on this knowledge, this report categorizes citizen science activities in detail and analyses them in relation to the issues mentioned above. Such an understanding provides the basis for conceptual

models to be applied in web analytics in Work Package 3. These models are generated from the categorisations.

The literature reviews presented in this report addresses a selection of topics listed in the aforementioned Science with and for Society call topic description. The respective reviews have been written by different authors. The topics are:

- Historical contexts
- Conceptualisations and definitions of citizen science
- Benefits, caveats, and ethical aspects of citizen science activities
- Participation patterns, demographical and gender aspects
- Enablers, barriers, incentives, disincentives for the mainly involved persons
- Educational aspects
- Visibility of citizen science activities
- Economical aspects
- Categorisations and typologies of citizen science

The reviews had the overall objectives

- to assess the state-of-the-art on what is known about these topics according to peer-reviewed scientific literature; and
- to identify knowledge gaps that could be filled in Work Packages 2, 3 and 4.

Since conceptualisations and categorisations of citizen science activities played an important role in developing CS Track's own categorisations of such activities, the research answered to the following questions:

- How is citizen science conceptualised?
- And what are the different forms of citizen science included in the conceptualisations, categorisations and definitions of citizen science?

Structure of this report

Chapter 2 of this report presents the methodologies the research for this report was based on. Altogether, this research consisted of desktop research. The literature analyses in chapters 3, 4 & 5 are based on a structured literature retrieval in scientific databases that is described in the methodology chapter. Chapter 2 further describes how the grid of citizen science activities and dimensions, the Activities & Dimensions Grid of Citizen Science, which is the basis for the conceptual models to be described in D1.2, was compiled and how categorisations and typologies of citizen science activities have been taken into account. Chapter 3 of this report puts citizen science into a historical context of amateur science and public engagement in science and research in democratic and authoritarian states. Chapter 4 of this report presents conceptualisations of citizen science and terminology issues in citizen science that are discussed among scholars. Section 5 of this report presents desktop research on benefits of citizen science: claimed, probable and proven ones. Ethical issues and caveats identified in scientific literature are discussed. The subsection on people in citizen science describes demographical aspects, presents findings on participation patterns and gender aspects, and discusses enablers, (dis)incentives and barriers for citizen science. The subsection on education aspects discusses citizen science in formal education, informal (science) education by citizen science and obstacles to conducting citizen science in education settings. The following short subsection discusses the online visibility of citizen science activities. Finally, chapter 5 concludes

with a discussion of economic aspects in citizen science. Chapter 6 of this report describes typologies, classifications and categorisation that have been published in scientific literature and assesses their usefulness and limitations. In the subsections following these analyses, this subsection presents with all required detail the categorisations that provide the theoretical basis for the conceptual models for computer analytics in Work Package 3. Chapter 7 of this report presents the role and context of computational analytics in CS Track and the methods that will be applied for the analytics to be performed in Work Package 3. The literature analyses identified several knowledge gaps. Chapter 8 lists open research questions that are based on these knowledge gaps and relevant for Work Packages 2, 3, 4 and beyond. The report closes with concluding remarks (chapter 9) and an annex with notes on contributions (chapter 10) and a comprehensive list of all literature cited in this report (chapter 11).

2 Methodology

Michael Strähle & Christine Urban

Literature review

The literature review was mostly based on a systematic information retrieval in the Scopus, Google Scholar and PubMed databases by using keyword lists. These lists also included synonyms of keywords. When searching in databases, synonyms of keywords were added to the keywords with the Boolean operator OR when appropriate.

The main keyword that was always used was "citizen science" (in conjunction with "(participatory) environmental monitoring", "public engagement", "crowdsourcing", and "participatory research"). It was used in combination with "activities", "Africa", "Asia", "Australia", "barriers", "benefit(s)", "biodiversity", "categorisation", "categorization", "caveat(s)", "challenge(s)", "characteristics", "China", "conceptual framework", "cost(s)", "cost-benefit analysis", "definition", "democratisation", "democratization", "democratic", "economic benefit(s)", "economic aspects", "(science) education", "efficacy", "enablers", "ethics", "evaluation", "expectations", "funding", "gender (aspects)", "guidelines", "history", "impact", "incentives", "Japan", "Latin America", "lessons learned", "lessons learnt", "marketing", "motivations", "recommendations", "recruitment", "requirements", "research area(s)", "research integrity", "rewards", "risks", "roles", "RRI", "Russia", "science literacy", "(science) policy", "target group(s)", "tasks", "training", "typology", "USA".

The main part of the information retrieval took place from December 2019 - February 2020; information retrieval on some topics was repeated from October 2020 - January 2021.

In a first step, review authors searched for peer-reviewed scientific literature that is tagged with at least one of the keywords of the lists or contains it in the title or the abstract. To avoid a language bias by focusing only on literature written in English, the literature search also included publications in French, German, and Spanish. Literature formats included journal and conference papers, review papers, monographs, book chapters, scientific blog entries, and scientific reports. Also reports commissioned by public authorities and policy documents have been consulted if they are frequently cited in peer-reviewed literature.

In a second step, publications were selected by assessing their relevance and usefulness according to title and abstract but not according to frequency of citation. Of particular interest were empirical studies and meta-analyses. Except of the publication format, additional exclusion criteria were applied. Already at proposal stage it became clear that a considerable body of publications on citizen science consists of project presentations that do not discuss the topics of CS Track. These are scientific papers that present and discuss outcomes of scientific projects that made use of citizen science or what they considered as citizen science. If these publications did not include reflections on lessons learned from engaging with members of the public, they have not been selected. Also duplicate publications have been excluded from analyses.

In the chapter on the visibility of citizen science, so the authors, the selection of examples was guided by the aim to illustrate the described collaborations between

citizen science and (social) media. For the chapter on informal science education in citizen science, so the authors, the referenced literature and project selection was guided by current discussions in the community and aiming to provide a well-rounded overview with illustrative examples from different countries and research areas for each ISE stakeholder area as identified by Falk et al. (2012).

After relevant research publications have been identified, the publications were coded with the respective search terms applying to them. In synopses of these publications common and controversial points were identified. Review papers and publications on citizen science were also analysed in respect to topics, scope, argumentations, claims, possible contradictions and sound conclusions.

The Activities & Dimensions Grid of Citizen Science

To inform the qualitative research and the compilation of the project database in Work Package 2, the analytics tasks in Work Package 3 and the online survey in Work Package 4, a grid of citizen science activities and their dimensions was developed. Based on the Activities & Dimensions Grid of Citizen Science, among other things, conceptual models for the web analytics in Work Package 3 can be developed.

In a first step the authors searched for existing categorisations, typologies and conceptualisations which are (frequently) discussed in the scientific community and by citizen science advocates and practitioners. Of particular interest were meta-analyses of such categorisations and typologies and discussions about the feasibility of categorising, respectively classifying, citizen science. In a second step, the authors analysed different categories/types/characterisations of citizen science for their usefulness for CS Track's objectives and research questions. Because most categorisations were developed for theoretical discussion and not for empirical research, none of them could be applied in the original form. Empirical research requires that the issues to be researched can be operationalised and measured in some way, a criterion none of the categorisations met. Hence, the authors assessed the relevance of each category and type of these categorisations for the research objectives and questions of CS Track. This ended up with so many relevant aspects of categories and types that grouping them into categories proved practically infeasible. Dropping important details in order to construct some more general categories would not do justice to the multitude of possible characteristics of citizen science that other scholars considered as central traits and it would not suit rigorous empirical research. To allow for a sufficiently detailed differentiation between citizen science activities, it was decided to set up a grid of citizen science activities and important dimensions that could characterise them. Consequently, the authors broke down the categories into their elements. The Activities & Dimensions Grid of Citizen Science includes almost all citizen science activities and dimensions other scholars mention but in a more detailed form that makes manifestations of such activities and dimensions measurable.

In a next step the Activities & Dimensions Grid of Citizen Science was reviewed against additional categorisations (e.g. Franzoni & Sauermann, 2013) and meta-analyses of such categorisations (e.g. Schrögel & Kolleck, 2019) and refined.

Finally, the authors suggested some ways to operationalise the Activities & Dimensions Grid of Citizen Science by making the dimensions quantifiable. Operationalisations include measures that could be used to define minimum thresholds for some

dimensions to determine if an activity should be considered as a form of citizen science at all.

The activities and dimensions were checked one by one against the different research issues CS Track aims to shed light on. In a further step, the citizen science activities and their dimensions were reviewed for their relevance for the research objectives and research questions of CS Track.

3 Historical context of citizen science

Michael Strähle

A history of citizen science?

The history of citizen science cannot be written for several reasons. First of all, the history of mathematics, history of philosophy, the history of sociology, and history of historical research can be written but not the history of citizen science. Citizen science is a label attached to quite diverse activities that cannot easily be labelled science: Science education, crowdsourcing, consulting citizens in matters of research by consensus conferences or similar public engagement schemes, interpreting data, even passive contributions by providing computing powers (e.g. SETI@Home) or gut samples have been called citizen science. (In Chapter 6 and 7 the authors present categorisations of such activities.) To write a history of citizen science, histories of all these activities would have to be written and put together.

Furthermore, there is no definition of citizen science all citizen science practitioners would agree on. Suggestions to make efforts to come to an agreement (Dörler et al., 2019) have not been widely accepted (e.g. Auerbach et al., 2019). On the contrary, efforts are made to attach the label citizen science to more activities that look like citizen science to those who apply it: to participatory environmental assessments, patient centred health research, the counting of locusts by peasants in ancient China about 2700 years ago (Irwin, 2018) (although these peasants probably did not consider themselves as citizens), to activities that seemingly remind of citizen science activities although those who conduct them may not consider them as scientific or, in some cases, themselves as citizens. Hence it is not a surprise that no monograph on the history of citizen science has been written. In Scopus, an abstract and citation database of peer-reviewed literature, the author could not find a single paper on the history of citizen science. What could be found are remarks on the history of citizen science, scattered across literature: in case studies on citizen science and conceptual papers, quite often in introductory remarks, and also in reports on citizen science that contextualise citizen science in the history of science. There is a book in preparation on the history of citizen science in Austria in the second half of the 19th century (Taschwer et al., 2019), however, this is quite an exception. And then there is considerable literature on the history of amateur science, the history of science education, and on public engagement in science; literature that does not refer to citizen science, let alone, to the history of citizen science. Therefore, this chapter is less about the history of citizen science but more about what is being told about the history of citizen science and how citizen science or the discourse on citizen science could be contextualised in a history of science, respectively a history or discourse on public engagement or public contributions to scientific research. Because this would warrant a larger research project of its own, this chapter highlights aspects of such a history.

One of the most comprehensive presentations of the historical context of citizen science is Strasser & Haklay (2018), which is part of a larger policy analysis that was commissioned by the Swiss Science Council, and Strasser et al. (2019). Because of its relative comprehensiveness, the following account is largely based on these two studies, enlarged by further literature, especially one touches upon contexts that have not been considered by those who wrote about the history of citizen science so far. When writing about the history of citizen science, one has to decide what is the perspective under which it is written. For instance, it can be a history of ideas, history

of discoveries or a history of how it was shaped by social, political, institutional, and cultural contexts and how it shaped these contexts. Since, as already mentioned, such a task, under whatever perspective, would go beyond the scope of this chapter, the author follows the aforementioned studies to contextualise citizen science and critically scrutinise references citizen science proponents made to invent the origins of citizen science: to the history of citizen science and the giants on whose shoulders these proponents claim to be standing on.

Confusing gentleman science with citizen science

Strasser et al. (2019) mention historical precedents or origins of citizen science: amateur naturalists of the 18th and 19th century and the critique of science and its discontents in the late 1960s and early 1970s. The English version of the Wikipedia article on citizen science sees citizen science in the tradition of Isaac Newton, Georges-Louis Leclerc de Buffon, Benjamin Franklin and Charles Darwin. Ironically speaking, the authors could have added Albert Einstein who, aided by his wife Milena, developed his Special and General Theory of Relativity in his leisure time when he was an officer of the Patent Office of the City of Bern. It appears as if all gentlemen scientists of the 17th, 18th and 19th century were citizen scientists because they were "amateurs" which seems to indicate that "amateurs" are as capable as "professionals" to conduct scientific research, even on the level of Charles Darwin. This view is backed by referring to Paul K. Feyerabend and Erwin Chargaff, two outspoken critics of how scientific research is managed and governed and how it impacts on our societies. By this twist, citizen science is positioned as a kind of "counter-science", the true science, that is put in opposition to today's big science dominated by "money-biased technical bureaucrats" (Chargaff, cit. Wikipedia). By conducting amateur science or engaging members of the publics in citizen science, so can be concluded, citizen science reclaims the sciences back from the bureaucrats. This view is not convincing for at least three reasons. As Strasser & Haklay (2018) and Strasser et al. (2019) point out, "amateur" and "professional" are mutually exclusive categories that have not been established at the time of Newton, Franklin and Darwin. If they were amateurs, who were the professionals at that time? Secondly, irrespective how well justified and well-grounded all activities are that aim at engaging publics in scientific processes, technology assessment and science policy, the differentiation between the sciences and the public, the removal of the sciences from everyday life, was crucial for the development and the success of the sciences (Shapin, 1991; Michael, 1998). In the 17th century Paracelsans considered scientific research that is conducted removed from everyday life as defective since it is not related to and situated in the practical experience of artisans. Before scientific research became a full-time occupation, most scientists and scholars earned a living from other preoccupations. The famous 18th century experimental physicist Georg Christoph Lichtenberg was a university professor, however, astronomer Johannes Kepler earned a living as an astrologist. As Strasser & Haklay (2018) mentioned, Isaac Newton was Master of the Mint for the King in London. Interestingly, Newton considered his research in alchemy more important than the scientific discoveries he is famous for (Dobbs, 1991). The 17th century philosopher Baruch de Spinoza, who was a lens-grinder, a quite profitable profession at that time, and rejected an appointment as a professor of philosophy in Heidelberg, on the one hand embodied the knowledge growing out of practical experience the Paracelsans held in so high esteem, on the other hand he more or less secretly wrote at home most abstract, nevertheless revolutionary philosophy that reduced God to the laws of nature and the substance of the universe.

Thirdly, citizen science is already contributing to big science, big science already conducts citizen science. The most obvious example for this is CERN's CitizenCyberLab which has already engaged thousands of members of the publics in high energy physics, a research area that does not immediately come to one's mind if one thinks of public engagement in the sciences or of citizen science at all. One does not have to be too critical with a Wikipedia article because entries in Wikipedia can always be revised and improved. However, the increasing institutionalisation of citizen science through national and international citizen science associations like ECSA, CSA & ACSA raises the question why so little attention is paid to the historical context of citizen science. Moreover, the comparison with Darwin and Newton conceptualizes public participation in a way that puts expertise in its very centre (Strasser et al., 2019).

Strasser et al. (2019) point to another, more appropriate way how to conceptualise public participation in the sciences: domestic space. Much citizen science is taking place at home; people use their computers at home to fold proteins, for instance. "The home was, since the scientific revolution, the key place for the production of scientific knowledge, especially among natural philosophers developing experimental ways of knowing (…) in the domestic kitchen (Shapin, 1988)" (p. 58). The professionalisation of science is closely linked to the separation of spaces: spaces for living and spaces for working. Since science has become a profession and paid full-time occupation, the separation of the spaces where one lives and where one conduct research marks the difference between those who conduct scientific research as a profession and those who conduct it as a leisure time activity, at least in the experimental sciences. Some scientists may have become painfully aware of this separation of spaces during the lockdown's during the COVID-19 pandemic when they could not go to their laboratory or to libraries as they were used to. Conferences have been (at the time of writing they still are) held online only, without much informal space for exchanges with colleagues about potential funding, applications, etc. (How will this impact on the production of scientific knowledge?)

Crowdsourcing has a long-standing tradition in Asia and Europe

Besides such individual contributions, in other fields of inquiry we can see practices one probably would categorise as crowdsourcing. One could even say that there is a long-standing tradition since centuries of involving volunteers, decoupled from the experimental sciences, in crowdsourcing empirical data. Crowdsourcing is and was not restricted to the Western hemisphere. In ancient China persons collected data on migrant locusts, in Japan citizens count cherry blossoms (Irwin, 2018), and in Africa pastoralists report environmental data in what is called participatory environmental monitoring, respectively participatory environmental assessment (e.g. Turreira-Garcia et al., 2018; FAO). At least beginning with the 17th century, in Europe "it was common for scientific institutions to collect observations from a vast range of people residing in different places" (Strasser & Haklay, p.38). This resulted in sometimes vast observer networks that spread beyond national borders. People collected – and still collect - weather data, identified and collected specimens of plants, reported seismic data, measured water levels, reported trout distributions in Spain (Clavera et al., 2014 & 2017) and observed animals, they keep archives of historical documents, write regional histories and even run museums, for instance museums of local history, which, among other things, display documents, photograph, paintings, and everyday objects which are important for the history of a specific district or region.

From the very beginning these cooperations and networks of contributors have been initiated by the most prestigious scientific institutions such as the Royal Society. Why? Because they relied on these networks. These networks became more and more professionalised by establishing standards and organisational structures to become less dependent and occasional contributions and to rely on systematic ones. Strasser & Haklay (2018) refer here to weather studies. Meteorological societies provided the instruments for measuring weather data and instructed naturalists how to record weather phenomena and measurements. Austria's oldest crowdsourcing project - PhenoWatch -, which is called a citizen science project today, collects weather data. It commenced in 1851 and is organised by Zentralanstalt für Meteorologie und Geodynamik. Meanwhile there is also a citizen science project on old weather data, called Old Weather. The project engages volunteers to transcribe historic ships logs from the 19th and early 20th centuries. Such data about past weather are vital for climate science and also for historical research. One could say that such networks of volunteers have always been important whenever a single person or organisation could not conduct this collection of data alone.

Such calls for contributions could even be recruitment measures. Academies organised competitions and awarded prices for providing scientific or technical answers to practical problems (Caradonna, 2012, cited according to Strasser & Haklay, 2018). The competitions were open to everybody, irrespective of qualifications or social rank.

This may indicate that at least in former times everybody, irrespective of qualifications and social rank, could contribute to the sciences, bluntly said: that everybody was or is an expert. However, this would be a quite romanticising picture of scientific endeavours. Crowdsourcing, the mobilisation of non-professional contributors to scientific research, is neither an "innocent" approach, nor does it necessarily contribute to the democratisation of the sciences. For example, weather forecasting served military campaigns (Strasser & Haklay, 2018). Telegraph networks made it possible to collect weather data from far distances. Nor are amateur science and crowdsourcing *per se* innocent practices that contribute to the democratisation of the sciences and democratisation at large.

Crowdsourcing in totalitarian states

Under the rule of Mao Zedong, China promoted mass science, science by the masses, for instance in earthquake prediction (Fan, 2012). Since for orthodox Maoists scientific research was political, pervaded by western bourgeois or imperialist behaviour and thinking, it was imperative to bring the knowledge of the proletarian masses into the sciences to create a Chinese non-elitist science that makes China independent from western science. This led to an amalgamation of scientific knowledge with folk knowledge that yielded unreliable results.

To understand this policy, one has to understand how China – and also Japan - experienced western science and technology in the 19th century and reacted to it. China lost the Opium Wars because it had no appropriate answer to British weapon systems, especially the canons of the British Navy. The British surprise attacks on Chinese harbours and the humiliation of China that resulted from China's defeat first increased calls for a modernising of the Chinese Army by importing western weapon technologies, later calls for acquiring western science and technology and abandoning Chinese traditions in science and technology completely. As Japan, China was shocked by the capability of western weaponry. For critics of the late Qing

dynasty, the resulting partly colonisation of China by western powers was a clear indication of the decadence of the Chinese elites. Since then, the reference to western sciences meant to save China through western science. This urge to take on western science prevented the critical appraisal of Chinese traditions of conducting research (Needham, 1979). Such an appraisal began under the rule of Mao Zedong, when Joseph Needham started it. Today the Chinese government supports Traditional Chinese Medicine (TCM) and western medicine alike. However, its support for TCM is disputed also in China (Zhu & Horst, 2019).

To give another example: The Soviet hut labs movement that started as a newspapers campaign in the 1920s (Aronova, 2017). Reminding a bit of science shops, a newspaper called peasants to direct questions to scientists. The newspaper served as an intermediary between scientists and peasants and published the scientists' answers. At the same time the intermediary encouraged the peasants to pursue experiments and create so-called "hut labs". After World War II the hut lab movement has grown to a network (Joravsky, 1970, cit. Aronova, 2017). "Many collective farms established meteorological stations and kept routine weather observations; for the most part, the hut labs were engaged in experimenting with crop rotation, fertilisation, weed control, and stimulation of seeds and plant growth (Anon., 1950; Chmora, 1949). However, the production of scientific results was *not* the aim of the movement. Rather, the hut labs were endorsed as a cheap and easy way to increase yields and exalted as a new way of doing science" (Aronova, 2017, p. 235). Lysenko, a biologist and agronomist, was director of the Institute of Genetics of the Academy of Sciences of the USSR. He favoured Lamarckism over Mendel's laws of biological inheritance and made it to a doctrine that theoretical biology must follow Soviet agricultural practice (Editors of Encyclopedia Britannica, 2021). For him the hut labs provided the evidence he was looking for, and he praised those who worked there as experts equal to professional scientists.

Citizen seismology in the USSR and what it might say about today's citizen science

Aronova (2017) also presents a case of citizen/civic/amateur seismologist in the USSR, the case of Vladimir Mannar. He detected a niche for himself in earthquake prediction (see for the following Aronova (2017), pp. 236-245). Similar to the citizen science projects CASTOR and OPAL which offered citizen scientists instructions for how to build low-tech sensors for measuring air quality, Mannar planned to publish a manual on how to build a low-tech seismic station. In Russia, involving volunteers in earthquake research dates back to the 19th century. According to Aronova (2017), staffing seismic stations with non-professionals was usual practice. The originality of Mannar's idea was to engage in earthquake prediction. Among villagers he collected observations of extraordinary events precursing earthquakes, trained pupils in making observations, designed instruments and, finally, the Geophysical Institute in Moscow appointed him as a technical supervisor of a seismological station. However, the acceptance of plate tectonics theory made earthquake prediction a big science enterprise which relies on statistical assessments and probabilities instead of observations, also in the USSR. Mannar called it a capitalist science. Because of changes in scientific theory and the role of high technology in seismology, a paradigm shift (Kuhn, 1962), Mannar's contributions were no longer needed.

With further advances in machine learning, this could also happen to some of today's citizen scientists who tag images of plants or animals, engage in taxonomy, and spot monkeys in videos. Citizen science activities would have provided the vast data

amounts needed to train algorithms (Ceccaroni et al., 2019). As a consequence, citizen science tasks could become more demanding and require more training for citizen scientists. As a non-intended effect, the threshold for joining a citizen science activity could be higher than before because participation would require more expertise or time, thereby being more accessible to people with corresponding education and time resources (Strasser & Haklay, 2018). Another consequence could be that projects could have to allocate more resources for training participants, which could make projects less economically feasible.

19th century: The professionalisation of the sciences, with amateur ornithology that challenged professionals

Science became a more or less regulated profession by the 19th century. As for instance Strasser et al. (2019), Strasser & Haklay (2018) and Felt et al. (1995) mention, since then we can speak of professional and amateur scientists. This has to do with the increasing role of the sciences, especially the natural and technical sciences, for governments and industry. Especially in Germany governmental research institutions and higher education institutions were established; industry established its own research laboratories; universities were organised according to the research driven Humboldt model; and governmental funding of basic research was provided. The professionalisation of the sciences changed the relation between those who conducted research in the public; it also changed how scientific knowledge was communicated to society at large. Parallel to the economic rise of the bourgeoisie, the public sphere emerged (Habermas, 1990/1962). In the 18th century those who watched experiments in physics and chemistry in laboratories, or discussed new findings and theories in salons and cafés (Bensaude-Vincent, 2001), considered themselves as citizens of the republic of science. Diderot's and d'Alembert's Encyclopédie, probably the most important publication of the Enlightenment, which had the objective to present knowledge that was based on experience, empirical findings and reason instead of doctrine and dogma, was a success also in economic respects (Darnton, 1993). In the 19th century, with the professionalisation of the sciences, new printing technologies and increasing literacy, popular science magazines were established, which became a commercial success. Scientific discoveries became an item of mass consumption, not in cafés, cabinets or salons but at home (Bensaude-Vincent, 2001). At first sight, the spatial division between professional scientists and the publics on the one hand and the expanding popularisation of the sciences on the other might have kept out the publics from scientific endeavours. At the same time, British magazines encouraged readers to report inventions and scientific observations. In botany amateur scientists contributed to plant taxonomy. In Paris and Berlin fully equipped astronomical observatories were established, which were open to the general public and amateur astronomers (Bensaude-Vincent, 2001). In Germany the first so-called Naturvereine (natural history societies) were founded in which amateur scientists conducted scientific research on plants and animals. Mahr & Dickel (2019) analysed the relations of such a natural history society, the German Ornithological Society (Deutsche Ornithologie-Gesellschaft, DOG), with professional ornithology and how it compares to today's crowdsourcing practices. Established as a formal association, the members of the DOG set up their own research agendas and methods independently from professional ornithologists, who mostly turned up their nose at these endeavours. There was a striking difference in organisational structures, too. The DOG was organised as an association whose members have been elected and were accountable to the

members of the DOG, which collaborated on an equal footing, while professional ornithology was hierarchically organised.

Apparently, the DOG differentiated itself from professionals by engaging not in taxonomy that can be conducted in an armchair but in field observations. What is more, the huge number of members dispersed across Germany allowed for research for which professional ornithologists would have to organise themselves as a network with a common research agenda: biogeographical research. Having founded its own journal (Journal für Ornithologie), the DOG organised large bird counting projects, following a standardised method which allowed statistical analysis, by publishing calls for contributions. Because of the success of these campaigns amateur and professional ornithologists in the United Kingdom, Austro-Hungary, and the United States adopted parts of the research design. As Mahr & Dickel (2019) put it in drastic terms: It was hijacked by experts (p. 11).

Today's information and communication technologies make crowdsourcing much easier. The smartphones we have in our pockets are powerful computers that, among other things, make it possible to take photographs of birds and plants and upload them to platforms such as iNaturalist or Zooniverse. No doubt, the internet and smartphones are game changers for citizen science. Compared to today's crowdsourcing projects, the amateurs at DOG set up their own research agenda, research design and research infrastructure. They organised themselves as peers and discussed their observations, whereas today's crowdsourcing consists of a transfer of data only. How these data are processed into scientific output is not always convincingly explained by project organisers, also coordinators and organisers are not tired of stressing the educational value of participating in their projects. Understanding how such uninvited participations (Wynne, 2007) as DOG's relate to and impact on science and technology could help us to create a more inclusive science system.

20th century: Big science and its critics

Beginning in the 1930s and continuing during the Cold War when big science came into being, division of labor in science and technology became more widespread, scientific institutions became professionally managed and received almost unlimited funding until the 1980s when expectations began that science and technology should contribute to economic competitiveness (Felt et al., 1995). This goes hand-in-hand with the rising importance of the experimental sciences (Strasser & Haklay, 2018) and modern physics (Bensaude-Vincent, 2001). In parallel the role of an invited participation in science and technology declined (Strasser & Haklay, 2018). Mahr & Dickel (2019) consider DIY biology[1] as uninvited participation in experimental sciences that challenges professional sciences. No doubt, DIY biology does not only challenge the norms and routines of professional biotechnology, it also raises ethical and integrity issues because it is less regulated than professional molecular biology.

First the dropping of atomic bombs on Hiroshima and Nagasaki, later, among other things, atomic energy, the toxic effects of DDT on the environment (Carson, 1962) and genetic engineering led to controversies about risks and adverse effects brought about by science and technology. Although these controversies may look like having

[1] Do-it-yourself biology is a movement grouped around the platform diybio.org that puts genetics into the hands of interested publics. The term refers to all kinds of experiments in genetics outside research labs that range from simple genetic modifications and bio art projects to experiments in body enhancements (Ireland, 2014).

originated outside the scientific communities, they have been stimulated by members of the scientific communities who addressed the publics to sound alarm on developments in the scientific communities they considered of tremendous public interest. Erwin Chargaff warned of threats by genetic engineering, Rachel Carson wrote a bestseller about the toxicity of DTT and the effects it has on the environment. Together with his wife, Linus Pauling organised the petition against nuclear weapon development that was signed by thousands of scientists, among them dozens of Nobel Prize winners, that had a tremendous impact: the ban of atmospheric testing of nuclear weapons and the limited test ban treaty (Strasser & Haklay, 2018). Additionally, in the 1960s also protests against the Vietnam war and the role of scientific research led to a questioning of the directions of science and technology and raised the issue of who actually benefits from them. In the 1960s a citizen scientist would have been a scientist acting as a responsible citizen. Today a citizen scientist is a citizen who contributes to scientific research without having to be a qualified researcher or scholar (Strasser & Haklay, 2018).

In the 1970s we can discern invited and uninvited public participation in scientific research. Uninvited participation means here contributions to scientific research that were neither initiated nor funded by research institutions or governmental research funders. Strasser & Haklay (2018) mention as examples of such public participation: women's health movements which, among other things, aimed at improving biomedical knowledge about women's health by self-examination; the Black Panthers, who initiated the only research projects on sickle cell anaemia, because they considered it as a neglected research topic in health research; the case of citizens of Woburn, especially mothers, who initiated a research project on toxic waste and who convinced professional scientists to support them; and finally the famous case of ActUp, an AIDS activist group, that, after overcoming resistance from the scientific communities was involved in scientific research and AIDS. (On the latter see also Epstein, 1996.)

Science shops are an example of what some STS scholars would call invited participation. They are contact points for public research requests. The first science shops established in the Netherlands, where they are called wetenschapswinkels. In English, "science shop" is an odd name as it insinuates that one can buy something there. In Dutch "winkel" and in German "Laden" have connotations of some organisation of the alternative movement and self-organisation and signal an institution with a low threshold to enter. The first Dutch science shops have been established at universities at natural science departments. Located at the departments or faculties or at the university level these science shops are contact points mainly for civil society organisations and interested citizens with some research demand. From the Netherlands, the idea of science shops spread around the world. Nowadays there are science shops in Austria, Germany, Denmark, Canada, Ireland, the USA, and the United Kingdom, just to name a few countries. Like in citizen science, there is no single uniform model of science shops, because they still largely depend on regional boundary conditions. For instance, in Austria and Germany science shops are extra-university research institutions. Some science shops function as intermediaries by directing research requests to interested students, others conduct most of the research by themselves. There are science shops that work the other way around, too, by contacting civil society organisations who might be interested in research a student would like to conduct on their behalf; some are available for answering questions which do not warrant a research project but can be answered with less effort, like a non-profit environmental helpdesk.

Democratised science?

Science shops seemed to make the barrier between the sciences and the publics permeable. However, what if there is research that never knew such a barrier? Public archaeology in Arkansas might be such a case. Barnes (2007), a scientist working for the Arkansas Archaeological Survey (AAS) says that from its origins, archaeology in Arkansas was a citizen science. In 1932 the AAS was founded out of the concern that construction work and agricultural techniques literally destroyed cultural memory. This concern was shared by legislators, archaeologists and publics alike. AAS involves volunteers in archaeological service since the early 1960s. The roles go beyond being excavators, beyond providing an ancillary service; they are involved in all aspects of the research process. And then other things the contributions of the citizens scientists lead to the establishment of a new research area, African American archaeology.

Public engagement with sciences

In their self-understanding, science shops shared with the aforementioned uninvited participation in science and technology and with scientists who sounded alarm about the hijacking of science and technology by the military and industry one concern: they try to bring public interest into scientific communities.

In the 1980s governments experimented with new forms of public participation in science policy. Most famous for this was the Danish Board of Technology, at that time a governmental agency that developed several of today's most famous public participation schemes: participatory consensus conferences[2] and scenario workshops[3], just to name two of them (Irwin, 2015). Since then, these participation schemes have been copied, adapted and further developed throughout the world to give citizens a say in science policy and technology assessment, sometimes as if they can be transferred and implemented without any consideration of the context they originated from. The "participatory turn" (Jasanoff, 2003) was a turn away from former initiatives to promote public understanding of science that aimed at putting down public controversies on GMO and other controversial topics by informing the publics. The understanding of policymakers behind it was that such controversies rooted in an uninformed public that misunderstood the scientific and technological issues and reacted only emotionally to them. Once the facts are made clear, controversies would disappear. However, these controversies did not disappear because of information campaigns, which could even fuel them. As a consequence, especially after the BSE[4] crisis in the United Kingdom, governments changed course by promoting "dialogue-based" engagement in science and technology policy. Controversies have been and are responded to by deliberative formats for arbitrarily selected mini-publics who have no say in framing the issues to be discussed (Irwin, 2015; Stilgoe, 2014; Felt et al., 2007). Under this perspective, citizens are invited to evaluate scientific issues, however, questioning the discourses of professional scientists is not on the agenda. What may have incited controversy may not be discussed. What

[2] A participatory consensus conference is a jury-like, consensus-oriented public engagement scheme which brings lay citizens and experts into a dialogue on policy issues in science (Participedia, 2018).

[3] In its original form, a scenario workshop is a participatory method for developing common visions and plans of actions on mostly local issues. The engagement scheme involves residents, experts, business owners and policy-makers (Participedia, 2020).

[4] Bovine spongiform encephalopathy

appears as an opening up is in fact a closing down (Stirling, 2008), the harvesting of public opinions (Irwin, 2015), despite the rhetoric of openness and dialogue (Felt et al., 2007). Retrospectively, this turn looks more like a strategy for the management of public controversies than as a turn to a transparent regime of deliberative democracy in science and technology policy.

That presently governments promote citizen science might be due to failing campaigns to promote public understanding of science and the limitations of public engagement with sciences and the overpromising of those who pushed for it. Citizen science, understood as direct engagement of citizens in scientific research, could then be the answer to the deficit model - a perspective that someone lacks information or skills to understand and accept something - implicit in public understanding of science and public engagement in sciences. But why is the educational value of citizen science stressed so much? Why are citizen scientists framed as being in need of science education? As it seems, the deficit model in public engagement in sciences is still alive.

4 Citizen science as a concept

Michael Strähle & Christine Urban

4.1 Two conceptualisations of citizen science

When literature refers to the original concepts of citizen science, usually it mainly refers to two concepts that have been created independently of each other during the 1990s (e.g. Woolley et al., 2016; Wikipedia, March 11, 2021; Cooper & Lewenstein, 2016; Kimura & Kinchy, 2016; Strasser & Haklay, 2018): the citizen science concept of Rick Bonney (Bonney, 1996; Bonney et al., 2009a & 2009b) and the one by Alan Irwin (Irwin, 1995). Although, as Irwin (2015) mentions, these two concepts are not completely contradicting or excluding each other, sometimes they are described as if they are (e.g. Franzen, 2019; Cooper & Lewenstein, 2009). For instance, Cooper & Lewenstein (2009) describe Irwin's concept as bottom-up citizen science and Bonney's concept as top-down citizen science. Juxtaposing them is justified insofar as these concepts present quite different understandings of what scientific research is good for and the roles of citizens and scientists. These differences might root in quite different professional backgrounds. Rick Bonney is a well-known ornithologist, Alan Irwin is a well-known sociologist of science and STS scholar. But they also root in different goals. Bonney aimed at volunteer contributions to ornithology, which are supervised by professional scientists, while Irwin aimed at sketching a kind of new social contract between sciences and societies.

Rick Bonney: Citizen science as citizen education

For today's organisers of citizen science projects Bonney's concept is more relevant than Irwin's. Bonney (1996, Bonney et al., 2009a & 2009b) considers citizen science as an approach to involve volunteers in scientific data collection. As we have seen, such an approach is nothing new in the history of scientific research, and Bonney does not claim to be its inventor, nor does he claim to have coined the term. In 1989, the National Audubon Society, an environmental organisation dedicated to the protection of birds and their habitats, used the term in an awareness campaign on acid-rain (Cooper & Lewenstein, 2016; Haklay, 2015; Mitchell, 1989; Bolze & Beyea, 1989; Strasser & Haklay, 2018), in environmental monitoring. What seemingly contributed enormously to making the term more popular, was the twist Bonney and his team gave to this approach in 2009. In their study commissioned by the National Science Foundation on how "Public Participation in Scientific Research" (PPSR) can improve public science literacy (Bonney et al., 2009a), citizen science became an approach that meets two quite different objectives: cost-effective data collection by volunteers on the one hand and building public science literacy on the other. Interestingly, the term "citizen science" is rarely used in this study; instead, Bonney et al. (2009a) refer to PPSR. In Bonney et al. (2009b) the term "citizen science" is used. The contributions remain within traditional scientific frameworks. By learning how scientific research is conducted, citizens gain trust in the sciences, even more they become good citizens by becoming more engaged in local politics and environmental conservation because they contributed to scientific research and developed a positive attitude towards it (Franzen, 2019). Contributing observational data, an often mundane, ancillary task, is framed as basic education in civic virtues. Bonney et al.

(2009a & 2009b) do not mention the concept of scientific citizenship, a concept used by Irwin (2001) under a critical perspective, but similarities are striking.

Alan Irwin: Citizen science as a responsive science system

Alan Irwin's perspective on citizen science is not geared at an educational objective. He questions the distinction Bonney et al. (2009a & 2009b) apparently make between citizens and scientists. For him scientists are always citizens, and scientists should be aware of this. The issue is less that citizens develop a more positive attitude towards science, but that the science system develops a more responsive attitude towards public interests and needs and a broader understanding of societal, environmental and, yes, scientific issues. Irwin's book is a sociological reflection on the status of different kinds of knowledge and experiences and how the sciences can contribute to today's environmental challenges. As a side note, tackling these challenges is also an important objective for Bonney. In 1996 Bonney stated "that bird watchers will save the world" (Bonney, 1996, 7). Exactly these environmental challenges engage people with scientific research by measuring the toxicity of water etc. because contamination affects them. These challenges and issues are not only scientific ones, they are also social. Their very nature makes it necessary to give citizens a say in tackling them, also in scientific research projects and in setting research agendas. In the tradition of the social movements in science in the 1970s, Irwin demands not to leave the development of solutions for environmental threats only to professional scientists. Being aware of the role the sciences play in reinforcing existing social orders that hinder us from tackling humankind's environmental challenges, he calls for a democratisation of the sciences and hopes for a "pressure 'from below'" (Irwin, 1995, 178, cited acc. to Franzen, 2019).

Bonney and Irwin: Similarities and differences

Bonney agrees with Irwin that citizen science contributes to answering our environmental challenges, Irwin does not consider it as an alternative to 'conventional science' (Irwin, 2015), and both of them will not present their understanding of citizen science as mutually exclusive. However, there are differences between these two concepts that are not sufficiently reflected when reference is made to both of them. For Irwin, participation of citizens in science is valuable because it links research priorities to public benefit. In his concept, citizens are allowed to question scientists' priorities. The question is how we can create spaces for interactions between citizens and scientists to break out of scientific and technological determinism (Mowat, 2011), whereas the concepts of Bonney et al. (2009a & 2009b) could also be understood as marketing of the value of traditional scientific endeavours aimed at the publics (Woolley et al., 2016). If they see a place for public participation in defining research questions is an open question: In Bonney et al. (2009a) they do, in Bonney et al. (2009b) seemingly not. Irwin has a strong focus on public engagement in science by consensus conferences and other deliberative formats (and criticizes their consensus orientation and how they are designed); Bonney et al. (2009a) deliberately excluded them when conducting their study.

Because of their differences in respect to the objectives, benefits and understanding of the roles of scientific research, these two conceptualisations of citizen science cannot be easily amalgamated with each other. The question remains how the reference to Irwin's and Bonney's conceptualisations of citizen science together

made by citizen science practitioners and theorists on the one hand and political decision-makers on the other came about and what functions it performs. It multiplies the uses of the term "citizen science" to an extent that seemingly every participation in scientific research, in data collection or by informing science policy, providing computing power or gut samples, can be called citizen science with some justification.

4.2 Further conceptualisations and definitions for "citizen science"

"Citizen science" is a label attached to many approaches involving publics in research processes: participatory monitoring, community-based research, scientific crowdsourcing, biohacking and participatory action research, just to name a few (e.g. Wikipedia). Quite a long list could be compiled of all the definitions of citizen science that have been made. Just to list a few ones:

The **Oxford English Dictionary** defines citizen science as

> *scientific work undertaken by members of the general public, often in collaboration with or under the direction of professional scientists and scientific institutions.*

Lexico.com defines it as

> *The collection and analysis of data relating to the natural world by members of the general public, typically as part of a collaborative project with professional scientists.*

The **Green Paper on Citizen Science**, published in 2013, defines citizen science as

> *the general public engagement in scientific research activities when citizens actively contribute to science either with their intellectual effort or surrounding knowledge or with their tools and resources.* (p. 6)

And in its **Open Science Survey** (2020), the European University Association defines citizen science the following way:

> *Citizen science is a broad term, covering that part of open science in which citizens can participate in the scientific research process and different possible ways: as observers, as funders, identifying images while analyzing data, or providing data themselves.*

In a **concept paper** on the applicability of citizen science in departmental research of the **Federal Environment Agency in Germany** (Rückert-John et al., 2017), the following working definition can be found:

> *Citizen science comprises voluntary activities that contribute to scientific knowledge and research (Translation by the authors) (Original: Citizen Science umfasst ehrenamtlich durchgeführte Aktivitäten, die zu wissenschaftlichen Erkenntnisgewinn und zur Forschung beitragen).* (p. 19)

As the European Commission writes in its Science with and for Society Work Programme, any definition of citizen science is disputed. As a consequence, the European Commission describes her understanding of citizen science in the Science with and for Society Work Programme 2018 - 2020 as follows:

> *Citizen science is emerging as an important policy orientation but is still largely unexplored. It covers a range of different levels of participation: from raising*

> *public knowledge about science, encouraging citizens to participate in the scientific process by observing, gathering and processing data, right up to setting scientific agenda and co-designing and implementing science-related policies.* (p. 40)

And on the following page citizen science is described as

> *(…) citizen science should be understood broadly, covering a range of different levels of participation, from raising public knowledge of science, encouraging citizens to participate in the scientific process by observing, gathering and processing data, right up to setting scientific agenda and co-designing and implementing science-related policies. It could also involve publication of results and teaching science.* (p.41)[5]

Instead of clear definitions we can find characteristics of citizen science that coincide on the most general level only: that citizen science involves members of the public in scientific processes. These members of the public can be qualified and professional scientists, too, probably from other scientific domains than the ones they contribute to when participating in a citizen science activity as a volunteer (e.g. Transcribe Bentham). However, there seems to be a common understanding that citizen science engages members of the public who lack formal qualifications for it. This applies to descriptions and definitions of citizen science following the conceptualisation of citizen science by Bonney et al. (2009a & 2009b). To make things more complicated, as we will see in Chapter 6 on categorisations and typologies there are other conceptualisations of citizen science, too, that have a broader, normative understanding of citizen science that includes public participation in science policy without claiming that activities such as consensus conferences and crowdsourcing of data are citizen science (e.g. Irwin, 1995). Definitions of citizen science can be clear and appropriate for specific purposes and specific activities. However, we cannot expect a general definition of citizen science that suits all purposes.

A definition is always a decision, but also not making a definition is a decision, too, with practical implications. Some scholars find that clear definitions would be too deterministic and exclude many projects ((e. g. Auerbach et al., 2019). But how can we characterise citizen science without a definition or at least criteria for exclusion? How can there be a responsible policy on citizen science without a clear description what constitutes it? Clearly characterising or defining citizen science would help to present a clear picture what is citizen science and what it is not. Up to now, the sometime vague uses of the term citizen science - a vagueness that, as we have seen, is held up by some citizen science practitioners - allows to attach citizen science as a label to a very broad range of research projects that involve lay persons as participants, contributors of computing resources (e.g. SETI@Home) or gut samples (Del Salvio et al., 2016; Fiske et al., 2019) and even subjects of research such as interviewees, irrespective if they contribute actively to research or are persons who are investigated. They can downplay contributions of cooperation partners who have acquired in-depth expertise in different ways than by studying at university by calling them "citizen scientists". The too unconditional use of the term citizen science creates a free-riding problem. Grant applicants could use the label to win reviewers sympathy. Project owners could use it to safeguard themselves against criticism from peers by referring to the "democratic" or "educational" potential of their projects, and they

[5] https://ec.europa.eu/research/participants/data/ref/h2020/wp/2018-2020/main/h2020-wp1820-swfs_en.pdf

could safeguard themselves against criticism from outside scientific communities by characterising their projects as scientific ones. Using the citizen science label allows scientists to some extent more flexibility to react to criticism by peers, research funders, policy-makers and society at large (Guerrini et al., 2019). In this respect, tackling the vagueness of the term citizen science is an issue of research integrity and social responsibility.

What is citizen science, and do we need to define it?

There is no consensus about what citizen science exactly means even among researchers who are highly specialised on the topic. Just as research funders and policy makers use it differently: sometimes quite differently:

> *[…] no central authority or governing body oversees the field, and even agreeing about who counts as a citizen scientist is challenging.* (Rasmussen & Cooper, 2019, p. 1)

But there has not only been a broad consensus that the term is fuzzy. There is not even consensus if it should be defined clearly.

The term "citizen science" has made a remarkable career in terms of scientific publications and funding schemes. Citizen science policies are developed. Some questions emerge which would go far beyond this report: What do those who are active in citizen science contexts expect to gain from it? Who expects what challenges citizen science to solve?

But in spite of its extensive use and the many promised benefits for society, even highly specialised scholars are far from agreeing what it exactly means. The only broad consensus they have reached is that the term is indistinct. There is also no consensus if this is a disadvantage. If a terminology is desirable or not remains contested. Which is remarkable in view of the many benefits for science and society that are postulated for a high variety of conceptualisations that partially are incompatible. Those who argue against rigid definitions, see a risk of excluding activities and narrowing down the diversity of "citizen science" (Heigl et al., 2019a; Auerbach et al., 2019; Heigl et al., 2019b).

But how can one talk about citizen science, let alone investigate the phenomenon in its different facets and assess the many promised benefits for science and society without having a clear common understanding of what it means?

Among those who are firmly advocating for taking steps towards developing a binding international definition are Heigl et al. (2018) which they see as necessary to develop standards for citizen science. They bring the still unsatisfying situation to the point:

> *But what exactly qualifies as citizen science? It is interpreted in various ways (1) and takes different forms with different degrees of participation (2). In fact, the label citizen science is currently assigned to research activities either by project principal investigators (PIs) themselves or by research funding agencies.* (Heigl et al., 2018, p. 8089)

One could add that it is also other scholars who sometimes assign the term rather arbitrarily, too, because of the mentioned lack of clear definitions.

In spite of intensified discussions as the term "citizen science" is used more and more often, the challenge to find clear definitions prevail, as even the most recent literature shows. Vohland et al. (2021) still ask the question "What is citizen science?" and

describe it as broadly referring to "*active engagement of the general public in scientific research tasks.*" (Vohland et al, 2021, p. 1). But, even this very general and inclusive definition excludes some activities which are presently recognised as citizen science: citizens' deliberation on research policies would not belong to "research tasks". Also, when individual citizens or NGOs request information or more research on a certain question, they may trigger research without further engagement. The umbrella label citizen science frequently also includes innovation and development (sometimes) happening in fab labs or maker spaces, but these are usually not called research tasks, either.

Hence, adapting the above sentence, in the broadest sense one could say that presently citizen science is a rather undefined term that refers to the active (or passive) engagement of the general public in activities that are in some respect related to science and/or innovation, excluding those members of the public who are (substantially) paid for it.

Déjà vu? Similar debates on public engagement and citizen science terminology

Some debates on citizen science conspicuously remind of debates on public engagement we have had since the 1990s at least. Definitions and descriptions of citizen science include references to fields as different as education, science and public participation, a complex of references that resembles the meanings of public engagement (Lewenstein, 2016). Some other similarities between citizen science and public engagement are striking. As no definition of public engagement seems to capture all shades of meaning, no definition of citizen science is accepted as conclusive; and as it is always open to discussion when participation begins, so it is always open to discussion what is part of citizen science and what is not. Eitzel et al. (2017) argue for using the term broadly so it is more inclusive. Other people than professional researchers participating in citizen science activities maybe do not see an advantage of such an ambivalent concept or term. Such ambivalence might be praised as democratic flexibility because it allows for inventing more and more schemes to involve citizens in scientific processes and call it citizen science. But that was the case with public engagement too. Another commonality between public engagement and citizen science is the imagination of two different spheres, science and society, a quite artificial distinction, if we take into account that, as Sheila Jasanoff (2014) put it, we children of modernity are enmeshed in science and technology. And, just to name a few, as Bruno Latour, Ulrich Beck and Hans Jonas made clear, our societies have become laboratories for scientific experiments. What is the use of making a distinction between science and society? What Bauer & Jensen (2011) said about public engagement may apply to citizen science, too: "This ambivalence in the definition of public engagement activities allows scientists to police the boundaries of science/society flexibly and with their own interests in mind." (Bauer & Jensen, 2011, p. 4). Meanwhile, definitions of public engagement and citizen science have multiplied, so have terms that refer to science/society relations, especially in European research programmes.

Debates on terminologies in citizen science

The terminologies in citizen science are subject of ongoing debates among scholars, policy makers and practitioners. It would go beyond the scope of this report to describe all the suggestions made by different authors. It suffices to say that no

practicable solution has been found yet. To give a picture of the current situation the authors give some examples of different attempts to shed light on what terms are used.

One strategy is to apply quantitative methods to investigate which vocabulary is used in the field of citizen science. Statistical analyses of literature, websites or online media can also shed light on the frequency to which the investigated terms appear. This approach can give a rough idea of their popularity in different research fields, the contexts in which they are used and how it changes over time. Just to give an idea of the abundance of expressions that have been invented over the time, the authors start with one work that restricts itself to the area of geography alone. It is only an example among others of how scholars tackle the issue of terminology.

Linda See et al. (2016) performed some extensive research on which terminologies have been applied in literature and on the web connected to passive or active involvement of lay people in science and/or crowdsourcing in the geospatial field. Their overview gives a good picture of the lack of clarity in terminology in citizen science, crowdsourcing and other forms of contributing geographic information and how the use of expressions can change over time. (See et al., 2016, p. 8).

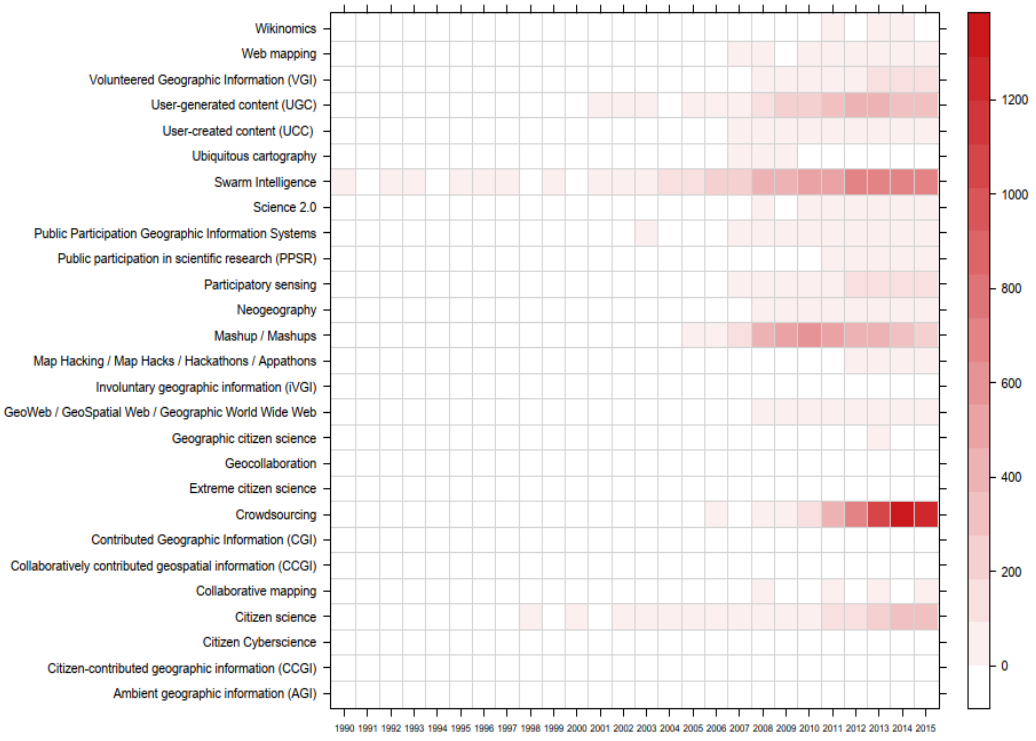

Figure 2. The frequency of occurrence of different terms found in the literature relating to Crowdsourced Geographic Information.

(See et al., 2016, p. 9.)

See et al. (2016) conducted then a Google Trends analysis of these terms. Interesting in the CS Track context are their results for comparing "crowdsourcing" and "citizen science", the latter appearing more often from 2007 on and then staying comparingly constant until 2015, while a stronger raise of the term "crowdsourcing" is observed (See et al., 2016, p. 9)

In their conclusion See et al. write

> *The majority of sites do not collect very much information about participants. This may make participation easier but it means that very little research can be undertaken on the relationships between participation, data quality and demographics, or on the understanding of motivational factors.* (See et al., 2016, p. 17)

They confirm that there is much more than a merely terminological problem when talking about engaging other people than professional scientists in research projects: The difficulty, or sometimes impossibility, to assess which people are actually involved, further complicates the understanding of the term "citizen science".

Kullenberg & Kasperowski (2016) performed another quantitative analysis. Their scientometric study is not dedicated to a certain area but to citizen science in general. In their introduction they ask - like other scholars - "What is citizen science?" and answer it similarly as most of them:

> *The meaning of "citizen science" is in fact not very clear, particularly when formulated on a science policy level, where it is often defined too broadly without making the distinctions that scientists work with.* (Kullenberg & Kasperowski, 2016, p. 2).

They approach the issue with an analysis of publications referenced in Web of Science (WoS) and of the co-occurrence of related terms. Interestingly, they find no scientific output for the majority of projects they retrieved, which is why they conclude that primarily many citizen science projects do not have a scientific objective (Kullenberg & Kasperowski, 2016). This would be worth to be further investigated. Does the lack of scientific output prove that there was no scientific objective in the first place? There may be other reasons for not leaving such traces in the WoS: A number of citizen science projects with scientific goals may not have succeeded in publishing their results, and other citizen science projects may not have thrived for publishing in high profile journals at all. (The paper refers to non-professional contributors as "volunteers",)

Either way, if "citizen science" had no substantial scientific goal, it would not be clear why it should be called "science". Other terms like "science education" or "science communication" might then be more appropriate. Having no substantial scientific goal would also contradict the 10 principles of citizen science launched by ECSA, which are widely accepted now (Robinson, 2018, p. 29 et seq.).

A radically different approach of shedding light on the term "citizen science" than researching how it has been used in the past, is directly asking those who are presently making use of the term to decide on how to use it in a less fuzzy way. Such negotiations of definitions can take the form of surveys or consultations.

Much attention has received a recent initiative, a cooperation between EU.CitizenScience, a project funded in Horizon 2020, and ECSA – The European Citizen Science Association, to characterise citizen science. At the time of writing, details on the methodology are not published yet, only the results and explanation notes are found at Zenodo. Citizen science scholars and citizen science practitioners developed vignettes[6] which described fictional examples of diverse citizen science activities. People were invited then to comment on these vignettes and to decide which of them should be included in the term citizen science or excluded. A version 1 of the

[6] According to the Oxford English Dictionary, a vignette is "a brief evocative description, account, or episode" (https://www.lexico.com/definition/vignette).

document dates from April 2020, apparently an ongoing process is intended (Hakley et al., 2020a & Haklay et al. 2020b).

Because there is no detailed description of the methodology yet, it is not quite clear how far the "characteristics of citizen science" should be regarded as a research study or a consultation. If it is the first, there are few methodical questions. Why using vignettes? They can hardly be formulated in a neutral way. If the texts are loaded, they can steer the reader into a certain direction and thus influence answers. Vignettes have been used in psychology for quite specific research questions. In the second case, if it is intended as consultation, then it is part of direct or indirect political decision making in the research area. Deciding on what can be called "citizen science" most likely co-determines what will be eligible for funding under the label "citizen science". In that case, a higher degree of transparency would be called for. It should be clear who was involved in such a decision-making process, how the invited were selected, how results were documented. Obviously, the characteristics do contain elements of consultations, but it was not fully illustrated yet to what degree the procedures tried democratic approaches.

Characterising citizen science and the meaning of the term is an ongoing endeavour of citizen science advocates, proving (again) the non-existence of satisfactory definitions. This is notable insofar, as under this fuzzy label there exist already research policies, green and white papers, and funding schemes. Albeit still undefined or in spite of its blurriness, citizen science is also included in the MoRRI indicators, a monitoring system based on quantitative indicators for measuring Responsible Research and Innovation activities, and counts as a sign of "responsible research and innovation" (e.g. Stilgoe, 2019).

Conceptualisation of "citizen" and of "scientist"

The core concept of citizen science consists in a distinction between professional scientists on the one hand and citizens who are not professional scientists on the other hand. Without this distinction any scientific activity would just be science.

According to Encyclopedia Britannica, science is

> *any system of knowledge that is concerned with the physical world and its phenomena and that entails unbiased observations and systematic experimentation. In general, a science involves a pursuit of knowledge covering general truths or the operations of fundamental laws.* (The Editors of Encyclopedia Britannica, n.d.)

Other encyclopedias present similar definitions.

None of these definitions say that science is defined by any characteristics or educational background of those who carry it out, which weakens the concept of citizen science.

Hence, one could say that citizen science is about participation of persons in research and/or innovation who would normally not take part in it (or not be noticed as taking part in it), without (substantial) pay. The vagueness of the concept of the citizen who is different from the ordinary scientist is also expressed by a heated discussion among citizen science practitioners and scholars about how to call him or her.

Needless to say: No satisfying solution has been found yet. How could it be possible to find a common name for the participants of very different concepts of citizen

science? They may be students, pupils, volunteers, practical consultants, amateur inventors, participants in consultations or local interest groups? It seems that the discussion about which characteristics citizen scientists must have to turn science into citizen science is replaced by a discussion about perceived or assumed sensitivities of these "citizen scientists".

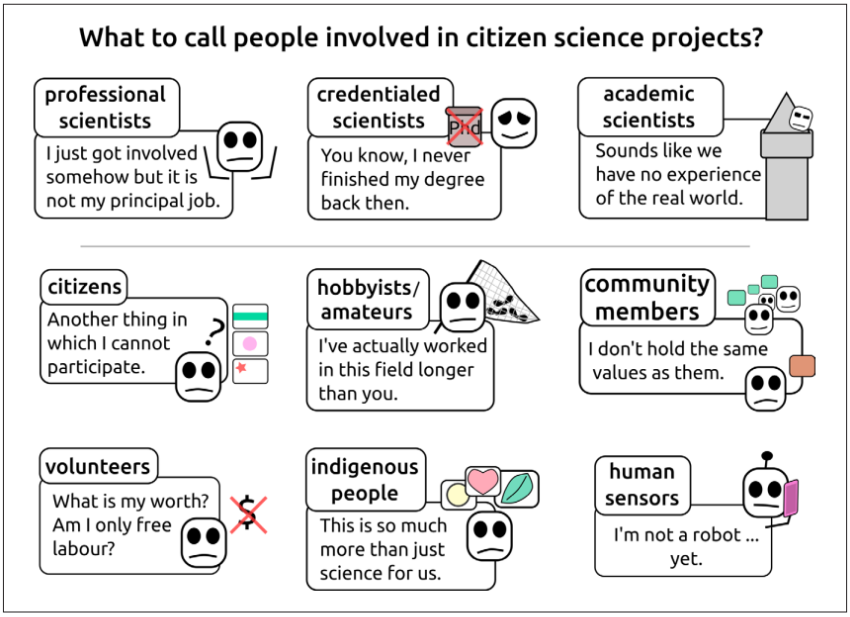

Figure 1: Illustrated examples of negative interpretations of commonly used names to describe people participating in citizen science, selected from our list of terms. Every term is used and interpreted in many different ways in different situations; this graphic highlights interpretations commonly encountered by the authors (also see Tables 3 and 4, particularly 'caveat' column).

(Eitzel et al., 2017, p. 5)

It appears that problems of terminology in citizen science are mainly discussed by scientists. But do we know how far people outside the academic field of citizen science are interested in this terminology, given that there is not enough evidence on how far citizens are even aware that they are contributing to science or know that there is such a discussion on how they should or should not be named within the academic citizen science communities?

Probably the best-known scholarly contribution to this topic was written by Eitzel et al. in 2017. Notably, the authors come from science and/or educational backgrounds and had started a discussion on the CSA mailing list about how to name citizens. In the following a working group developed which conducted an analysis of the different understandings of citizen science and related terms (Eitzel et al., 2017). In spite of careful consideration of a large number of possible terms, the original question, how to call people participating in different roles in citizen science, could not be solved: For any possible term they analyse, the authors find also a caveat, a way to interpret the term as problematic in one way or another and depending on the context. While some terms obviously contain negative connotations or show condescension, there are also terms for which the alleged caveats look a bit artificial. A "professional researcher" is put into the same group as a paid or employed researcher (Eitzel et al, 2017, p. 12). But a volunteering professional remains a professional – in contrast to being paid or employed. For a "volunteer scientist" they see a potential negative implication of being "inexperienced or not worth to be hired"

(Eitzel et al., 2017, p. 12). But "volunteering" just indicates not being paid for a task, which refers to neutral fact and not necessarily a value judgement. That a "contributor" would be similar to a "donor", who is mostly considered somebody who bestows funds or goods (Eitzel et al., 2017, p. 14), might not be a too frequent interpretation of the term.

The issue of finding terms for people participating in citizen science could be complicated by some scientists' tendencies to overestimate their status in society. In citizen science communities, whose members are mostly scientists and scholars, a power imbalance between professional scientists and people who have no academic education is perceived, with the latter in the weaker position. But how realistic is this picture nowadays? Since a few decades the number of people, who acquire higher education, has risen. In 2019, more than 40 % of the 30 - 34 years olds in the EU had completed tertiary education (EUROSTAT, visited 2/2021). If average professional scientists see themselves as socially superior nowadays, this might be rather wishful thinking and/or denial of the typical working conditions academia offers to younger scientists. In spite of the egalitarian rhetoric, some citizen science scholars seem to consider it embarrassing for a person not having studied at a university. This may be one reason why they see any explicit terms as "problematic" and one tries to circumscribe. But at the same time, it remains speculation how much citizen scientists/lay people/volunteers really care about how professional researchers call them, because they are seldom asked.

The prefix "lay" (e. g. lay researchers/lay persons)

Although it seems to be widely acknowledged that the use of "lay" in connection with participants in citizen science would be highly problematic (Eitzel et al., 2017, p. 14 et seq.; Strasser et al., 2018, p. 55), the reasons for this condemnation of this prefix are not fully clear, especially in view of the fact that "lay preacher" or "lay judge" are not at all derogatory terms.

The underlying confusion might lie again in the different conceptualisations of citizen science: Being a lay person is not synonymous with possessing no university degree. But in the context of citizen science, it is interpreted that way sometimes. A prominent example for doing so is Peter Finke, a philosopher of science, who published on citizen science. The title of one of his books can be translated as "the underestimated knowledge of laypersons" and gives the example of Irmgard Sonneborn, a saleswoman, who accumulated so much knowledge in her leisure time that she became a renowned expert of botany - even though she never went to university. (Finke, 2014, p. 13). This use of the term denies that expertise could be acquired by autodidactic learning. People who have accumulated extensive knowledge over many years of self-study and who are even recognised by scientists are usually not defined as "lay persons". Neither the Oxford dictionary nor the Duden dictionary, the authoritative dictionary on German at least in Germany, are specific on how much expertise needs to be acquired to go beyond the status of a "lay person" (in a certain field). It is the question how often the term "citizen science" means to include research cooperations between university-educated, specialised scientists with other high-level (although unpaid) experts. These can be people who have subjected themselves to laborious self-study and/or who have worked for many years in the field of interest. In some cases, indigenous people could be meant who possess extensive traditional knowledge that has been accumulated over generations of observation and experimentation (e.g. Walajari, 2019; Liebenberg et. al., 2017). At least, differentiation

between working with other experts and people without specific knowledge is necessary, as these are entirely different conceptualisations of citizen science. The benefits which citizen science proponents most passionately claim would rather support the latter concept: Usually citizen science proponents emphasise the advantage of involving persons who have no specific expertise in a field (see: chapter benefits) and would otherwise not engage in knowledge building.

Does citizen science necessarily involve a cooperation with volunteers?

Many authors assume that citizen scientists are volunteers[7] who engage in science projects. The term does not do justice to the full range of meanings attributed to citizen science.

"Volunteers" is not an expression that informs much about who has to cooperate to make some scientific endeavour citizen science. Firstly, in some cases scientists organising a project are not paid, and thus volunteers like the citizen scientists.[8] Secondly, if citizen science activities are carried out in formal education, "volunteers" would hardly apply to students or pupils. In cases where citizen science is part of a curriculum, their participation is obligatory. Even if citizen science is organised as a voluntary activity that is not a direct part of school lessons or university courses its fully voluntary character remains questionable. Hence, not all conceptualisations in citizen science see the involvement of volunteers as necessary.

Thirdly, and maybe most importantly: If one gives one's opinion in a public consultation one usually would not use the term "volunteer" either. Volunteering refers to working for a good cause rather than saying what one thinks about an issue. Defining the act of "making decisions" – not the process of coming to this decision – as "work" could have some consequences for democracy, which would merit a research project of its own.

Are scientists cooperating with "ordinary" citizens in citizen science?

The term "ordinary" seems to be often accepted for other participants in citizen science than professional scientists. For instance, the authors found it used by a COST action on citizen science[9] and many others. The term "ordinary" suggests that researchers are "special" while most other people are not. (By the way, this contradicts the manifold initiatives to make young people consider science careers by promoting that science is an ordinary profession occupied by ordinary people like many others). Whereas the term "lay person" always depends on the specific context, and even the most successful scientists are lay persons in most areas, "ordinary" is a statement on the person as a whole.

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[7] According to some authors, even the frequently used term "volunteer" could be problematic as it focuses too much on participants not being paid or even questioning the value of their work (Eitzel et al., 2017).

[8] Of course, this does not exclude any future payoffs in the form of higher earnings because of publications and stronger reputation.

[9] CA15212 - Citizen Science to promote creativity, scientific literacy, and innovation throughout Europe, https://cs-eu.net/about, last access on 8 February 2021.

Citizen scientists

The term is confusing on several levels. A professional scientist is as much a citizen as a lay person. The term "citizen" can be understood in different ways and can refer to legal citizenship, however, it is clearly not the intention of citizen science proponents to exclude anybody. Additionally, many tasks carried out by citizen scientists are not tasks predominantly carried out by scientists. Instead, collecting data, taking probes, and many other tasks have traditionally been carried out by *auxiliary* personnel employed by scientific institutions. Hence it boils down to a definition of a citizen scientist as somebody who is not paid for performing scientific tasks or ones supporting scientific research. When we do not know who actually participates in a citizen science activity, the term "citizen" is a wildcard. Because of such an indeterminacy the term "citizen" can become a projection screen for more or less unfounded ideas, who these citizens actually are, who contribute to a scientific project, and of insufficiently justified, sometimes even patronising, claims by project organisers what benefits citizen science has for "citizens".

The terminological contradictions between the different scholars do not end here. There is some indication that citizen scientists do not identify with it. Tancoigne (2019) analysed the use of the term "citizen science" on Twitter and finds that

> *Many participants in citizen science projects with Twitter accounts do not use the labels "citizen science" or "citizen scientist" in their profiles. These are terms constantly used by organizers and the media, but even the top participants do not include the expression in their bios.* (Tancoigne, 2019, p. 11)

It is unclear if they do not know the term or if they reject the expression. Some empirical research may be indicated, because we did not find much about how far citizens are aware that what they do is called citizen science or if citizens do not like to be called citizen scientists. We found anecdotal evidence that some biohackers prefer to be called scientists because they consider what they do as rigorous research. For them the term "citizen science" seems to have connotations of amateurism and non-professional science (Guerrini et al., 2019). In other contexts, the term "citizen science" can have undesirable connotations, because of the political connotations. In Japan, e.g., there are concerns using the term "citizen science" because of its connotations of oppositional political activism, especially anti-nuclear activism. Situating oneself against the government makes it more difficult for everyone to join such an initiative (Kenens et al., 2020). According to Kenens et al. (2020) only one of the citizen science organisations they investigated, used the term "citizen science", interestingly it is the one that is mostly cited in the citizen science community - Safecast. With the exception of Safecast, these investigated initiatives - all of them are bottom-up initiatives that were created after the Fukushima accident - do not aim at contributing to science, instead they want to serve their community. Scientific research has a purely functional role here: measuring radiation accurately. In some cases, experts have been consulted informally only, in others they were co-founders of such a citizen group; nevertheless, the main objective was never the scientific one. Is this citizen science or something different?

Debates about terminology of citizen science have primarily paid attention to problematising what is meant by "citizen", but neither what is meant by "science" nor what these non-professional researchers and contributors called citizen scientists experience as science, as if it were quite obvious what science is, as if science and technology would be neutral, not being co-created by the power struggles in the social and economic systems they are part of. What science is meant here? Mostly

natural scientific research or also humanities research? Moreover, such debates about terminology are mostly led by scientists. As Lewenstein (2016) points out, the implications of labelling citizen science as "science" are far from being clear. For some practitioners, citizen science is a new approach to science, for others it is a kind of counter-science, some consider it a kind of teaching method. The list could be enlarged.

In a Commission brochure on citizen science, the authors write that "it is important to distinguish between the concepts of public engagement, co-creation, citizen science, open science and science communication to clarify the purposes of each in the context of Horizon Europe" (European Commission, 2020, p. 27). We agree that this terminology is confusing. But why define all these terms? Do we need them all? Maybe it is a proper solution to apply the law of parsimony here: Words should not be multiplied without necessity. The potential confusion about the term "citizen science" is created by the temptation to apply it as a general term for a lot of practices in public participation in scientific processes and science education. These discussions about terminology and meaning can partly be avoided by having a look at the universe of participatory practices and reminding oneself how these practices are called instead of trying to apply a general term as a catch-all word for all these practices.

Some scholars – e. g. Eitzel et al. (2017), recommend that participants should be given the choice how to be named (Eitzel et al., 2017). In many situations this may be a practical solution – but for researchers analysing citizen science, potential funders or regulating bodies governing legal and ethical issues, developing more clearly defined terminologies would ease talking about issues related to citizen science.

5 A literature review on citizen science-related topics

5.1 A description of available peer-reviewed scientific literature

Michael Strähle & Christine Urban

What do we find when searching literature about citizen science? In a nutshell, we find an abundance of case studies, essays, reflections and reports. Most of the literature consists of presentations of projects by researchers who conducted them, however, reviews and comparative analyses of issues of citizen science are rather scarce so there is only little empirical evidence on them. The available empirical evidence is not sufficiently comprehensive to allow for well-founded assessments of the state-of-the-art in citizen science.

We used mainly three sources to get a picture of what has been published on citizen science:

Google Scholar: A research was performed in May 2020 which gave back thousands of hits. Searching with the same terms year by year gave back considerably different numbers than a search over several years. Google Scholar is not very selective, many of the hits were not cited in other literature. To cut down hits, mostly retrieval of titles in combination with keywords of special interest was performed.

Scopus: Information retrieval also in this scientific database from December 2019 - February 2020 and October 2020 - January 2021 yielded a similar number of hits and trends.

Pubmed: May 2020: Gave back literature mainly but not only in the health sector.

Google Scholar and Scopus gave an impression of the incredible amounts of text that has been produced and presented on the topic of citizen science.

While Scopus and Pubmed are scientific databases that contain mostly peer-reviewed scientific literature, Google Scholar presents a broader range of scientific publications that include preprints and grey literature such as research reports.

In most of the case studies their authors tend to depict a project as an example of what citizens scientists can do. As stated before, often their authors are the project organisers themselves. Many of them paint a quite positive picture of the achievements and impacts, but it is not clear how many contain also critical self-reflection. Secondary analysis of and secondary research on a random selection of these reports and case studies - most of which have not been subjected to deeper investigation - could yield valuable insights to citizen science: the narrative of project organisers, their perspective, their worries, how they like to see the project and too be seen. And sometimes there is a (self-)critical review that does not embellish errors, cul-de-sacs and unsolved problems. The latter might not be fashionably optimistic, but pointing out issues that need improvement are the main chance that they can be improved. Unfortunately, such a secondary analysis across a considerable number of

projects would go beyond the scope of CS Track. It would require not one but many projects to answer all open questions that came up during literature research.

The literature we use in D1.1 is mostly restricted to peer-reviewed literature and/or work that has found recognition within the citizen science community.

5.2 Citizen science and its relations with the science system

Michael Strähle & Christine Urban

Benefits: Claims and identifications

Not only is there a broad range of interpretations of what activities can be tagged as citizen science, there is an equally broad range of hopes how citizen science can be beneficial in various dimensions. Several scholars have analysed the literature, identified and categorised the various promises made about citizen science adding to the common good.

For instance, Kimura & Kinchy (2016) carried out an extensive literature review and identified seven claims among many other claims that received the most attention. They found that - according to citizen science scholars

> *Citizen science can enable researchers to overcome a variety of constraints on their research. It can have an educational function, expanding scientific literacy and environmental awareness. Some claim that citizen science empowers participants in a variety of ways, such as building social capital and leadership skills. Citizen science projects can level inequality between experts and laypeople and foster collaboration. Citizen science can also help social movements by filling gaps in knowledge and challenging official accounts. There are indications that citizen science can bring about policy change. It can also be used to catch polluters and bring them to justice.* (Kimura & Kinchy, 2016, p. 333)

The authors conclude that no single project can show these virtues at the same time, "particularly since some of them are contradictory" (Kimura & Kinchy, 2016, p. 333).

The impression that literature is somewhat overly optimistic about what citizen science can do and achieve for individuals, science and society is also confirmed by Strasser et al. (2019). They allocate the diverse promises to three groups, which, as they think, should be critically evaluated:

> *Among the various kinds of participatory research projects, those promoted under the banner of "citizen science" have produced a particularly dense promissory discourse. Three kinds of promises are made: a greater democratisation of science, better scientific literacy, and new scientific breakthroughs.* (Strasser et al, 2019, p. 62)

Our own literature research confirms what is stated by these scholars: a broad range of benefits are claimed. (Of course, they also depend on the understanding of citizen science and its goals). Identified and claimed benefits are mostly indicated without further explanation or based on anecdotic evidence that might be true for the specific projects in which they have been identified. There are undoubtedly benefits that are very plausible, and for some projects positive evaluations are available.

However, benefits cannot be assumed for citizen science in general: They have to be assessed project by project.

At the time of writing, no systematic assessment of the benefits of citizen science for scientific research could be found, even not for specific areas such as biodiversity research. Some benefits can be deducted, e.g. on the basis of methodological considerations, however, for some benefits there is only anecdotal evidence which cannot be generalised.

Benefits for the advancement of the state of research in some areas brought about by citizen science are indicated. Scientists may have a career benefit from contributions by citizen scientists, however, seemingly such benefits have not been investigated so far. Investigations of researchers' career profits - and also losses - would help us to deepen our understanding of impacts citizen science may have on advancing scientific knowledge, incentives and disincentives, and barriers and enablers for scientists to engage in it. At the time of writing, the issue when citizen scientists expect a personal benefit from contributing to scientific research and what benefit they expect has not been investigated across a sufficiently broad and diverse range of scientific projects already. Probably it can be fairly assumed that citizen scientists do not expect a personal benefit if the contributions require little effort. This is in line with research on success factors for citizen science projects. These studies identified as a success factor very small tasks for citizen scientists that do not require much scientific training or cognitive efforts (e.g. Riesch & Potter, 2014). Tasks such as taking a photo with a smartphone and loading it up to a platform are very minor contributions that can take little time unless contributors feel compelled to engage in a competition, who takes the most professional picture. However, citizen scientists might be interested in benefit sharing if the research they contribute to can be commercialised unless they do not decline participating in such projects (Resnik et al., 2015; Guerrini et al., 2018).

The general question here is: Who identifies what benefits for whom? In this chapter we focus on benefits identified by scientists; benefits identified by policy-makers will be discussed in D1.2. Since we rely on scientific literature, we discuss what specific benefits of citizen science scientists identified. In their understanding of citizen science most of the authors seem to follow the Bonney model that situates citizen science in a classic epistemic framework of scientific research with participants in traditional roles. When the main objective is to gain scientific insights and to publish them, this is no surprise. Citizen initiatives that design their own research activities often do so to pursue a purpose that goes beyond a scientific one, and research might be only one of several other means to reach the initiatives' objectives such as environmental or health protection. Of course, there is no clear-cut separation between scientists on the one side and activists on the other. Activists may use scientific evidence to promote their uses, and scientists may have similar ambitions as activists, however, their reward systems are different. The main objective of activists is not to be rewarded by publishing often cited peer-reviewed articles in scientific journals with a high impact factor, by patent applications or by receiving scientific prizes or grants.

Benefits identified by scientists can be clustered into ones for the advancement of scientific research, the environment and ecological systems, citizens, and society at large.

In principle some benefits to scientific research brought about by citizen science can be

- discoveries and insights that could or would not have been gained without contributions by citizen scientists because of their skills, computing power they provide, or data not to be had otherwise than by citizen science;
- recognising of knowledge gaps (Elliott et al. ,2019) and blind spots;
- generating new research questions (Elliott et al., 2019), new research topics or new perspectives on research topics;
- and cost benefits.[10]

For all these potential benefits we can give examples but they cannot be generalised, especially not across approaches and methodologies. Without extensive research on different citizen science approaches and single activities it is impossible to say how far any potential benefits are typical or not.

Resnik et al. (2015) briefly give examples of benefits of citizen science other researchers have indicated. They identify three main benefits: Citizen scientists are a valuable resource for scientists because citizen science may allow to conduct research projects that could not be conducted by researchers themselves because of their geographical scale, the time, labour effort and, probably, funding they would require. Among other things, citizen scientists provide "free labour" and ancillary science services by gathering data on animal behaviour, environmental pollutants, invasive species and animal and plant populations. However, if this "free labour" goes far beyond small tasks it raises the issue why these tasks are being done by citizen scientists without remuneration. Furthermore, among other things, citizen scientists can contribute to research design, subject recruitment, and dissemination activities and help to take societal needs into account. The second benefit they determine is an educational one: an enhanced understanding of science that translates into public support for scientific research, an empowerment of citizens, and a better understanding and appreciation of nature and the environment. The third benefit they see is a democratisation of science by giving lay persons a say in scientific issues. Although these examples make an impressive list of benefits, it cannot be said with sufficient certainty that they are the result of a systematic assessment. Especially the claim of a democratisation of science by citizen science may not be sustained when critically scrutinised.

Discoveries and insights

Named as specifically successful are the insights and discoveries brought about by players of the scientific online puzzle game Foldit.[11] These players try to "fold" proteins into the most stable state they can adopt. The accomplishments of these ten-thousands players include have been published in Nature several times, in PNAS and PLoS Biology, just to name the most important journals, In 2017 the Entomologischer Verein Krefeld (Entomological Association Krefeld), an association of hobby entomologists that is headed by a biologist who wrote his doctoral dissertation on an entomological topic, proved by a standardised method that in the Krefeld region the "biomass" of insects had declined by 75% in the period 1989 - 2013. The results were discussed in the German Parliament. Apparently academic research had not

[10] See on this also the chapter on economic aspects of citizen science.

[11] *Solve Puzzles for Science | Foldit*. (n.d.). Foldit. Retrieved April 11, 2021, from https://fold.it/portal/

performed such research so far (Hilbrich, 2018). The world's largest data repository on biodiversity, the Global Biodiversity Information Facility, gets half of its data from citizen scientists. According to Irwin (2018), these data have been used in more than 2,500 peer-reviewed papers between 2009 and 2018.

Recognising knowledge gaps and blind spots

Referring to S. Harding and H. Longino, two eminent philosophers of science, Elliott et al. (2019) point out one of the major topics of philosophy of science: objectivity. Generally understood as an attempt that all truth claims rest on impersonal criteria. This is an ideal because scientists may unite around common approaches, general assumptions and even habits, similar to what Kuhn called paradigms (Kuhn, 1962) and Fleck called thinking styles, not around impersonal criteria only. To give scientific minds a body, Haraway (1988) reminds us that our knowledges are situated, essentially partial. For Harding and Longino science is social knowledge that requires diversity to get a more complete picture. This is where also lay participants - that do not necessarily have to be citizen scientists - can play a decisive role: By bringing in other and diverse perspectives, interests, and complementary knowledges and experiences, they can play a valuable role in determining which avenues to investigate and what areas of research deserve more consideration than others and to detect blind spots. (However, scientific research has to safeguard itself from inappropriate advocacy. This applies to industry-related research, too.) Although their contributions may not lead to disruptive innovations or radical technological breakthroughs, it may make research more attentive to societal needs and different knowledges.

New research questions

Involving other people than scientists with whom one shares a thinking style or perspectives can be challenging and also rewarding by generating new research questions. As Elliott et al. (2019) point out, new research questions can also be generated and new inquiries can be facilitated, especially in ecology, by the new opportunities for data collection citizen science allows for.

Some forms of citizen science can bring data collection on a new level

One benefit seen by a lot of scholars is crowdsourcing of data, including the potential of citizen science to collect a previously unimaginable enormous amount of data. This is closely connected with technical advancements that allow the majority of the population to purchase sophisticated smartphones, tablets and similar gadgets, with which it is possible to make high resolution photographs and to include information on the place and the time where/when they were taken.

However, the reliability and quality of data and their collection is regarded as an Achilles heel of citizen science (see e. g. Catlin-Groves et al., 2012; Freitag et al., 2016). There are sites that are more frequently observed by citizens than others, and at different times. More data are gathered in well-populated places (Catlin-Groves et al., 2012) or those that are less remote (Callaghan et al., 2020). Sites in less populated areas, near traffic ridden noisy streets or post-industrial areas tend to remain neglected. As can be expected, some of these data are collected on weekends or holidays because participation in citizen science is also a leisure-time activity (e.g.

Courter et al., 2012). If the subjects/objects of research are moving, as is the case with animals, it matters at what day- or night-time they are observed. Apart from preferences and habits that lead to local and temporal bias, there is the possibility of human error. Some forms of data collection require skills that need training and/or experience (e.g. Kosmala et al., 2016) not to mention the probably rare but not impossible cases of misconduct (Rasmussen, 2019),

But this potential weakness in data collection seems to be nothing that could not be overcome. There is quite a body of literature discussing how to improve the value of the abundance of information that can be provided by a huge number of volunteers (Catlin-Groves, 2012; Callaghan, 2019).

In their review Catlin-Groves et al. (2012) mention measurements like asking clear questions, providing a list of easily identifiable species, relatively rigid protocols, checking conspicuous data and employing well-trusted experienced volunteers, etc. If projects run longer, participants can collect experiences and improve i. a. their ability to identify species. Some projects give the input of contributors with proven reliability more weight.

Other solutions can be based on statistical methods. Callaghan et al. (2019) give examples of how researchers can deal with patchy data collection from "biodiversity sampling events" (BSEs). Investigating the probability of data collection errors and their nature helps to develop targeted remedies (Clare et al., 2019).

For Callaghan et al. (2019) incentives for participants are key, too, such as taking quality of observations into account and not just their number.

Few studies come to the conclusion that citizen science may not save any time or money (see, e. g., Fauver, 2016), as data collected by lay persons needed so much afterwork, that would have been more efficient to have it done by trained employees. General statements should be avoided, an evaluation on a case-by-case basis is necessary to make any judgments how good data collection worked. Anyway, there seems to be consensus that much thought has to be given on how to optimise data collection. This is also an ethical question as participants time would be wasted if data were severely compromised. According to Jennet (2016) contributors do care much about the quality of data.

There are also some open questions about how to evaluate the issue: To do justice to citizen science, it would be necessary to assess the quality of data provided by traditional research with the same evaluation concepts and rigour instead of using them as a reference for the quality of data that were collected by lay persons (e.g. Specht & Lewandowski, 2018).

Some forms of citizen science raise people's interest in science and innovation

One can assume that this is closely connected to the quality of the conducted research. While it is widely assumed that citizen science raises the interest in science and innovation, one could also raise the question under which conditions it does so and if a suboptimal project could have a detrimental effect.

Discussions on ethical issues and caveats

There seems to be not enough awareness among citizen science proponents what a broad range of meanings is given to the term citizen science presently. Hence, one

sees it still depicted as a means to achieve very different things at the same time. In Nascimento et al. (2018), for instance, citizen science provides not only a huge amount of data, it supports better policies, empowers citizens, educates them about science, and much more. The only challenge they see is an assumed resistance of researchers against introducing more citizen science (Nascimento et al. 2018, p. 219 et seq.)

Not only are there generalisations about benefits of citizen science to be expected that do not heed that the different forms it can take can hardly be comparable on the benefit-dimension; in the same way generalising statements about the lay people involved are made, which are not supported by empirical research.

> *Citizen scientists show significant commitment to the topic and are as capable as the best researchers in many cases. Thus, the information that they produce should be trusted.* (Haklay, 2013, p. 115)

This general statement could be misunderstood as a call for a too mild assessment of research or data provided by whoever is called or calls him-/herself "citizen scientist". It demands a level of trust for a group of frequently unknown persons that many scholars and most critical citizens would deny anybody else, including professional scientists. If critical evaluation and doubt have always been an important corrective in research and innovation, why should any participants in citizen science, be it professional or lay researchers, exempted from scrutiny? (Additionally, it implicates that earning trust would mostly be a question of capabilities, without mentioning other and maybe more important factors like accountability.)

A narrative of hostility against citizen science

In parts of the citizen science communities, there exists a narrative that there is general resistance from traditional scientists to citizen science (e.g. Nascimento et al., 2018). Haklay perceives an elitism among professionals which he makes responsible for mainstream science not taking seriously the results produced by citizen science (Haklay, 2013). Admittedly, there may be scientists who frown upon "ordinary" people "playing being a scientist". And there are quite a few examples that show how established researchers try to fend off results from citizen science projects on the grounds that lay persons were involved. For example, the numbers of the mothers who measured radioactivity levels after the Fukushima disaster in 2011 were dismissed as the non-scientific work of irrational women who spread rumours about hazards (Kimura, 2016). However, we did not find any systematic studies that investigated if a principally negative attitude towards citizen science is wide-spread among the majority of credentialed scientists nowadays or if we are observing relatively few isolated cases. There are some aspects to be considered. Scientists do not have a reputation of being extraordinarily fair to each other. Research shows that high competition makes the field prone to conflicts. (e. g. Twale & DeLuca, 2008). Why should scientists treat citizen scientists better than their colleagues? Another argument for citizen science not being taken seriously would be the observation that a researcher who engages in citizen science has lower chances to make a career. At least, several citizen science proponents demand that the traditional academic reward systems need a change to make citizen science attractive to researchers (e. g. Schade et al., 2021). But this might not be related specifically to engaging in citizen science: A researcher who puts energy in anything else than building a career has little chances to climb the ladder of the academic hierarchy. Science is a rather fierce

working environment (Hesli & Lee, 2013; Gill, 2016; Salminen-Karlsson, 2018; Carpintero & Ramos, 2018). As long as a researcher has not found a stable working position ("tenure track"), s/he lives under precarious conditions that forces her/him to constantly hunt after publications, opportunities to present at conferences, applying for funds and to elbow out competition. Also, researchers who invest in teaching students or who take a sabbatical, care for family, etc. experience disadvantages for their careers. Experts see this as a reason for not enough people taking up science careers, which might create a barrier to the development of a knowledge society. Hence, there are efforts to make the working places more agreeable and flexible to attract young people and women. In this bigger picture the fault lies not so much in citizen science not being taken seriously enough, but in creating working places that allow scientists to have a life beside their profession.

Additionally, not all research results are taken seriously, be they mainstream or citizen science. As far as publications are concerned, in some disciplines an abundance of low-quality preprints is deplored by many scholars and quite a few attempts to publish "mainstream research" are rejected by high impact journals. For instance, an actual example provides Añazco et al. (2021) by reporting that out of their sample of 5,061 preprints dealing with the COVID-19-crisis only 288 were published, which equals a publication rate of 5.7%. The authors consider that more publications of preprints will follow, but the percentage remains still very low. (Añazco et al. 2021, p. 4 et seq.) It would be a research project of its own to investigate further, but it suffices to say that for any given project one cannot assume that it would have been published if it had been carried out by professionals only. Additionally, citizen scientists frequently carry out tasks that have never been carried out by professionals only. Data collection, taking probes and other assistive work has also been done by employed non-professionals, which to our best knowledge does not cause a rejection of research results by academia. There could be other reasons for results being less visible in literature: One could ask if the type of research taken up by citizen science may be less likely to be published, because citizen scientists are usually not under any pressure to choose well-publishable topics. The reason for lower publication rates of research done by citizen scientists would deserve investigation as well as the attitudes towards citizen science within the different disciplinary communities.

Discussion about ethical and integrity issues in citizen science

Rasmussen and Cooper (2019) begin their editorial on ethics in citizen science with justifying why the topics deserves immediate attention:

> *Because scientists and citizen science practitioners are humans, and because humans err (or worse), we should expect that problems in the field will arise. We should not wait for a problem to bring ethics to the door of citizen science and react to it then; instead, we should find and prospectively address potential problems. (*Rasmussen & Cooper, 2019, p1)

Concerning the potential benefits of citizen science, there is relatively wide-spread optimism in the literature. However, some pitfalls or barriers are brought forward by scholars that (can) hamper its hoped-for benefits or turn them even into disadvantages for society at large or for some social groups.

Power imbalance is an issue that is frequently brought forward by citizen science scholars. According to this narrative, it could lead to an exploitation of citizen

scientists by professionals, condescending attitudes, lack of recognition and insufficient respect (Keune, 2019).

But it is an open question whether it is realistic to always assume a hierarchy that allows for condescension or exploitation. Firstly, in reference to what is known about lay participants (see Chapter 5.3.2), there is some indication that they are mostly well-educated and do not usually belong to underprivileged groups. This is not surprising because being able to volunteer requires resources. Time resources are not available in abundance to the less affluent, quite on the contrary. The lone parents or people struggling with survival have little time to spare.

Secondly, as far as citizen scientists are volunteering without any direct or indirect pressure. They most likely will simply stop participating in the respective project if dissatisfied. Research on volunteering in the non-for-profit-sector in general shows a high demand and competition for volunteers, their unpaid work is an important resource for NPOs, their recruitment and retention are an important topic (see e. g. Garner et al., 2011; Randle et al, 2013; West & Patemen, 2016; Butt et al., 2017; Marsh & Cosentino, 2019; Waters & Bortree, 2012). There is rather a shortage of volunteers. "Exploitation" suggests that the exploited party is weaker, has a lower social status and thus can be exploited by the stronger party. However, the opposite is equally possible, namely that many fully voluntary citizen scientists – or some of them – could be enjoying a higher social status than the professional researchers. Depicting citizen scientists in general as potential victims is problematic, not only because it is another deficit model. There is not enough research about the socio-economic and educational background of participants, but a dominance of middle to upper class members is widely agreed on (see Chapter 5.3). A high social status not only lowers the risk of being exploited, but also the question appears, why it would be desirable to give privileged social groups the power to influence science in most steps of the research process. This contradiction would merit much more awareness than we found in literature.

Exploitation could be a very realistic scenario if citizen scientists are members of vulnerable groups, have low socio-economic status and/or experience (indirect) pressure to participate. This issue would deserve additional research: Because not much is known about participants in citizen science and their motivations, there could be a lot of blind spots. For instance, economic and political power relations in communities or simple group dynamics could be strong enough to discourage nonparticipation. Another field where full voluntariness cannot be guaranteed, is citizen science in the scope of formal education. Even in cases where students are given a choice there might be indirect sanctions for those who refrain from participating in offered citizen science activities. And in professional life especially young people have to fill their curricula with all kinds of unpaid work (see e. g. Holdsworth, 2017; Curiale, 2009; Howker & Malik, 2013; Stewart & Owens, 2013,) to increase their chances on the labour market (Spera et al., 2013)

Some authors give examples where paid employees have been successively replaced by unpaid, voluntary workers (e.g. Woolley et al., 2017). The question whether this elimination of jobs is the cause or the consequence of voluntary work needs careful investigation. It leads to the question how far a citizen science activity benefits the common good (however defined) or how far somebody could draw economic gain from the unpaid work of "citizen scientists", either in the short or in the long run. It should go beyond the most obvious cases where enterprises are involved who have a reputation of exploiting labour force, but one would also have to investigate how far it could be an unintended side effect of successful volunteering, if

the unpaid get into rivalry with the employment opportunities of others. And more importantly, how such undesirable impacts could be avoided.

Several authors point out risks of breaching privacy and data protection.

Incomplete information, **unclear communication or** any **lack of transparency** can deceive a participant, intentionally or by neglect. It can make participation a disagreeable experience for citizen scientists. Making sure that all necessary information is communicated clearly is crucial, including the impact the results of the conducted research by citizens scientists can have.

Pocock et al. (2020) examine using citizen science for the detection of invasive species which afflict trees. One ethical dilemma they see is citizen scientists being taken by surprise when trees are felled, because they expected other solutions, like actually saving the diseased trees. (Pocock et al., p. 723 et seq.)

> *Good communication is required because people who could be effective early detectors may be dissuaded from reporting due to their concerns about the impacts of eradication measures, both to methods used (e.g., insecticides or culling mammals) or their outcome (felling trees or restricting recreational access). (Pocock et al., 2020, p. 725)*

While several authors scrutinise project holders for potential misconduct, only few authors discuss possible imperfections or faults that could be found on the side of the citizen scientists, and how to deal with them. Citizen scientists are only humans after all, but parts of the citizen science communities make generalising positive assertions about their abilities and characteristics.

Conflicts of interest and the claim of the democratisation of science by citizen science

A Nature editorial in August 2015 applauds the achievements of citizen science but ends with raising concern especially whether it should influence policies:

> *Scientists and funders are right to encourage the shift from passive citizen science — number crunching — to more-active roles, including sample collection. But as increased scrutiny falls on the reliability of the work of professional scientists, full transparency about the motives and ambitions of amateurs is essential.* (Nature, 2015)

The following discussion shows that parts of the citizen science communities are rather sensitive to critical standpoints: The citizen science community reacts strongly and defensively. On the ECSA website we find a letter to the editorial that was reposted from the CSA website:

> *However, instead of seeing public engagement with citizen science as an asset – one that channels public concerns into asking targeted questions and obtaining sound scientific evidence – the editorial saw this as cause for concern and conflict of interest.*
>
> *Traditional science also struggles with issues related to transparency of motives, conflict of interest, and integrity. Citizen science is not special in this regard, but*

> *by singling it out, the Nature editorial casts undeserved doubt upon the integrity of citizen science data.* (ECSA Website)[12]

But how does this make the concern raised by the Nature editorial invalid? Without taking sides concerning the examples the editorial gives, the question is legitimate: If traditional science has problems with managing conflicts of interest, why should citizen science be exempted? Although most researchers are aware that fully neutral science is seldom achievable, the full transparency for which the editors advocate, is no unreasonable demand – neither for traditional science nor for citizen science. That individual interests can be "channelled" into research questions is idealising public participation, irrespectively if this is done in science or any other fields where decisions are negotiated.

In their answer to the Nature editors some highly ranking citizen science proponents frame citizen science as a political tool, because it "*channels public concerns into asking targeted questions and obtaining sound scientific evidence*" (ECSA, 2016). This claim would only hold true if citizen science would be able to involve all members of the public, which it never does. Instead, only small publics participate in a certain activity. Such a group of individuals cannot be regarded as "the public" or society as a whole.

The claim that citizen science would democratise science is one that appears frequently in literature. It is also postulated in ECSA's 10 principles of citizen science:

> *However, unlike traditional research approaches, citizen science provides opportunity for greater public engagement and democratization of science.* (Robinson et al., 2018, p. 29)

Public engagement in science is not some kind of panacea to "democratise science". The highly contested Flint Water Crisis shows how difficult it is to evaluate the potentials and pitfalls of citizens engaging in science on their own behalf. In 2014 and due to a construction project, the city of Flint switched the water supply temporarily to a new source. Soon after, residents began to complain about skin rashes, hair loss and other health conditions. Residents organised sufficient evidence that the water was contaminated with lead, other toxins and pathogens, The municipality ignored the complains for months and insisted that the water was safe, but eventually was forced to switch back to the original water supplier, to repair corroded water pipes and to offer compensations to the inhabitants.

The case is still highly contested, a case of highly successful citizen science for the one, a case of citizen science going wrong to the others. While some scholars emphasise how the citizens partnered up with scientists to prove their cause, others paint a picture of citizen science going array after a good start, with an enterprise-affiliated NPO selling products and citizens forging evidence to increase compensation (see, e. g., Roy & Edwards, 2019; Pauli, 2020; Ruckert et al., 2019). It seems impossible to judge what really happened in retrospect. Politicians, citizens or credentialed scientists witnessing the crisis were too involved to be regarded as a fairly objective source of information. Maybe this opens the question if at some point, after citizens have collected evidence, in cases where so much is at stake, it would be good to bring in experts that are trusted by all parties.

[12] https://ecsa.citizen-science.net/2016/05/25/citizen-science-community-responds-to-nature-editorial/. Last visit on 12. 2. 2020

Giving a say to whom and why in developing research policies or projects?

In cases where public engagement influences research policies, citizen science certainly is a political endeavour. There is some consensus among scholars that in the majority of projects participants contribute free labour force but are not involved in decision making. If that is true, it means that in citizen science (see Chapter 5), in spite of all claims, there is relatively little experience with what some refer to as "democratising science" as it is not usually claimed for data collection activities without decision making power of citizen scientists.

Science and innovations are not the only fields in which the participation of citizens is expected to improve democracy. In debates about citizens' deliberation in general, topics emerge that slowly find their way into the debates on citizen science.

Scholars believe that citizen science participation is biased towards well-educated, male, middle-class members of advanced economies (Haklay, 2013, p. 112; Strasser, 2019, p. 62-63). In many projects it remains unknown who actually participates. Obviously, it contradicts some ideals that are important to the citizen science communities, such as "democratising science" and the egalitarian approach.

Nevertheless, the demand to give citizens or the public engaging in science more power is wide-spread. It is mirrored in categorisations that build on measuring the quality of citizen science by the extent to which participants can influence the research project.

In 1997 Hartman criticised Earthwatch, a global CSO that organizes eco-tourism, for not sufficiently involving the lay contributors in the research process:

> *"We could partially interpret Earthwatch as an organization in which the public is excluded (administratively and cognitively) during the creation of research objectives, pays to be 'utilized' during the data-collection stage, and is then once again (cognitively) excluded during the reporting of results through publication stage"* (Hartman, 1997, p. 84)

Earthwatch organizes research expeditions for which citizens pay themselves. Such travels cannot be afforded by everybody, and this probably leads to a high selectivity for wealthier participants. Demanding that these citizens should have the power to co-determine the goals and design of research amounts to demanding that those who can afford it should be allowed to buy themselves into science.

That citizen scientists should have political power sometimes appears as an unquestioned premise in literature:

> *With the advent of the Internet, citizen science is experiencing an explosion in growth, but it is not impacting conservation decision-making to its full potential. Now is the time to address this issue while we are still in the exploration and development phase of this newly reborn phenomenon.* (Newman et al., 2016, p. 9)

Advocating for citizen science to impact directly on policies might be caused by an overestimation of its democratic potential. There are voices warning against idealising participatory approaches and asking for caution. For instance, the heritage expert Harald Fredheim (2018) states that

> *Similar to that of social innovation (Olma 2016), part of the appeal of participatory approaches is the promise of circumnavigating politics and*

> *existing power structures. It should, however, be clear that this is not possible; participation merely creates new arenas for power to be negotiated.* (Fredheim, 2018, p. 625)

There is another fundamental problem, when citizen science claims to make science more democratic. When citizens are volunteers, their possibilities to participate depends on their resources. Time that is not needed to work for a living or to cut down living costs is a luxury the poor not often possess. Although not sufficient research on citizen science participants is available, there is some indication that the majority of them are relatively well off. Volunteering participants might be mostly well-educated members of the upper and upper middle class (see Chapter 5.3). Hence, contrary to the egalitarian goals, the chances to participate are not distributed equally among citizens. As long as citizen science is about contributing unpaid work for the common good (however defined) this is in line with other caritative activities where the wealthier are asked to donate some of their better resources. But if the more affluent get a better chance to deliberate and prepare decisions, this is quite a different matter.

Scholars and practitioners talking about engagement of "the public" in other contexts than science see several issues that challenge the assumption that giving citizens a say would per se improve democracy in decision making:

NIMBY (Not in my backyard) and LULU (locally unwanted land use) are well-known catchwords in urban planning. If we assume that the wealthier have better chances to fend off power plants, chemical industries or waste disposal facilities, they may often be realised in poorer neighbourhoods, where citizens have less time and other resources to organise resistance. If citizen science is supposed to lead to political decisions, as it is framed by some scholars and/or practitioners, then personal motivations and potential conflicts of interest would merit more attention.

Sometimes not single citizens but non-profit organisations are partners of professional researchers in citizen science projects. The term NPO is very broad, and it is not a term that guarantees grassroot engagement. Individuals, enterprises or even government bodies can establish NPOs. NPOs can establish umbrella NPOs. NPOs can be affiliated to companies, political parties, religious and other groups or influenced by them.

In the field of health and medicine, the possible conflict of interest that derives from pharmaceutical industry sponsoring **patient advocacy groups** is most obvious. There has been even evidence for Big Pharma encouraging people with certain health issues to start such initiatives. It has been discussed for many years how the producers of medication influence patient advocacy groups who are important partners who can powerfully lobby products when meeting policy makers. Meanwhile, US, European and Australian associations have set up codes of conduct to safeguard any patient advocacy group against too much influence from one pharmaceutical company. Nevertheless, as Karas et al. (2019) explain, the rules are not very binding and a breach is hardly followed by sanctions (Karas et al., 2019). Khabsa et al. (2020) ran a meta-analysis of studies on financial relationships between patient and consumer representatives with the health industry. They come to the conclusion that such relations are variable but frequent and that there is a lack of transparency. Because they can create conflicts of interests in patient representatives and groups, they recommend that research and policy introduce rigorous regulations to disclose such links and - if possible - to open other funding resources for patient groups (Khabsa et al., 2020).

In medicine, we find more discussion among scholars on ethical issues than in some other fields. This is not surprising, because the health sector is under stricter societal and

governmental observation (e. g. Fiske et al., 2019; Wiggins & Wilbanks, 2019) and potential harm can be more severe and also more obvious.

The well-discussed topic of recognition in citizen science

The literature also often deplores a possible **lack of recognition** of citizen scientists, which is mostly expressed by not naming (all) those who contributed (Smith et al., 2019; Houllier & Merilhou-Goudard, 2016).

How far this is an issue probably depends on the characteristics of a project and how much was contributed by the non-professional participants: If somebody who has invested considerable time and thought, has discovered or invented something, stealing the laurels is a serious issue. Attempts to claim credit for the results of these efforts may even have legal consequences. An appropriation of the intellectual work of others is also against the European Code of Conduct for Research Integrity (ALLEA, 2017), which does not state that this rule would only apply if the injured person is another scientist. On the other hand, if thousands of persons have sacrificed only a few minutes of their life time for data collection, they probably neither expect nor insist on receiving "recognition". Many may not even wish to be named as an individual. (It would be also interesting to have investigated, if the issue of recognition has really such priority for citizen scientists as it has for academics for whom an impressive publication record is necessary for making a career in a highly competitive environment. Being free of this treadmill might be an advantage.) The issue of naming contributors is a highly complex one: As Cooper et al. (2019) point out, giving the names of contributors contradicts confidentiality. It is not only but especially critical in what Cooper at al. (2019) call type 2 projects, in which volunteers not only do research (or related tasks) but at the same time function as research subjects and thus feed personal data into the projects (Cooper et al., 2019).

Guidelines for ethical issues in citizen science?

When Cooper et al. (2019) conducted a preliminary assessment of ethics oversight, they investigated what they termed type 4 project in their categorisation (see Chapter 6): Projects in which volunteers do not cooperate as subjects of research but as active participants conducting research or related tasks. The authors examined 47 projects from 38 platforms and they found out that 20 projects and 19 platforms provided neither an equivalent to Informed Consent nor Terms of Service and only 2 projects offered Informed Consent (Cooper et al., 2019, p. 4). They conclude that whereas there exist rules and regulations for protecting the rights of lay persons who participate in research in the role of research subjects, almost no regulations are in place for volunteers who conduct research or related tasks and cooperate with professionals from research institutions. The authors compare the risks for lay researchers to the risks for human subjects of research and show that although there are differences, both groups could suffer physically, psychologically, on a socio-economic level and/or by a loss of confidentiality:

Table 1: The typical risks tend to be different for conventional human subjects than for volunteers in Type 4 citizen science projects.

Conventional HSR	Volunteer in Type 4 project
Physical risks	
Discomfort Pain Injury	Manipulation from persuasive technology Risk of harm from data gathering activities
Psychological risks	
Anxiety Sleep deprivation Depression	Loss of efficacy by not having access to research data Distress from not having acknowledgement of contribution
Social/economic risks	
Embarrassment Loss of respect Loss of wages	Justice by not having access to benefits of volunteering Intellectual property loss while solving problems and sharing ideas
Loss of confidentiality	
Invasion of privacy Loss of dignity	Loss of geo-privacy when gathering data

(Cooper et al., 2019, p. 69)

Cooper et al. (2019) advocate for making lay participants strongly aware of privacy and confidentiality risks and potential legal liabilities towards others. For this reason, they suggest that projects insure volunteers against such risks where they could emerge (Cooper et al., 2019, p. 5).

Only recently, a group of researchers from ETH Zürich, Jobin et al. (2020), wrote recommendations for the *Competence Center Citizen Science* (CCCS) at their university. Building on the categorisation of Cooper et al. (2019) they analysed the ethics guidelines and ethical principles from the Citizen Science Association (CSA), the European Citizen Science Association (ECSA), Bürger schaffen Wissen (GEWISS), Österreich forscht and DIYbio.org. For the CSA, where they found references to external sources, they analysed the Belleville Committee Ethical Principles, the CCPH Guiding Principles of Partnership, and the Beyond Sabor Code of Ethics. Jobin et al. (2020) found out that the ethical issues and the questions of oversight in citizen science are underdeveloped.

Citizen science - a neoliberal plot?

In his thought-provoking essay "Against Citizen Science" Philip Mirowski (2017) radically criticizes citizen science as styling itself as a grassroot movement fostering the common good but really ŧooted in market fundamentalism that one might call neoliberalism. He paints a grim picture in which citizen science benefits mostly particular economic interests who harvest the data and unpaid work provided by citizens, who replace employed professionals and in which science gets privatised and governed by market forces, while policy makers delegate responsibilities. One can hardly refute his claim that much of what is labelled as citizen science looks more like a top-down enterprise than a bottom-up movement.

> *However, let's look at who's behind a sample of recent initiatives: the National Science Foundation in the United States, which funded the PBS series The Crowd & the Cloud (2017); US congress, which passed enabling legislation for citizen science in the American Innovation and Competitiveness Act (AICA) (2017);*

> *the Pentagon's DARPA, which donated $10 million after 2012 to introduce biohacker spaces in more than 1,000 high schools; an NGO called the European Citizen Science Association; and various foundations with deep pockets dedicated to something called open science. Not much space left for the average Joe. Indeed, the 'citizen' herself seems almost entirely absent from this crowded phalanx of bureaucratic programmes and entrepreneurial interventions, all united in their fervour to found a republic in which citizen science can flourish.* (Mirowski, 2017)

From different fields we hear voices being aware of the risk of approbation of participatory approaches by particular interests. From the field of cultural heritage Fredheim (2018) says:

> *Due to neoliberalism's penchant for masking its capitalistic and deregulatory intentions in a rhetoric of freedom, democratisation and innovation, and its incredible success in doing so through domineering economic disruptions like the 'sharing economy', heritage professionals, scholars and volunteers would do well to be wary of new 'democratising' initiatives intended to double as relief for pressurised institutional budgets.* (Fredheim, 2018, p. 620)

And also Vohland et al. (2019) discuss if citizen science might support neoliberalism by providing a cheap workforce. They come to the conclusion that citizen science can either support or counteract neoliberal developments. They acknowledge the potential of exploitation of citizens' cheap labour by state or economy, but they also hope that citizen science would increase social cohesion and sustainability by mutual learning and help to maintain a "non-economic sphere." They recommend self-reflection and developing ethical standards to safeguard citizen science against being used by neoliberal trends:

> *To avoid instrumentalization by the state or companies, to ensure fair interactions with participants, and to keep a space free of the economization of life, we offer recommendations that begin with the call to be self-reflective, and to develop an international ethics of citizen science. For this, the citizen science community must analyse its impact, normative foundation, and practices.* (Vohland et al., 2019, p. 8)

5.3 People involved in citizen science

5.3.1 Participation patterns

Marinos Anastasakis & Kathy Kikis-Papadakis

In studying the characteristics of people engaging in citizen science projects, one may follow the simple approach of classifying participants according to their *demographic characteristics* (e.g., age, gender, race, ethnicity, socioeconomic status) and their *participation patterns* (e.g., how many hours a user spends on a project). Consequently, the review of the literature concerning is divided into two sections, demographics and participation patterns.

5.3.2 Demographics

A large part of the literature reporting on participant demographics deals with projects situated in North America. These studies have found that citizen science participants are mainly white, middle-aged and well-educated males. For example, the US National Academies of Sciences, Engineering and Medicine[13] conducted a meta-analysis of 68 citizen science projects in order to explore participant demographics (Pandya & Dibner, 2018). The data used for the study cover a period from 2000 until 2018 and are mostly related to outdoors projects (80%) situated in the United States (74%). The meta-analysis results showed that citizen science participants are mainly white, middle-aged (21-60) and well-educated males, with a slight tendency to have previously participated in other projects as well. Similar findings have been also reported by Burgess et al. (2017). In their study, Burgess and colleagues surveyed managers from 125 different citizen science projects on biodiversity and found that participants are primarily white, well-educated adults with no bias in gender. The majority of these projects were housed in North America (66.4%), followed by projects housed in Europe (9%) and Asia (2.5%).

Despite the potential differences that may or not exist between projects housed in different geographical regions, similar demographics have been also reported by many other studies as well (cf. Merenlender et al., 2016; Price & Lee, 2013; West & Pateman, 2016). For example, Mac Domhnaill et al. (2020) surveyed 438 adult citizen scientists on biodiversity in Ireland and found that participants are middle-aged, highly educated, employed and financially independent people residing in rural areas. Based on their analysis, they concluded that certain populations such as younger people, people residing in urban areas, that are unemployed or have lower levels of education are underrepresented in their study.

Not knowing to what extent younger people i.e. primary and secondary students participate in citizen science projects is a concern that has been raised by a few authors (Herodotou et al., 2020; Mac Domhnaill et al., 2020; Pandya & Dibner, 2018). Despite that, investigating demographics of student populations has been realised by an extremely limited number of studies: to our best knowledge, Herodotou et al. (2020) is the only study investigating younger people's demographics. Herodotou and colleagues studied a sample of 104 young participants about their online engagement in various Zooniverse projects related to the Natural History Museum of London (Project Plumage, Science Gossip, Notes from Nature, London Bird Records, Orchid Observers and Penguin Watch). Although their target group was indeed young people (10-19 years old), the majority of participants in their sample was found to be females (67%) something contradicting findings from the wider citizen science literature where most of the participants are found to be males. In explaining this gender imbalance, Herodotou et al. (2020) suggest that within youth populations, citizen science participants may be predominantly females or it may be the case that females are more inclined to be engaged in Zooniverse projects (although as the authors note larger samples are needed to confirm this).

The absence of adequate data regarding participant demographics limits not only our ability in drawing concrete conclusions about who participates in citizen science projects but also in attending issues related to equity, diversity and inclusion[14]. In their

[13] www.nationalacademies.org

[14] According to the National Academies of Sciences, Engineering and Medicine (Pandya & Dibner, 2018), equity refers to the distribution of opportunities enabling participants to engage

report for the National Academies of Sciences, Engineering and Medicine, Pandya and Dibner (2018) concluded that:

There is limited systematic, cumulative information about who participates in citizen science. Community and youth projects are underrepresented in the available data, suggesting that existing data is biased toward white middle- and upper-class populations. (p.145)

If certain ethnic, racial or socioeconomic groups are indeed underrepresented, it is less likely for them to benefit from citizen science (Evans et al., 2005) and since many citizen science projects aim at motivating participants in pursuing scientific careers, a reduced diversity of citizen science volunteers may result a less diverse scientific workforce (Pandya, 2012).

In sum, the literature exploring participant demographics demonstrates a few areas that merit further research. First, certain groups such as young people (i.e., students) or people with lower levels of education are currently underrepresented in citizen science projects. Second, it is currently unknown whether a project's scientific area is related or not to participant demographics (e.g., whether astronomy related projects attract more well-educated, white males). A final remark relates to studies exploring students' demographics. Although this line of research is currently limited, results from projects with students contradict insights provided by other studies: for example, Herodotou et al.'s (2020) findings show that in contrast with the general consensus (participants are mainly males), in citizen science projects with students the majority of volunteers are females. Despite that, there is no sufficient evidence in concluding that demographics in citizen science projects with students follow a different pattern than with projects entailing adults.

5.3.3 Participation patterns

Due to their nature, online citizen science projects lend themselves in allowing us to study volunteers' usage patterns in an unobtrusive manner. Although, studying the motivational aspects of engagement, i.e., ***why*** a person chooses to engage in a citizen science project, has a well-established literature, our understanding of ***how*** participants actually engage in a citizen science is still under development (Ponciano & Brasileiro, 2014).

Perhaps the most widely used notion for studying how a participant interacts with a citizen science project is ***engagement***. According to Ponciano and Brasileiro (2014) "engagement means to participate in any enterprise by self-investing personal resources, such as time, physical energy, and cognitive power" (p.4). Herodotou et al. (2020) note that within the broader Human Computer Interaction (HCI) literature, engagement has been conceptualised "on a continuum based on the type of activities that users engage with and the intellectual contribution required" (p.2).

Typical measures of engagement include *frequency* (the number of days a volunteer contributes); *activity ratio* (the proportion of days on which a volunteer was active and made at least one contribution in relation to the total number of days he/she is linked to the project); *typical session duration* (the continuous period of time a volunteer devoted in making a contribution), *daily productivity* (the average number

in a successful manner, diversity relates to the demographic differences among individuals, whereas inclusion focusses on the processes that make participants feeling welcome.

of contributions per day), *daily devoted time* (the average number of hours a volunteer contributed to the project on days he/she was active) (Herodotou et al., 2020; Ponciano & Brasileiro, 2014; Ponciano et al., 2014).

A good starting point in understanding how participants engage in citizen science projects is Ponciano et al.'s (2014) work. Ponciano and colleagues classified roughly 23,000 participants from two Zooniverse projects (Galaxy Zoo, Milky Way) into ***transient*** and ***regular***. Transient volunteers are users that complete tasks only one day and do not return, whereas as regular volunteers are characterised those who return and make contributions at least one more day. Similar results were also reported by Eveleigh et al. (2014). Eveleigh et al. studied the behaviour of 299 volunteers (aged between 26-79 years) from the Old Weather project. By analysing each participant's total number of contributions, forum posts and days spent on the project, the team distinguished two groups of participants: ***high contributors***, referring to users demonstrating regular and significant participation and ***low contributors*** referring to participants with small input and little involvement in the project.

In obtaining a more detailed understanding of participants behavioural patterns in citizen science, other studies have utilised a larger number of engagement descriptors such as activity ratio, relative activity duration and daily devoted time. This is an approach taken by Ponciano and Brasileiro (2014) and Herodotou et al. (2020). Ponciano and Brasileiro (2014) studied approximately 30,000 volunteers from two projects (Galaxy Zoo, Milky Way). By performing a cluster analysis Ponciano and Brasileiro distinguished five groups of participant engagement: (1) ***hardworking***, referring to volunteers exhibiting hard work but leaving early the project; (2) ***spasmodic***, applying to participants making contributions for a short period of time and with irregular periodicity; (3) ***persistent***, concerning volunteers who remain linked to a project for a long time but are active for a few days only; (4) ***lasting***, referring to volunteers sharing similarities with the persistent profile yet they remain linked to a project for a shorter period of time and; (5) ***moderate***, referring to participants not being particularly distinguishable from the other profiles except that they demonstrate a reverse relationship between engagement and days being active (being less days linked to a project translates to more contributions).

By performing a cluster analysis, on 104 young people (between 10-19 years old) participating in various Zooniverse projects, Herodotou et al. (2020) identified the presence of five distinct engagement profiles: (1) ***systematic users*** (*N*=5, active users who visit the platform regularly); (2) ***casual users*** (*N*=8, not very active users who demonstrate very inconstant visits); (3) ***moderate users*** (*N*=16, not very active users who have constant visits); (4) ***lasting users*** (*N*=40, users that although have few active days and do not visit regularly a projects, they are linked to Zooniverse the longest) and; (5) ***visitors*** (*N*=34, users that although contribute to a project for only a few days, they demonstrate high levels of activity during those days).

In sum, we can conceptualise engagement patterns in citizen science projects as a continuum with two extreme poles; on the one end we find users who interact once and then leave the project (low contributors, transient users, visitors) and on the other we find volunteers contributing regularly (high contributors, regular users, systematic users). In between these extreme profiles we find a spectrum of different engagement behaviours depending on the metrics and analytical approach used in classifying them. Although the literature suggests that some profiles may have a universal character with no differences between adult and young populations (lasting and moderate users), young volunteers exhibit distinct engagement patterns when compared with adults (Herodotou et al., 2020). Thus, as mentioned in the case of

participant demographics, more research is needed in terms of exploring behavioural patterns among young volunteers.

5.3.4 Enablers, barriers, incentives, disincentives for the mainly involved persons

Emilia Lampi, Joni Lämsä & Raija Hämäläinen

With the global changes in citizen science brought about by the COVID-19 pandemic, a better understanding of the related enablers, barriers, incentives and disincentives has never been as important as it is today. Namely, we must be aware of the possibilities and challenges faced by various citizen science actors. This foundational work also allows us to pave the way for future research (see Work Packages 2, 3 and 4) in the area of citizen science by identifying connections between relevant studies that have yet to be uncovered (see the work plan of Work Package 4, specifically the triangulation of evidence; Maxwell, 2006). A search of citizen science alone in Google Scholar yielded approximately 71,000 results, illustrating the multi-layered nature of the topic. Researchers widely agree that involving citizens in research is beneficial for all participants, various disciplines, and society at large. Despite the vast number of publications on citizen science, current research has typically focused on the impact of individual projects, and only a few studies have investigated the impact of citizen science projects and public engagement in general.

To address this gap, we aimed to explore the understanding of citizen science based on representative studies of enablers, barriers, incentives and disincentives for the mainly involved people. We searched the Scopus database with a query string that included keywords related to our topic and identified the 10 most frequently cited citizen science reviews published in English. Three of these reviews were excluded as they did not explicitly state the enablers, barriers, incentives or disincentives of the people involved in citizen science. Since most of the reviews were published in scientific journals focused on biology and environmental sciences (Figure 1), we chose three illustrative examples from other scientific areas, such as sociology and education. Taking other fields into account is important as the enablers, barriers, incentives and disincentives might differ amongst the fields.

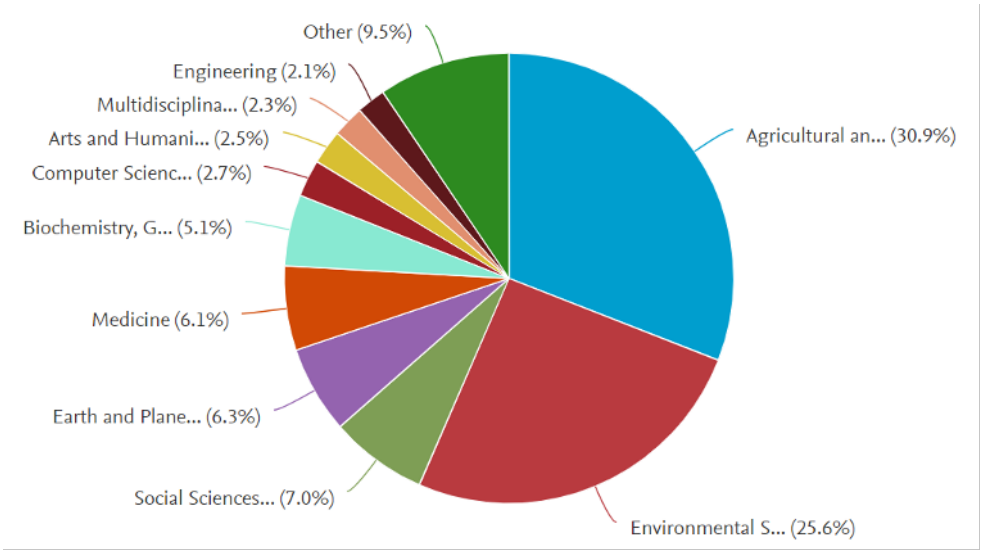

Figure 1: The thematic distribution of the reviews in Scopus

5.3.4.1 Wide possibilities for professional researchers

Especially in the last two decades, the use of citizen science has rapidly increased in terms of scope and attention when professional scientists and policy-makers have noticed its potential at international, national and local levels (Liu et al., 2017). Utilising citizen participation can be a resource-wise opportunity to collect large, longitudinal datasets that could otherwise be difficult to acquire (Cohn, 2008; Danielsen et al., 2005; Tulloch et al., 2013). Technological developments allow researchers to reach out to a large number of citizens and provide effortless methods of communication and novel ways of collecting, analysing and/or discussing data with professional scientists and citizen scientists (Dickinson et al., 2012; Goodchild, 2007; Newman et al., 2012). Some researchers have noticed that, especially in the field of environmental sciences, engaging citizens in the research process will usually lead to practical actions and impacts in the local communities (Danielsen et al., 2005), stretching the research's benefits even further.

There are, however, concerns about data quality when non-professional researchers are involved (Bonney et al., 2009; Danielsen et al., 2005; Tulloch et al., 2013). It is crucial to design research projects carefully to avoid overly complicated tasks (Cohn, 2008) and oversimplified (Danielsen et al., 2005) or distorted (Newman et al., 2012) datasets. Furthermore, it is crucial to ensure that engaging in the research process will benefit the citizen scientists as well as the professional scientists (Cohn, 2008; Danielsen et al., 2005; Ramírez-Montoya & García-Peñalvo, 2018). This may mean ensuring that sufficient resources are allocated from the professional scientists' side for the coordination, training and constant support of the lay participants (Tulloch et al., 2013). All in all, a successful citizen science project needs very careful planning and sufficient resource investment, which might create barriers for some professional scientists.

5.3.4.2 Multi-layered opportunities for participants

To maximise the benefits of citizen science projects for all involved parties, it is vital to understand why people would engage in citizen science—and why they would not. Citizen scientists can be driven by the opportunity to learn something new (Cohn, 2008; Dickinson et al., 2012; Newman et al., 2012), to do something meaningful by participating in scientific research (Cohn, 2008; Newman et al., 2012) or to contribute to social movements (McCormick et al., 2003). Other motivations include social reasons (Dickinson et al., 2012; Newman et al., 2012), altruism (Goodchild, 2007), competitiveness or monetary rewards (Newman et al., 2012) or the possibility of career benefits (Goodchild, 2007). Hence, the incentives are very diverse and multi-layered and might differ significantly based on the field, project type or culture.

The development of technology has been seen as a strong enabling and motivating factor for citizen scientists (Bonney et al., 2009; Dickinson et al., 2012). However, the increasing use of technology and the internationalisation of citizen science projects might also create barriers for those with limited internet access (Voinov et al., 2015) or limited language skills (Goodchild, 2007). Moreover, a major barrier or disincentive for citizen scientists may be tasks that demand certain competencies (Cohn, 2008) or are too difficult to conduct (Bonney et al., 2009). It is also vital that the costs of participating in citizen science projects not fall on the participants (Danielsen et al., 2005). Moreover, the participants must have a certain level of trust in the project for it to be successful (Voinov et al., 2015). Therefore, from the participant's perspective, careful planning and implementation of the project from the initiator's side plays a major role in creating accessible, motivating projects that benefit everyone involved.

The synthesis of the literature illustrates the diversity of citizen science projects and activities that makes it challenging to find common enables, barriers, incentives, and disincentives across the projects and activities. Instead, the different projects face different challenges when motivating the citizen scientists to participate in the citizen science activities. Altogether, there is indication from various examples but by far not enough evidence to make concluding remarks: more systematic research needs to be done in the future to come to conclusions.

5.3.5 Gender Aspects of Citizen Science

Marinos Anastasakis, Kathy Kikis-Papadakis

Given that citizen science has been linked by many scholars with the democratisation of science, reaching a wider range of audiences and participants should be consider a priority (Bonney et al., 2016). Our review regarding participant characteristics in citizen science has already shown that reaching more diverse participants in terms of their gender, age or socioeconomic status is certainly an area that calls for more attention and merits greater efforts if we wish to make citizen science more inclusive. Among the authors supporting that the gender dimension is not well articulated in the citizen science literature is Curtis (2018). In her literature review, Curtis identified 13 studies from 2005 until 2017 that report on participants' demographic data and concluded that typical participants in online SC projects are well-educated males with an interest in science or computing. Curtis notes that a range of ages have been recorded in these projects with no obvious trends but in some projects (e.g., involving distributed computations) participants tend to be younger. Despite that, our own

observation is that the studies included in Curtis' review are primarily concerned with adults (mostly aged between 20 and 50). So, do the male-dominated participation patterns reported by many studies be related to a person's age? As mentioned earlier, not knowing to what extent primary and secondary students participate in citizen science projects is a concern that has been raised by a few authors (Herodotou et al., 2020; Mac Domhnaill et al., 2020; Pandya & Dibner, 2018). Thus, the fact that most studies report male biased samples might be related to participants' age: as noted before, Herodotou et al.'s (2020) study suggests that within youth populations, citizen science participants may be predominantly females.

A study offering a more in-depth account of gender differences in citizen science is the one by Cooper and Smith (2010). Cooper and Smith analysed data from participation in bird-related recreational activities in the USA and the UK. Data were categorised into four categories: supportive (membership in bird conservation organisations, *N*=1,095,346), participatory (citizen science projects, *N*=83,112), competitive (events or organisations that evaluate the quantity of birds reported, *N*=6,933) and authoritative (experts who often train and organise individuals in participatory activities, *N*=256). The participatory category included twelve citizen science projects. The sample from citizen science projects included only adults and was found to be slightly male biased (54.52%). When participants were examined on a per project basis, some citizen science projects were found to be female biased: these were not related to bird watching per se but to watching bird feeders, nest-monitoring etc. The authors suggest that these gender patterns may be related to constrains that female participants are imposed with or motivation differences with male participants. This is because when projects were categorised according to location (i.e., whether someone can participate by just being home or whether should go away), female participation occurs around their residence and male participation away from their residence. With regards to motivation, the authors suggest that female participants may be more motivated in helping birds, teaching children or assisting scientific endeavours whereas men may be more focussed on achievement.

Other authors have drawn attention to issues surrounding sampling procedure in the citizen science literature. For example, Füchslin et al. (2019) note that studies in citizen science are biased because they describe only people participating in citizen science projects who have additionally agreed to be surveyed. In an attempt to identify a wider and more inclusive group of people interested in citizen science, Füchslin et al. (2019) surveyed a sample of 1,051 people in Switzerland regarding their intentions of participating to scientific research projects. The survey results indicate that being younger, having a higher proximity to science or living in a household with children are significant predictors of participation in citizen science. However, their study showed also that gender, educational level or employment status cannot predict a person's interest in participating in scientific research.

An area of the literature that could possibly provide additional insights regarding the gender dimension in citizen science is related to projects where participation is primarily motivated by an interest in public safety or health. Examples include projects for reporting cycling safety data all over the world (Ferster et al., 2017) or identifying factors contributing to allergic rhinitis symptoms (Silver et al., 2020). Despite that, these types of citizen science projects are less common and the studies by Cooper and Smith (2010), Herodotou et al. (2020), Curtis (2018) and Füchslin et al. (2019) hint that gender, culture and age may be related to gender-science stereotypes. In this respect, Miller et al.'s (2018) work offer us great insights about the interplay of gender, age and culture. By conducting a meta-analysis of "draw-a-scientist" studies, Miller et

al. found that stereotypes in science have changed during the last 5 decades, with more children associating women with science than in previous years. However, their meta-analysis also showed that as children age (around the age of 14-15), the tendency of associating women with science decreases and children tend to draw more male scientists. According to Miller et al. these results offer us an insight into how children respond to their cultural environment: one the one hand women's representation in science has increased during the last 50 years; on the other, children still learn to associate science with men because women remain underrepresented in some scientific areas.

5.4 Citizen Science and Education

5.4.1 Introduction

Reuma De-Groot & Yaela Golumbic

Research about the educational aspects of citizen science has been underway over the past years, alongside the rise of citizen science globally. Research has focused on individual learning outcomes in multiple projects, establishing typologies of learning outcomes and examining how these learning outcomes are produced and the processes involved (Ballard et al., 2017; Jordan et al., 2015; Phillips et al., 2018). Such research has taken place in relation to both formal and informal situations and spans learning in a variety of settings including schools and universities; science and nature clubs; museums and science centres; online communities and many more. While such research has developed greatly over the past years, a gap still exists integrating the knowledge about the educational benefits and its dynamics with the many citizen science settings.

5.4.2 Formal Education

Patricia Santos, Miriam Calvera-Isabal, Reuma De-Groot & Yaela Golumbic

Formal education refers to a "systematic, organized education model, structured and administered according to a given set of laws and norms, presenting a rather rigid curriculum as regards objectives, content and methodology" (Dib et al., 1988). The International Standard Classification of Education (ISCED) distinguishes eight levels of education but this research is only focused on Primary education (ISCED 1), Lower secondary education (ISCED 2) and Upper secondary education (ISCED 3) (European Commission/EACEA/Eurydice, 2018).

According to the European commission "knowledge of and about science are integral to preparing our population to be actively engaged and responsible citizens, creative and innovative, able to work collaboratively and fully aware of and conversant with the complex challenges facing society" (Hazelkorn et al., 2015). Moreover, as it is documented in literature, citizen science projects increase awareness and knowledge about the topics it addresses (Brossad et al. 2005; Evans et

al. 2005; Jordan et al. 2011) besides giving the opportunity to participants in educating themselves in scientific thinking (Freitag A., 2013).

Teaching is a cooperative behaviour (Galef et al., 2005) similar to citizen science (Wiggins, 2011; Haklay, 2015; Cigliano et al., 2015; Heiss et al., 2017). In order to achieve the objectives and recommendations involving students through formal education, citizen science projects might "*provide a valuable way to mainstream science education and create a more balanced science-informed society*" (Hazelkorn, 2015).

Curricula in formal education are defined by mandatory subjects which contain basic contents for different fields of science organized by subjects, to obtain the same knowledge for all the students at the end of their mandatory education. This rigid structure improves students' knowledge on different subjects and sometimes drives them to discover their passions. Nevertheless, it could also provoke demotivation or not to be engaged in subjects which they are not interested in and of course it doesn't attend diversity (Jenkins, 2011 discusses what has been said about the issue so far).

Many educational strategies have been developed and institutionalized with the aim of improving learning or engaging students in science. Some examples can be found in the Open University innovation reports (e.g., Kukulska-Hulme et al., 2020). These annual reports propose to introduce citizen science as a part of the educational discipline using approaches such as the "citizen inquiry" (Sharples et al., 2013) or the "learning from the crowd" method (Sharples et al., 2016). Another example is the one proposed by the Institute for Research in Schools (IRIS[15]) which tries to promote participation in research allowing students to contribute to the scientific community.

The integration of citizen science into formal education provides a unique opportunity to increase the reach of citizen science beyond its typical audience of well-educated, affluent individuals (Ruiz-Mallen et al. 2016). Schools also provide a good setting for structured learning and can integrate citizen science into existing educational practices serving as facilitators and increasing student relatedness to science (Shah & Martinez, 2016). citizen science enables students to engage with hands-on, authentic and real-lire research while learning about science from multiple perspectives. Benefits of student participation in citizen science in school environments include self-efficacy for science and the environment; motivation for science and the environment; increased scientific knowledge; skills of science inquiry; and environmental stewardship (Phillips et al., 2018).

However, schools also place specific constraints on learning through citizen science with research highlighting the many challenges to learning in such settings. One of the main challenges as students are automatically enrolled in projects as part of a school task, is the absence of choice (Kelemen-Finan et al., 2018). This in turn can serve as the main barrier (and when given, enabler) for increasing student motivation and interest which consequently lead to self-determined learning.

An additional challenge is linking citizen science learning outcomes through to schools' strategic plan and standards-driven curriculum which need to allow space for real-life learning in scientific projects. (Jenkins, 2011). Fortunately, there is a growing recognition of this need within the citizen science community, with many projects identifying links to national curriculum and aligning project to address these requirements (Spicer et al., 2020). Indeed, providing teachers with ready-to-use material and lesson plans connected to school curricula has been shown to increase

[15] The institute for research in schools (IRIS): https://researchinschools.org/

teacher engagement and willingness to participate and facilitate student learning through citizen science (Bonney et al., 2016). Providing training which specifically addresses the needs of teachers as facilitators of citizen science can also contribute to their buy-in and involvement (Lorke et al., 2019).

Finally, in order to achieve high level learning outcomes, teachers have to be fully engaged and on-board with the project goals, methods and content. They have to view themselves as competent and in possession of appropriate skillsets to both facilitate project participation and student meaningful learning. To accomplish these, teachers have to abandon the classical approach of teaching science in which lecture and testing are strongly emphasized, and guide their students in making connections between the data, their community, and the environment (Jenkins, 2011).

Participation and engagement in citizen science projects through scientific inquiry promote scientific skills and learning benefits (Trumbull, 2000; Brossard et al., 2005; Bonney et al., 200; Cronje et al., 2011; Jordan et al., 2011; Wiggins, 2011; Herodotou et al., 2017; Redondo et al., 2018). Active contribution in citizen science projects also could change students' attitude and behaviour toward science or a specific topic (Brossard, D. et al. 2005, Ruiz-Mallén, I. et al. 2016). On the other hand, researchers benefit from students' participation building a community and generating knowledge about the research questions raised.

The common objective of citizen science projects is to conduct research in a specific field in order to answer a scientific question (Schäfer, T. et al. 2016). There is a wide variety of projects and topics (e.g., Zooniverse topics like space, nature, biology, humanities, etc. (Simpson, 2014; Pettibone, 2017) which means that citizen science offers an overview on science fields, and the opportunity to engage students into different and diverse topics and educational levels.

Although schools provide an environment explicitly designed for learning, not all the projects are designed for formal education or to involve children or youth (National Academies of Sciences, Engineering, and Medicine, 2018). Wiggings et al. (2011) defines a type of citizen science project as "Educational" that develops its activities educational-oriented. Others, nevertheless, adapt materials, practices and purposes for support learning outcomes (Ballard, et al., 2017, National Academies of Sciences, Engineering, and Medicine, 2018, Schuttler, S. G. et al. 2019).

To democratise science in the classroom (Bonney et al., 2016), the dialogue between scientists, teachers and students should be continuous. The role of scientists or coordinators is to assure the scientific process is being followed properly. Concerning the educational community, teachers have to control the learning process, facilitate the discussion and established scientific practices to show a proper perspective of the scientific research (Mueller, M.P 2012, Shah, H. R. 2016). It is necessary a collaboration between scientists and teachers or facilitators in order to define the contents of the curriculum that projects tackle, to planify if changes in the educational program are needed (Shah, 2016; Castagneyrol, 2016) or accommodate the project tasks to students' diversity (Jenkins, L. L. 2011).

Students act as volunteers in citizen science projects and participate in projects in different activities of the scientific process at any step on which scientific knowledge, skills and methods can be learned. Different models of participation are designed by projects and followed by schools to introduce citizen science in formal education (Phillips T. B. et al. 2014, Paige, K. et al. 2015) although Bonney R. et al. (2009) defined it for the first time. Students have to follow specific protocols to develop the tasks

assigned (Bonney, R. et al. 2009) on participating in the project. When participating in a citizen science project, students can classify data (ex. AI4MARS[16]), identify data (ex. Penguin watch[17]), build material needed to research (e.g., Desafío Bajozero[18]) or collect data (ex. Months of Canada[19]) among other tasks (Wiggins, A. et al. 2012).

Educational materials (posters, guides, videos, etc.) are created by projects to conduct experiments, support literacy, understand how investigation will be developed, know the timings, promote open discussions and advance in scientific knowledge. Also, training and conducting workshops are some of the tasks developed by scientists to train students (Cohn, J. P. 2008, Bonney R. et al. 2009). Those instruments and methods should be reflected in the curriculum (Mueller, M.P 2012, Schäfer et al. 2016, Shah, H, 2016).

5.4.3 Informal education

Julia Lorke

Due to the high number of citizen science projects around environmental, natural or physical sciences compared to citizen science projects within the context of humanities or social sciences, the section will mainly focus on the informal science education (ISE) sector. Starting with a clarification of what we mean by informal education and who the stakeholders are in the community of practice in ISE, we will build on the work by Kloetzer et al. (2020) to illustrate the connection between ISE and citizen science with examples from citizen science projects or other relevant developments in the interface of citizen science and informal education.

The Open education sociology dictionary defines informal education (2013) as "Unplanned and spontaneous learning of behaviours, norms, and values, which typically occurs outside of formal (school) settings." This type of learning is highly relevant as, according to Falk & Dierking (2010), on average people only spent 5% of their lifetime in formal education. While informal learning can happen anywhere anytime, informal education can happen in intentionally designed learning environments. The National Research Council (2009) description of informal science education acknowledges that informal education, in addition to everyday-life situations, can very well occur in spaces and programmes designed purposefully to enable the desired engagement and learning outcomes, as well as through science media. No matter if the learners engage with the learning opportunities intentionally or unintentionally in regards to learning. They define the following six strands to describe what learners may experience in informal learning settings:

- *"Strand 1: Experience excitement, interest, and motivation to learn about phenomena in the natural and physical world.*

[16] Zooniverse AI4MARS project (2020, October 15). Retrieved from https://www.zooniverse.org/projects/hiro-ono/ai4mars

[17] Zooniverse Penguin watch project (2020, October 15). Retrieved from https://www.zooniverse.org/projects/penguintom79/penguin-watch/classify

[18] Desafio Bajozero project (2020, October 15). Retrieved from https://ciencia-ciudadana.es/proyecto-cc/desafio-bajo-zero/

[19] Moths of Canada (2020, October 15). Retrieved from https://www.inaturalist.org/projects/moths-of-canada

- *Strand 2: Come to generate, understand, remember, and use concepts, explanations, arguments, models, and facts related to science.*
- *Strand 3: Manipulate, test, explore, predict, question, observe, and make sense of the natural and physical world.*
- *Strand 4: Reflect on science as a way of knowing; on processes, concepts, and institutions of science; and on their own process of learning about phenomena.*
- *Strand 5: Participate in scientific activities and learning practices with others, using scientific language and tools.*
- *Strand 6: Think about themselves as science learners and develop an identity as someone who knows about, uses, and sometimes contributes to science.*" (National Research Council, 2009, p.4)

Many aspects mentioned in these strands align with those found in frameworks for individual learning outcomes in citizen science (e.g., Shirk et al., 2012, Phillips et al., 2018). However, it is the term "sometimes contributes to science" that sticks out and especially highlights the potential of citizen science to contribute to informal science education in a way that other formats cannot offer. According to Hecker et al. (2018, p.2), contributing to science is the "common, shared goal" of citizen science activities and thereby "distinguishes citizen science from areas such as experiential learning or environmental education".

Similarly, to informal science learning environments, we find that most citizen science activities are also "institutionally framed" or "located in organised, designed environments" (Dawson, 2014, p. 211) including various of the 17 stakeholders that were identified as part of the informal science education landscape or community of practice by Falk et al. (2012), e.g.: science centres; botanical gardens; natural history museums; zoos and aquariums; libraries; media; after-school science; youth-serving community organisations; adult community organisations; environmental organisations and science societies.

Science Centres, Botanical Gardens, Natural History Museums, Zoos and Aquariums

Many institutions in this section have an educational mission, in addition to a research mission, such as many museums and science societies; others are mainly focused on an educational mission aiming to open up opportunities for the public to engage with science and research like science centres, for example. citizen science offers a way to engage audiences in research as well as providing learning opportunities in an authentic context. This is a promising approach to address the dual mission of these institutions and provide opportunities to actively participate in authentic scientific research. Hence, it is not surprising that these institutions engage in citizen science in various ways. For example, institutions showcasing citizen science as an approach or citizen science projects at events or in exhibitions (e.g. Ecsite's Sparks exhibition,[20] Berlin citizen science Day[21] at the Museum für Naturkunde), initiate and run citizen science activities themselves (e.g. Kew Gardens' The Lost and Found Fungi Project[22]

[20] Ecsite (2020, December 10). https://www.ecsite.eu/activities-and-services/news-and-publications/beyond-lab-beyond-sparks

[21] Museum für Naturkunde (2020, December 10). https://www.museumfuernaturkunde.berlin/en/press/press-releases/first-berlin-citizen-science-day

[22] Royal Botanic Gardens, Kew (2020, December 10). https://www.kew.org/science/engage/get-involved/citizen-science/lost-and-found-fungi

or the Royal Horticultural Society's Cellar Slug Hunt[23]) or contribute to capacity building efforts (e.g. the Chicago Botanic Garden's Citizen Science Academy[24]or the Guide to Citizen Science[25] from the Natural History Museum, London).

The collaboration of professional experts, amateur experts and interested hobbyists has a long tradition, especially in the case of natural history museums and science societies (Star and Griesemer 1989; Sforzi et al. 2018) with new technologies enabling new formats of such collaborations and providing opportunities to broaden the range of participants. In this sense, online citizen science projects can be an interesting way for organisations such as museums or botanical gardens to broaden their reach because participants would not be required to physically visit an institution. According to Trouille et al. (2017), crowdsourcing citizen science projects are used by museums "to engage their visitors, create metadata for digitized materials in their collections, and assist in their research efforts". As most museums and other institutions with collections are in the process of digitising their objects, citizen scientists are often asked to help with transcriptions of specimen labels, handwritten records, and other archive materials (e.g., AnnoTate[26], Notes from Nature[27], Die Herbonauten[28]). However, biodiversity monitoring projects in which citizen scientists are asked to record their observations of all or certain species in nature are quite common (e.g., Superproject[29], Big Seaweed Search[30] or FrogWatch). Ballard et. al. (2017) studied 44 natural history museum-led citizen science programmes and demonstrated that 26 of them, including some BioBlitzes, contributed to conservation outcomes, namely "conservation research, management, education and policy" (p. 87).

Libraries

The role of public libraries for their local communities has changed and moved beyond places that provide books and internet access. Many offer a range of community outreach activities ranging from arts and crafts workshops to public debates, ICT courses, wellbeing activities, support groups, providing venues for community events (Scott, 2011) or offering a library of things. In addition to their long tradition in providing access to knowledge and learning opportunities, they aim for equity in access to their services and take community needs into account in their programming (Scott, 2011). Bonhoure, Cigarini, Perelló and Vicens (2019) advocated for public libraries to be redefined "as spaces where people, groups and communities can practise citizen science of value at the individual, community and local level". An

[23] Royal Horticultural Society (2020, December 10). https://www.rhs.org.uk/slugssurvey

[24] Chicago Botanic Garden (2020, December 10). https://www.chicagobotanic.org/education/citizen_science_academy

[25] Natural History Museum (2020, December 10). https://www.nhm.ac.uk/content/dam/nhmwww/take-part/Citizenscience/citizen-science-guide.pdf

[26] Zooniverse (2020, December 10). https://daily.zooniverse.org/2015/09/01/new-project-annotate/

[27] Zooniverse (2020, December 10). https://www.zooniverse.org/organizations/md68135/notes-from-nature

[28] Die Herbonauten (2020, December 10). https://herbonauten.de/

[29] Natural History Museum of LA County (2020, December 10). https://nhm.org/community-science-nhm/superproject

[30] Natural History Museum (2020, December 10). http://www.bigseaweedsearch.org/

example of a citizen science project led by public libraries is "Jocs per l'Habitatge (Games for Housing)"[31] in which through a co-created process new data on access to housing was generated and applied to develop recommendations for new housing strategies. A helpful resource to embed citizen science is *The Librarian's Guide to Citizen Science* (Cavalier, Nickerson, Salthouse & Stanton, 2019) which provides an introduction to citizen science but also practical recommendations and tools such as a checklist for programming.

Another push to make use of the synergies between libraries and citizen science is led by The European Association of Research Libraries (LIBER) which sees libraries as a key player in realising the EU's Open Science agenda (Ignat et al., 2018). Within that effort, supporting citizen science plays an important role (Ayris et.al, 2018). In their Roadmap LIBER outlines four key recommendations to establish the libraries' stakeholder position: 1) Promoting the role of the library in citizen science and supporting citizen scientists in their work, 2) using the institutions' credibility and expertise to ensure ethical conduct and scholarly practice, 3) developing guidelines for methodologies and policies and 4) capacity-building in scientific communication, information technologies and project management for citizen science (Ayris et al., 2018). Spearheading the field of citizen science and research libraries within LIBER are the University of Barcelona (e.g., providing advice on intellectual property, data management and open access[32]), University College London (e.g., Transcribe Bentham[33]), the University of Southern Denmark (e.g., A Healthier Funen; Overgaard & Kaarsted, 2018) and Qatar National Library (e.g., Citizen Science Workshop 2019[34]) (Ignat et al., 2018).

Media

Traditionally informing and educating their audiences are aims of media outlets (see BBC mission[35]), so they may cover the launch, existence or results of citizen science projects (e.g., BBC Digital Planet's report on Dreamlab[36]), they may tell stories about individual citizen scientists (e.g., "iNaturalist Does More Than ID Plants" in Sierra magazine[37]) or report on the general approach, its relevance and impact (e.g., Nature's "No PhDs needed: how citizen science is transforming research"[38]). Media coverage increases the visibility of citizen science (see 4.6) and by raising awareness of the concept or individual projects and resources, media coverage can help projects with volunteer recruitment (Robson et al., 2013). Thus, it's not surprising that there are several examples of collaborations including media partners. For example, between 2005 and 2006 Woodland Trust and the BBC collaborated on the

[31] Open Systems (2020, December 10). http://www.ub.edu/opensystems/projectes/ciencia-ciutadana-en-accio/

[32] CRAI Universitat de Barcelona (2020, December 10). https://crai.ub.edu/en/crai-services/intellectual-property

[33] University College London (2020, December 10). https://blogs.ucl.ac.uk/transcribe-bentham/about/

[34] Qatar National Library (2020, December 10). https://events.qnl.qa/event/nXMM1/EN

[35] BBC (2020, December 10).https://www.bbc.com/aboutthebbc/governance/mission

[36] BBC(2020, December 10). https://www.bbc.co.uk/programmes/w3cswhd8

[37] Sierra (2020, December 10). https://www.sierraclub.org/sierra/inaturalist-does-more-id-plants

[38] Nature (2020, December 10). https://www.nature.com/articles/d41586-018-07106-5

Springwatch survey[39] that ran along with the popular BBC Springwatch TV programme, asking citizens to submit observations on, for example, ladybirds, bumblebees and frogspawn. The partnership between Zooniverse's SpaceWarps and BBC Stargazing Live even won an award for their collaboration.[40] The BBC apparently found these collaborations fruitful as they later engaged in the development of the citizen inquiry platform nQuire[41] in collaboration with the Open University and have since been involved in several additional projects (e.g., Gardenwatch[42]). Examples for media partnerships in citizen science can also be found in other countries, for example, Germany (e.g., Apfelblütenaktion[43], a collaboration between SWR (a German radio and TV station) and Heidelberg University of Education) and Denmark (e.g., A Healthier Funen; Overgaard & Kaarsted, 2018).

After-School Science

The after-school landscape seems to vary from country to country. In the US, after-school programmes across many different subject areas are very common. Hence, we also find several examples for programmes that are citizen science or include participation in a citizen science project among other activities. The Dragonfly Detectives[44], a project led by the North Carolina Museum of Natural Sciences, engages children in grades 4–8 in citizen science (Goforth, 2018). The Science Action Club[45] programme developed by the California Academy of Sciences embeds citizen science activities (e.g., BugSafari) within their educational curriculum. They report to have engaged 62,000 youth and educators in over 400 locations since the programme started in 2011. Another example is the Mad Science project which focused on engaging students from low-income communities in, for example, participatory sensing and applied an apprenticeship model to enable interactions between students and scientists. Heggen et al. (2012) reported more favourable views of technology, enjoyment of interactions with technology, and increased aspirations for STEM career paths as outcomes for participation in the Mad Science programme. In addition to after-school programmes, citizen science activities can be part of youth summer programmes. Ballard et al. (2017b) studied how youth can develop knowledge, skills, roles and agency in such programmes and developed resources for practitioners showcasing case studies[46] and key practices[47].

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[39] BBC (2020, December 10). http://www.bbc.co.uk/pressoffice/pressreleases/stories/2005/05_may/30/springwatch.shtml

[40] Zooniverse (2020, December 10). https://daily.zooniverse.org/2014/06/26/another-award-for-the-zooniverse/

[41] IET (2020, December 10). https://iet.open.ac.uk/projects/tomorrows-world-nquire

[42] BBC (2020, December 10). https://www.bbc.co.uk/programmes/articles/4gjThGt61ndDfXqcWL04rqn/gardenwatch-now-closed-to-submissions

[43] SWR (2020, December 10). https://www.swr.de/wissen/apfelbluete/

[44] https://dragonflydetectives.wordpress.com/

[45] https://www.calacademy.org/science-action-club-sac

[46] https://education.ucdavis.edu/yccs-case-studies

[47] https://education.ucdavis.edu/yccs-key-practices

Youth-Serving Community Organisations, Adult Community Organisations, Environmental Organisations & Science Societies

Youth serving organisations have discovered citizen science as one way to engage youth in STEM and as an activity that can support the development of various skills from scientific thinking to using an app to public speaking. Information and resources on citizen science are provided by or for many youth-serving organisations, e.g., various extensions of 4-H youth development programmes[48], STEM4Youth[49] or The Y[50]. Girl Scouts USA teamed up with the citizen science platform SciStarter to embed citizen science in the Scouts activities.[51] Educational materials are provided for troop leaders in the form of a toolkit. The platform has created a special access for troop leaders and their scouts, so they can monitor and support the girls on their "Think like a scientist" journeys over several years. The scouts get credit for their participation in the citizen science activities and can earn citizen science badges for various different stages.

There are various examples of more adult-focused organisations, such as science societies or environmental organisations, engaging in a broad variety of citizen science activities. One of the longest running citizen science surveys, for example, is the Audubon Christmas Bird Count[52] run by the National Audubon Society. Some embed citizen science as part of their wider agenda. The Marine Conservation Society, for example, runs Seasearch and is a partner in the Big Seaweed Search, but lists those citizen science activities on their website[53] in the section "Get active" which also includes environmental education or stewardship activities, such as beach cleans. The National Geographic Society provides a collection of resources on citizen science for educators and citizen scientists[54], ran stories about citizen science projects, offered grants for projects and since 2017 co-funds iNaturalist[55], one of the most popular biodiversity recording apps. Public Lab is an example for a community organisation leveraging open technology to run collaborative participatory science projects. The topics range from air quality and disaster response to waste and their approach is focused on equity and social justice.

Although this subchapter can only provide a brief overview on the various forms in which informal education stakeholders engage in citizen science and citizen science activities become part of the informal education landscape, the descriptions hopefully highlight the potential synergies between the fields.

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[48] https://nys4-h.org/projects/#citsci

[49] http://www.stem4youth.eu/citizen-science/

[50] https://www.ymca.net/summer-buzz/ways-for-kids-and-teens-to-become-citizen-scientists

[51] https://scistarter.com/girl-scouts-faq

[52] Audubon (2020, December 10). https://www.audubon.org/conservation/science/christmas-bird-count

[53] Marine Conservation Society (2020, December 10). https://www.mcsuk.org/get-active/

[54] National Geographic (2020, December 10). https://www.nationalgeographic.org/topics/citizen-science/

[55] iNaturalist (2020, December 10). https://www.inaturalist.org/pages/about

5.4.4 Online perspectives in citizen science

Patricia Santos, Miriam Calvera-Isabal

Online education promotes development on computer and technology skills, educational engagement in specific tasks related to computer technology, autonomy on learning and brings them closer to societal realities (by using simulators or online resources) (Robinson et al., 2008). With the emergence of the internet, web-based applications have been developed to support synchronous and asynchronous learning, giving the opportunity to the students to learn when and where they want and providing teachers a variety of learning resources to use in schools (Aristeidou et al., 2020). Additionally, during the last years and especially the last course because of the COVID-19 pandemic, the need to provide online support for education has become a priority, which has led to an advance in technological learning and development of many online applications (Dhawan, S. 2020).

Online citizen projects provide students the opportunity to be engaged in different types of projects for different topics and forms of participation (Curtis, 2015; Doyle et al., 2018). Nevertheless, Doyle et al. (2019) conclude that teachers prefer to address issues of local interest. In general, blended learning is supported by projects because protocols or communication are followed by students and teachers online from the project web page itself (ex. Vigilantes del aire[56] or Meet mee voor een schonere lucht[57]) although some platforms are completely dedicated to online citizen science (ex. nQuire[58] or Zooniverse[59]) (Herodotou, C. et al. 2014, Herodotou, C. et al. 2018). In general, most of the platforms have specific documentation about how to participate in a project from the school context.

There are different ways to participate in online citizen science (OCS) projects in the classroom but depends on the learning outcomes identified by teachers to fulfil (learning about research process, specific topic, etc.) and the project needs. Students have to understand what is required and follow the protocol to participate in the project. Pre-requirements to participate in OCS are: to have an internet connection and a computer/smartphone/tablet as a minimum (Doyle et al., 2019).

For those projects that follow a blended learning method, teachers participate in workshops to learn more about the project and how to conduct it, helping them to implement their teaching units (National Academies of Sciences, Engineering, and Medicine 2018, Doyle, C. et al. 2019). In general, there are many materials that explain all the educational aspects and the communication between teachers and scientists

[56] Vigilantes del aire project (2020, October 15). Retrieved from https://vigilantesdelaire.ibercivis.es/

[57] Meet mee voor een schonere lucht project (2020, October 15). Retrieved from https://www.luchtpijp.be/aan-de-slag

[58] nQuire platform (2020, October 15). Retrieved from https://nquire.org.uk/discover

[59] Zooniverse platform (2020, October 15). Retrieved from https://www.zooniverse.org/

is usually fluid (ex. OdourCollect[60], SCENT project[61], Vigilantes del aire[62]). For those projects that are completely online, and especially those that use a platform as a participation tool, there is information about the project (frequency, development time, ideal age of group, etc. (ex. Space Fluff project[63])) and pages with educational information in addition to forums where participants (teachers and students) can post comments or doubts and both other volunteers and coordinators will answer their questions (ex. Zooniverse[64] have for many projects a page with educational information and for each project their specific forum -called talk). These forums promote participation, engagement and motivation, critical thinking, learning with and by others and create a community that supports the learning process (Carlsen et al., 2014; Luczak-Roesch et al., 2014; Doyle, 2018).

It is important to pay special attention to those citizen science platforms (ex. EU-citizen science platform[65], Observatorio de la ciencia ciudadana español[66], Australian citizen science[67] or SciStarter[68]) or other associations that dedicate some efforts to create working groups or specific actions to involve students in citizen science (ex. Österreich forscht[69], Zentrum für Citizen science [70], Vigie Nature école[71], Environmental protection

[60] Educational resources for OdourCollect project (2020, October 15). Retrieved from https://ciencia-ciudadana.es/disponible-la-unidad-didactica-ciencia-ciudadana-para-monitorizar-la-contaminacion-odorifera/

[61] SCENT project educational resources (2020, October 15). Retrieved from https://scent-project.eu/teachers-guide

[62] Vigilantes del aire educational resources (2020, October 15). Retrieved from https://ibercivis.es/wp-content/uploads/2020/01/VIGILANTES_DEL_AIRE_UNIDAD_DIDA%CC%81CTICA.pdf

[63] Space Fluff project in SciStarter platform (2020, October 15). Retrieved from https://scistarter.org/space-fluff

[64] Zooniverse platform (2020, October 15). Retrieved from https://www.zooniverse.org/

[65] EU citizen science platform (2020, October 15). Retrieved from https://eu-citizen.science/

[66] Observatorio de la ciencia ciudadana español (2020, October 15). Retrieved from https://ciencia-ciudadana.es/

[67] Australian citizen science platform (2020, October 15). Retrieved from https://citizenscience.org.au/

[68] SciStarter platform (2020, October 15). Retrieved from https://scistarter.org/finder

[69] Österreich forscht platform working group (2020, October 15). Retrieved from https://www.citizen-science.at/netzwerk/arbeitsgruppen/ag-schule

[70] Zentrum für Citizen science (2020, October 15). Retrieved from https://zentrumfuercitizenscience.at/de/citizen-science-schule/

[71] Vigie Nature école educational resources (2020, October 15). Retrieved from https://www.vigienature-ecole.fr/escargots

agency (EPA)[72], SDU[73], Luonto-Liiton Kevätseuranta[74] or iNaturalist[75]).

Learning is one of the main purposes of participating in OCS projects. Kloetzer et al. (2013) demonstrate that participation on virtual citizen science projects promotes almost six different learning outcomes (Figure 2) related to different activities done. But, in order to ensure successful learning (Masters, 2016), students should have personal assistance if they have technical problems or doubts about the project or the resources they have available (Chen et al., 2010).

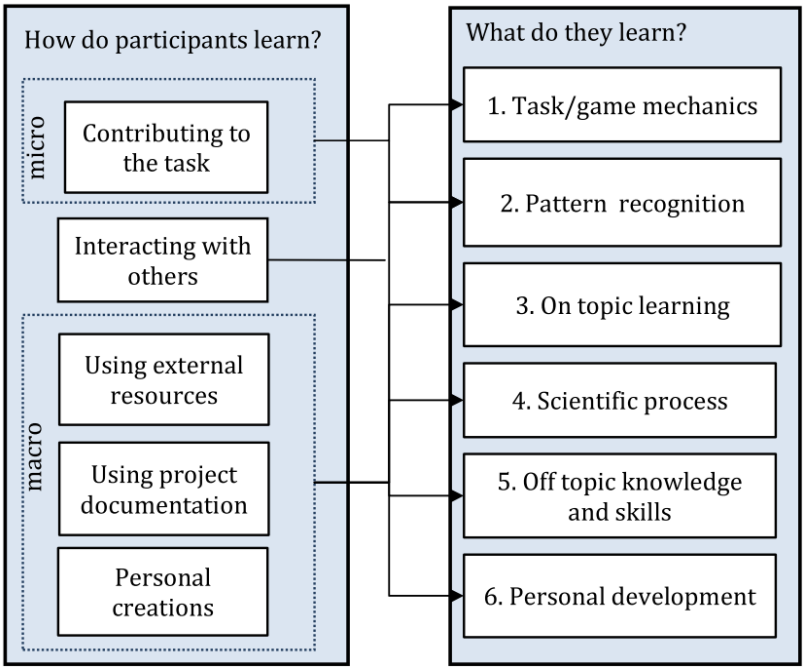

Figure 2. Learning in citizen science projects (Kloetzer et al. 2013).

5.4.5 Examples of educational citizen science projects

There are many strategies to classify educational citizen science initiatives (by learning outcomes, by project type, by how students participate, etc.) but it has already mentioned through the previous sections many projects related to all these categories. Below it is presented a list of selected projects that illustrates almost all the classification typologies.

Every name counts[76]: Project *developed online* through citizen science Zooniverse

[72] Environmental protection agency educational resources (2020, October 15). Retrieved from http://www.epa.ie/researchandeducation/

[73] Citizen Science & Active Schools (CSAS) from SDU association (2020, October 15). Retrieved from https://www.sdu.dk/en/forskning/forskningsformidling/citizenscience/activeschools

[74] Luonto-Liiton Kevätseuranta association educational resources (2020, October 15). Retrieved from http://kevatseuranta.fi/opetukseen/

[75] iNaturalist teacher's guide: https://www.inaturalist.org/pages/teacher's+guide

[76] Every name counts (2020, October 15). Retrieved from https://www.zooniverse.org/projects/cseidenstuecker/every-name-counts/about/education

platforms. It's a project about history whose goal is to "*ensure that all the names in the millions of documents stored in the Arolsen Archives can be found in the online archive – so that people all over the world can easily access information on the fate of their relatives*". There are additional resources available to ensure educational outcomes.

The Influence of Social Media on Vaccination Hesitancy in the European Union[77]: Project developed online through SciStarter citizen science platforms. It's a project about Health & Medicine that has to be developed only once. Its goal is "*Identifying connection between social media and vaccine hesitancy in the EU*". Specially dedicated to High school (14 - 17 years), College, Graduate students, etc.

Bug Safari[78]: Project promoted by CalAcademy's Science Action Club developed locally and integrated in iNaturalist platform. Is a project about local Biodiversity which "On local field expeditions, middle school youth search for bugs, collect specimens, and post photos to SAC's iNaturalist project".

Op zoek naar fruit en groenten[79]: Project developed locally with a camera and email account. It's about "plants, grain, fruits or vegetables in paintings". Volunteers take photos from paintings in a museum and "help biologists understand the evolution of the plant kingdom".

CoKoNet[80]: Project developed online. Is a project about sociology. The project evaluates "the consequences that the reduction of social contacts during the Corona crisis has on our personal behavior and on our communal contact network". All the data will be presented in a workshop for schools.

Discover earth[81]: Project developed locally. "Supports teachers and schools in understanding how they can achieve a more sustainable planet, with a focus on citizen science, climate change and the environment". Provides activities, workshops and resources.

Cities at night[82]: Project developed locally. "The main goal of the project is to tag, locate and georeference the archive of night time images of the Astronauts of the International Space Station". For schools, it is a powerful "too to teach geography, increase awareness about the light pollution problem".

Sounding Soil[83]: Is an Earth science project developed locally and online. The project's

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[77] The Influence of Social Media on Vaccination Hesitancy in the European Union (2020, October 15). Retrieved from https://scistarter.org/the-influence-of-social-media-on-vaccination-hesit

[78]Bug Sfar (2020, October 15). Retrieved from: https://www.inaturalist.org/projects/bug-safari

[79]Op zoek naar fruit en groenten project (2020, October 15). Retrieved from https://www.iedereenwetenschapper.be/projects/op-zoek-naar-fruit-en-groenten

[80] CoKoNet project (2020, October 15). Retrieved from https://cokonet.pages.ist.ac.at/ in Young science zentrum webpage (https://youngscience.at/de/angebote/projekte-zum-mitforschen/mitforschen-von-daheim/)

[81] Discover earth project (2020, October 15). Retrieved from https://earthwatch.org.uk/get-involved/education-and-schools/discover-earth

[82] Cities at night project (2020, October 15). Retrieved from https://citiesatnight.org/ in EU-citizen science platform (https://eu-citizen.science/project/45)

[83] Sound soil project (2020, October 15). Retrieved from https://www.soundingsoil.ch/ in Schweiz forscht platform (https://www.soundingsoil.ch/)

aim is "try to acoustically measure the biodiversity in the soil with sound recordings and to examine the relationships in the environment".

Water - Broad general education[84]: Is a project developed locally in Scotland about water and beaches. The main objective is to "find out about Scotland's bathing waters and beaches near" volunteers.

EnviroCitizen: Ciencia Ciudadana Para Una Ciudadanía Ambiental[85]: The participation is locally through Europe. Is a project that "aims to research how to encourage environmental citizenship through engagement with citizen science".

The Novels Survey: Coming of Age[86]: It is a project about literature and is online. The volunteers have to Rate BBC selection of novels about Coming of Age.

5.4.6 Possibilities and obstacles of citizen science in Education

As it was mentioned in previous chapters, citizen science promotes scientific skills, knowledge, learning in science, technological skills, engaging in science and changes in behaviour and attitude toward science (Ruiz-Mallén, 2016). But, how could these aspects be measured? Assessing the learning outcomes is not an easy task because scientists in general don't define these aspects as part of their project goals. "These learning outcomes should be specific, measurable, attainable, relevant, and timely" (Jordan, 2012). Phillips et al. (2018) identified different learning outcomes from different projects being some of them: "Interest in science and environment", "skills of science inquiry" or "Knowledge of the Nature of science" etc.

Phillips et al. (2015) defines evaluation as a "comprehensive process that involves a strategy to plan, implement, and report results" and needed to obtain evidence about learning outcomes and know strengths and weaknesses of the project. It can be done during the project life cycle but the final conclusion should be obtained at the end. The User's Guide for Evaluating Learning Outcomes from citizen science of The Cornell lab of Ornithology (Philips et al., 2015) defines three types of evaluation: front-end, summative or formative. There should be defined some indicators that "need to be targeted, feasible, valid, and reliable" for each learning outcome identified. (Jordan et al., 2012; Phillips et al., 2014).

There are many evidences of how citizen science can contribute to STEM career motivation (Hiller, S. E. et al. 2014), promote ecology (Kobori et al., 2016), knowledge about biodiversity, biology or water evaluation (Eberbach et al., 2009; Oberhauser et al., 2012; Thornton et al., 2012; Vitone et al., 2016; Ballard et al., 2017; Kelemen-Finan et al., 2018) and critical thinking and/or in community (Fazio et al., 2015; Masterson et al., 2019). These contributions have to be aligned with learning outcomes defined by projects and identified by teachers in the curriculum.

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[84] Water - Broad general education project (2020, October 15). Retrieved from https://www.environment.gov.scot/educational-resources/get-learning-water/water-broad-general-education-early-to-fourth-level/

[85] EnviroCitizen: Ciencia Ciudadana Para Una Ciudadanía Ambiental project (2020, October 15). Retrieved from https://www.envirocitizen.eu/

[86] The novels survey: Coming of Age from nQuire platform (2020, October 15). Retrieved from https://nquire.org.uk/mission/the-novels-survey-coming-of-age/contribute

The use of information and communication technologies (ICT) have increased during the last years, facilitating the implementation of citizen science projects, not only because of the presence of projects on internet (platforms, web pages, etc.) but also to the use of technology (mobile, cameras, virtual realities, sensors, etc.) to develop project activities by students (Herodotou et al., 2014). The use of ITCs is proven to increase student's motivation, interest in science, technology and STEM careers and increase in knowledge of the field of science or learning (Tsivitanidou et al., 2020).

Finally, gamification has been introduced as a method to conduct a citizen science project (e.g., SCENT explore game[87]). Volunteers have to solve different real-life problems or activities -synchronous or asynchronous- related to the scientific project to pass the game (Crowston et al., 2013; Iacovides et al., 2013; Curtis 2015; Rallapalli et al., 2015; Tinati et al., 2015; Tinati et al., 2016; Tinati et al., 2017; Tsivitanidou et al., 2020).

5.5 Visibility of citizen science

Sven Manske, Julia Lorke

Common ways for citizen science projects and activities to become visible to their stakeholders, potential volunteers and the public include traditional media, projects websites, national or international citizen science platforms as well as social media outlets. Media partnerships can be project-specific (e.g. Apfelblütenaktion[88], a collaboration between SWR and Heidelberg University of Education) or platform-based (e.g. nQuire[89], a collaboration between the Open University and the BBC). Although platforms seem to be considered as less relevant to projects coming from the citizen social science field (Göbel, Henke & 2019), many projects have their own web presence and/or are listed on citizen science platforms that often operate on a national or even international level (e.g. Bürger schaffen Wissen[90], EU-Citizen.Science[91]). At this point it should be noted that since citizen science activities could potentially be conducted entirely without any form of media coverage or online representation, there is a possibility that some of them are not detectable with the web-focused methods.

New and emerging technologies are heavily influencing and transforming scientific research projects during the last decades (Newman et al., 2012) and are opening up

[87] Mobile SCENT explore app (2020, October 15). Retrieved from https://play.google.com/store/apps/details?id=com.xteamsoftware.scentexplore&hl=en_US

[88] SWR Wissen, Apfelblüte (2020, October 15). Retrieved from https://www.swr.de/wissen/apfelbluete/

[89] IET, nQuire project (2020, October 15). Retrieved from https://iet.open.ac.uk/projects/tomorrows-world-nquire

[90] Bürger schaffen Wissen (2020, October 15). Retrieved from: https://www.buergerschaffenwissen.de/en

[91] Museum für Naturkunde Berlin, EU-Citizen.Science (2020, October 15). Retrieved from https://eu-citizen.science/

new ways of making results, processes, people and networks visible and partly open to the public. Besides traditional media outlets and established web resources, the use of mobile technologies has become more important in the field of citizen science. Mobile technologies are not only enabling new ways to collect data remotely and on a large scale through crowdsourcing, but also support the dissemination and communication of research results. Beyond this, social media sites and channels let novices and non-experts participate in scientific activities and involve them in scientific discourse to some extent. While the basic technology for enabling citizen science activities is a straightforward crowdsourcing infrastructure (for example, a data collection app), there is an inherent need to activate and acquire volunteers for such activities and ideally maintain their engagement over an extended period of time. Robson, Hears, Kau and Pierce (2013) have shown that social media sites such as Facebook or Twitter can be used to recruit and promote such crowdsourced citizen science activities, with the effect of a social media campaign (measured by the download rate for the project's app after each communication effort) being similar to the effect of an international press release and the corresponding media coverage.

For some citizen science projects, the use of social media is quite crucial as they do not form explicit or formal project structures. Daume and Galaz (2016) investigated the so-called implicit or embryonic citizen science communities that used Twitter as a communication backbone. The projects investigated are not formalized or institutionalized as they are not created or funded by specific initiatives. This unveils contexts, in which citizen science activities are formed in a bottom-up approach. Those informally organized projects are of particular interest for CS Track as they can extend the corpus of projects represented by the Work Package 2 database that was mainly sourced from established citizen science platforms. Identifying and analysing those types of citizen science activities will provide insights into trending citizen science topics and developing citizen science communities beyond the already captured more formalised landscape of citizen science.

While the work by Daume and Galaz (2016) has shown that individuals might use social media to network and connect to other "citizens" to kickstart or initialise citizen science activities, other formalized or institutionalized citizen science activities may choose to communicate within a closed ecosystem for project-internal aspects, but applying a different focus when communicating to the outside. Though when this different focus shifts to promoting the institutions rather than promoting the science activity, this communication strategy might be counterproductive. This "missed opportunity" of using communication channels to showcase the scientific process and the people involved have been explored by Brown Jarreau, Dahmen and Jones (2019) who found that although museums use Instagram as a promotional channel, this practice does not put the science or the scientists behind the scenes in focus. In the sense of citizen science, this would allow mediating the interaction between scientists and citizens. Tancoigne (2019) explored this process of mediation between citizens and scientists on Twitter and found out that there is a third role of actors, the "citizen science brokers". As a sidenote, Tancoigne explains that most of the actors, who call themselves "citizen scientists", are professional scientists from other research fields. This has implications for the work in CS Track, because this uncovers the challenge of identifying "real" citizen scientists that participate in such projects as non-professionals ("lay participants"), making it difficult to establish a "dialogue" between those actors.

Research has shown the importance of direct communication between volunteers and scientists in such programmes. According to Masters et al. (2016), citizen science

initiatives with well-functioning communication channels such as forums or blogs are better functioning regarding economic measures and active participation, which is connected to knowledge co-creation in the discourse and exchange with scientists. With the premise that participants extend their (scientific) knowledge and believe to learn about science, such communication structures tend to support motivational factors. A similar experience has been documented by Liberatore et al. (2018), where a Facebook group has been used to support a citizen science project in the context of bird watching. They highlight the important role of such platforms in establishing and providing access to public and private community spaces, where the latter is established through administrators or moderators. Apart from the organisation and infrastructure of communication, other factors coinciding with visibility have been explored in research. Bautista-Puig, De Filippo, Mauleón, and Sanz-Casado (2019) defined altmetric and bibliometric indicators to assess social interest in science. It turned out that open access publications tend to improve the visibility of projects through social media, with the highest volume on Twitter compared to other social media sites. Other indicators that have been explored in this research work are number of DOIs or the distribution of publications across the web of science categories, which are particularly of interest for the CS Track project (e.g. section 9.3).

Social media platforms seem to provide a solid foundation for citizen science projects – not only for the pure collection of crowdsourced data but also for knowledge co-creation, knowledge exchange and the building of expertise among non-experts in creating data of high quality that are valuable for science. Further, it enables social interaction between the stakeholders of citizen science projects, namely citizen scientists, project owners, practitioners, and the public through such open dissemination channels (Mazumdar & Thakker, 2020). Particularly the latter, communicating actively to a magnitude of people, e.g., through mass media, does not only help to massively increase the exposure of science activities, but this involvement of the public also increases the credibility of scientists and projects, as well as the participation of citizens in science (van Vliet, Bron & Mulder, 2014).

5.6 Economic considerations in Citizen Science

Raul Drachman

The purpose of this section is to understand – identify, define, qualify – the role of economic considerations in CS. As in other sections, we intend to reflect here on the way "our" theme –economic considerations – correlates *differentially* with CS Track's characteristics and reach. The questions that will be posed here will not only address the essence of that theme in the context of citizen science projects but especially its link to our project, putting any question in its unique perspective, considering its components, means, approaches, objectives, target users of its results, etc. Thus, if we talk about the productivity of voluntary work, for example, as an "economic aspect", we are not going to refer to it in depth as a topic of economic interest but mainly to ask when and how it shows and is relevant for citizen science and citizen science projects and, most importantly, how it could manifest in the framework of the comprehensive picture of citizen science that our project is intended to produce and

expose. This makes, in our view, a valid approach to refer to "economic considerations" as a distinct sub-section of D1.1/4.

Although it is apparent that citizen science is, first and foremost, a scientific-social-organisational phenomenon, it is the underlying set of economic considerations that will factually enable or not the endeavour and determine many of the conditions for its sustainability. Given the basic scientific motivation and economic determinants, however, the latter, in the citizen science context, do not necessarily have to be taken in the rigid, profit-driven manner a commercial enterprise (for example) would approach them, based on pure cost and benefit assessment. Indeed, we are talking about different endeavours. Development X is not the same development X if it is done in the lab and facilities of a company or university as if it is done in the time, expertise and geographical distribution conditions of a standard citizen science project. Usually these other elements – and especially considering also the socio-educational objectives that are proper of a citizen science project – very much relativise any insight one could make through the cold analysis of the disclosed economic-financial data of the citizen science project in case. As put by Sauermann and Franzoni (2015), a citizen science project is, after all, "a new organizational mode of conducting scientific research", with different opportunities and challenges, opening the ground, as well, for addressing other – and in many cases, broader – objectives that cannot always be conceivable in a standard profit-driven undertaking.

As a matter of rule, and with few exceptions, this special attention to the "other-than-economic factors" is a salient characteristic of citizen science projects and of the way they have been researched. More particularly, the science core of these projects has usually been seen as first among equal objectives, or characteristics, deserving and getting extra attention, above and beyond the economic considerations (within reasonable limits) and the "other" aspects (e.g., educational value). Further quoting Sauermann et al. (op. cit.), "Notwithstanding potential benefits for science education, our discussion will focus on the potential of crowd science [for citizen science] to advance the production of scientific knowledge". The economic side is not being disregarded, but it is put on a second level of attention. Quite surprisingly, even the *Ten Principles of Citizen Science* of the European Citizen Science Association seem to endorse this apparent downgrading of the economic considerations (see ECSA, 2015). All conceivable ethical, environmental, scientific, participatory, and other aspects of citizen science are considered in these Principles, but no economic aspects (cost, efficiency, comparative achievements, growth potential, etc.) are referred, even indirectly, in them. Principle #9 reinforces this view: "Citizen science programmes are evaluated for their scientific output, data quality, participant experience and wider societal or policy impact." If this is done on an economically sensible basis, or not, is another question.

In essence, our project adopts the approach of keeping the science (and other "classical") content and objectives in the front, and we do not propose to change this here. Economic factors, however, are an important component of the set of concerns (certainly in pre-launch stages) of all citizen science projects, and the experience revealed in this regard from the analysis of past and running projects will be necessary for any learned decision of starting (or up-scaling – see below) a project. Based on existing knowledge, it is our purpose here to take a closer look at the economic aspects relevant to citizen science so that they could be pondered in a framework that considers additional, other aspects that may eventually be viewed as "more important".

5.6.1 Approach and focus

Each and every citizen science project has its own economic facets, with unique qualitative and quantitative attributes and magnitudes, characterising also (and being conditioned by) the financial, organisational, legal / regulatory, environmental, socio-cultural and the other frameworks that make its economic profile. Addressing all these aspects in a given project could be possible only through their detailed observation and analysis *there*, which would most probably reveal a different picture than in any other project. So this is not the kind of information that CS Track will seek or provide – at least not for a meaningful number of projects – as it is not possible to reliably generate such information (say, creating our own *Standard & Poors 500* (-like) *Guide* for Citizen Science "businesses") in a project like ours. Instead, in what is relevant to this subsection our project will focus on determining categories of concepts, problems, research items, etc. with a visible economic dimension, and inform the interested user/reader about the extent of their presence, relevance and implications in citizen science projects and citizen science in general. Indeed, we deem it important, for our purposes here, to list **the aspects of economic interest that were raised in the literature** (or will/may be found out or hypothesized by us in our work in the project) as relevant for citizen science or citizen science projects rather than mentioning in which specific projects they were detected or measured and which were the concrete findings. Based on this "inventory" of elements or aspects, we – and ultimately the user of our results – will be able to tailor-make any desired search or inquiry of economic character to our/their needs, focusing on any desired citizen science project or group of projects. This way we intend to set the basis for an informed approach to look at the citizen science area and its activities with the aim of comprehending their economic side.

5.6.2 Aspects of interest in the economic realm in the citizen science area - Horizontal subjects

Estimations of "economic worth" of citizen science projects have been carried out via an evaluation of **the alternative cost of otherwise free (volunteer) work** used in those projects. Bonney et al., 2016, referred to and compiled findings built on the basis of this approach to assess economic worth contributed by two teams of researchers – Sauermann and Franzoni, 2015, and Theobald et al., 2015 – that worked on large sets of projects and data. The former authors focused on seven projects from the Zooniverse portal, using high-resolution involvement data of more than 100 thousand participants during 180 days in 2010. Under various assumptions, they estimated the total value of their "production" at about $1.55M, or about $222K per project on average (with a big variance, though, as the per-project data ranged from $22K to $654K). Theobald et al. 2015, surveyed 388 biodiversity-related projects, in which they estimated the annual numbers of volunteer participants (citizen scientists, in our usage here) between 1.36 million and 2.28 million, also here with a great variation on a per-project basis. The estimated value of the in-kind contribution ranged between $667 million to $2.5 billion annually.

Some of these numbers are quite impressive, although the width of the estimation intervals hints to the challenges embedded in the estimation processes and calls for their cautious use. Indeed, as mentioned in Wikipedia (https://en.wikipedia.org/wiki/Citizen_science, 21.11.20) quoting some authors (e.g., Frias et al., 2018), **data accuracy** is a concern in most empirical research on the citizen science subject. To be sure, large estimation variances show in virtually all variables of

economic interest (numbers of participants and other measures of size of projects, extent of work investment and its categorisation, output and productivity indicators, etc.). Aceves-Bueno et al., 2017, surveyed a large number of projects (and research approaches, by several authors), focusing on the data accuracy issue in citizen science. The authors concede that "the cost-effectiveness of citizen science data offers the potential for scientists to tackle research questions with large spatial and/or temporal scales", citing, among others, Brossard et al. 2005, Holck 2007, Levrel et al. 2010, Szabo et al. 2010, Belt and Krausman 2012. But data accuracy does remain an obstacle to draw reliable insight of wide validity. In any case, it is important to note that cost-effectiveness in citizen science is often seen as *outweighing* data quality issues (if these are properly managed), at least at the research level (Gardiner et al., 2012).

Besides issues of data accuracy, research has questioned whether the plain comparison of labor costs (paid vs. unpaid) is the right way of assessing the relative economic contribution of the citizen science format (even if we still accept that it is in the use of free work where the bulk of the attention to economic considerations should be put). Indeed, this may be an oversimplified comparison, considering the fact that, to a project-dependent extent, volunteer labor often needs **training** (expectedly more so than scientists in a similar project). Clearly, this consideration affects the originally simple equation; see Fauver, 2016, and its bibliography. This author (among others) found that "the citizen science projects studied [in his thesis] are not notably cheaper than their professional counterparts but are lauded for their benefits of education, community engagement, and stewardship". Considerations of this kind put in a richer perspective the volunteer work as an economic factor and, more in general, the economic analysis of citizen science. As written before, assessing the cost-benefit balance in citizen science is a more complex task than in regular business settings. The presence of values and other non-purely-economical (or not easily quantifiable) factors in the "equation" do add reasons to be careful in the analysis (and usually prevent generalized conclusions in this regard).

The **natural geographical distribution** as a factor in the relative cost analysis has not always been paid all due attention *when focusing on the economics* of citizen science projects; it has, of course, in the context of evaluating citizen science projects as scientific and educational endeavours, and as part of the participation motivation.

The utilisation of **new technologies** is an additional factor behind the (a priori, at least) relatively lower costs of citizen science projects. In fact, sometimes not much more than personal tablets or laptops (together with the ready disposition of youngsters to master them in novel environments) are needed for their implementation, and indeed, citizen scientists using and even building or adapting their own instruments are commonplace. Modern technologies mean increased options for these projects and are a sine qua non for their additional characterising features (internal communication, discussion, dissemination and recognition of achievements, etc.), around which the motivational apparatus can be built (see, e.g., Drollette, 2012 and Fauver, 2016). Although the utilisation of others' (and in particular, volunteers') technological means is a potential cost-saving factor, it does not seem to have been duly attended (evaluated) in currently available research; these evaluations, when attempted on large sets of projects with the aim of identifying regularities, seem to have considered almost exclusively the alternative cost of *work*, not of equipment. In any case, there have been many studies addressing creative forms of equipment utilisation that are thinkable in a citizen science (open-source hardware, digital

manufacturing, 3D printing, DIY, etc.; see Pearce, 2012 and 2016; Baden et al., 2015; Damase et al., 2015; Zhang et al. 2013).

Another subject with economic implications that has caught attention in citizen science research is the **up-scaling** of existing projects, intimately related to the concept of sustainability (which, in a citizen science context, refers to both project-internal conditions to permit a continuation and to external – often environmental – constraints). Maccani et al., 2020, analysed the phenomenon, defining the related concepts of *(up-)scaling* ("expanding a successful citizen science initiative in terms of the number of participants and the geographic extent") and *spreading* ("portability and replication of existing solutions, without a change of the actual scale of the activity in itself"). Clearly, economic factors are deeply embedded in both; some may be organisational / managerial in character and largely subject to human decisions; others, dictated from the outside. In general, "growth" is a key economic concept micro- and macro-economic-wise, relevant, of course, also to citizen science.

As said before, **voluntary work** is the standard pattern of citizen participation and contribution: "A key premise is that project organisers may be able to draw on *underused* [maybe "underpaid"?; note and italics of R.D.] human resources to advance research at relatively low cost" (Sauermann and Franzoni, 2015). These authors, building also on research done by many others, mention six types of **benefits** "from involving the crowd in the production of scientific research" (henceforth, partially quoted): (1) Contributing from intrinsic or social motivations rather than for financial compensation potentially allows project organisers to lower the cost of labor compared with traditional employment. (2) Speed advantages, to the extent that a large number of contributors work in parallel. (3) The large number of potential contributors enables projects to gain access to relatively rare skills and knowledge (also without scientific training). (4) Projects that require creative ideas and novel approaches typically benefit from rich and diverse knowledge inputs from a larger crowd with diverse competences and experiences. (5) Involving contributors across time and geographic space allows an increased coverage that is particularly important for observational studies. (6) Benefits for science education and advocacy.

All these benefits, however, translate into lower costs (and/or a higher benefit/cost ratio), overall, in some situations (projects) and less so, or not at all, in some others. In any case, as already mentioned, the achievement of **other (scientific, educational, other social, etc.) goals qualify the pure cost saving picture**. Additional developments come into play here, as outlined in Saurmann & Franzoni (op. cit.) in their study of projects under the Zooniverse umbrella, which need attention: uneven production ("a small share of contributors makes a large share of the contributions"); uneven extents and patterns of participation and contribution ("contributions are primarily driven by those who return for multiple days"; indeed, for many participation spans are very short and/or sporadic); unstable production ("contributions received by projects are highly volatile and critically depend on new users").

Research in other projects has often shown comparable findings to the above. Their meaning from our economic angle is principally a signal of caution: "free" work does not automatically mean zero cost, and the relation of work input to results ("the production function") is not clearly determined or fully predictable. Several additional factors affect the outcome, many of which are not economic in the usual sense – e.g., issues of **motivation and engagement** – but they should always be included in the economic analysis of projects involving volunteers. Sauermann et al. (2015), Theobald et al. (2015), Fauver (2016) and other authors referred (and not referred) in this section addressed the engagement and motivation factors in citizen science, the costs

associated with engagement, the consequent effects on productivity, and other elements of economic significance. These issues have been analysed also in another Zooniverse-oriented research project led by the University of Portsmouth; *The wonders of the Zooniverse: Modelling and optimizing volunteer participation in online citizen science* (https://gtr.ukri.org/projects?ref=EP/K039784/1).

5.6.3 Project-specific aspects addressed in the citizen science literature

As written before, we are not deepening into any specific project's data, but we nevertheless refer below to some research on citizen science projects or groups of projects that we found illuminating in their handling of economic information, to which we may refer further on in our project for guidance and inspiration.

Authors	Article's name	Knowledge area; essence as a citizen science endeavour
Bokhove et al., 2020	A cost-effectiveness protocol for flood-mitigation plans based on Leeds' boxing day 2015 floods	Flooding, consequences mitigation. Cost-effectiveness analysis of flood mitigation, intended as a protocol to compare and choose between flood-mitigation scenarios in a quantifiable and visual manner, thereby offering better prospects of being understood by a wide audience, including citizens and city-council planners.
Haseler et al., 2019	Cost-effective monitoring of large micro- and meso-litter in tidal and flood accumulation zones at south-western Baltic Sea beaches	Beach litter monitoring strategies. Differentiation between litter left at beaches and litter washed up onshore. Methods used are inexpensive, useful for volunteers, and can be carried out quickly (with limitations).
Toh et al., 2017	A cost-effective approach to enhance scleractinian diversity on artificial shorelines	Seawalls to alleviate the impact of rising sea levels. Mitigating consequential loss of biodiversity. Newer approaches: transplanting certain corals on subtidal seawalls in Singapore with the help of volunteers (who seem to enable a 23% cost reduction). Synergy between the community and scientists reduces costs and benefits biodiversity.
Miskell et al., 2017	Low-cost sensors and crowdsourced data: Observations of siting impacts on a network of air-quality instruments	Low-cost sensors offer the possibility of gathering high temporal and spatial resolution crowdsourced data-sets, improving understanding of individual and population exposure to air pollution. Crowdsourced approaches contribute to increase temporal and spatial resolution of air quality networks.

Targetti et al., 2016	Relating costs to the user value of farmland biodiversity measurements	Impact of agricultural management on global biodiversity. Besides the attention given to scientific effectiveness, relevant but less studied issues related to biodiversity measurements include the economic feasibility of monitoring programmes and the relevance of indicators for different end-users.
Targetti et al., 2014	Estimating the cost of different strategies for measuring farmland biodiversity: Evidence from a Europe-wide field evaluation	Costs of farm-scale biodiversity monitoring. Assessment of resources consumed by the research units and cost estimation for the measurement of six biodiversity-related parameters. Estimating a standardised cost for an ordinary measurement of six parameters at farm-scale. Highlighting the cost differences between three strategies involving different potential actors (professional agencies, farmers, volunteers).
Nelms et al., 2017	Marine anthropogenic litter on British beaches: A 10-year nationwide assessment using citizen science data	Marine ecology. Citizen science projects, whereby members of the public gather information, offer a low-cost method of collecting large volumes of data with considerable temporal and spatial coverage. Such projects raise awareness of environmental issues and can lead to positive changes in behaviours and attitudes.
Ambrose et al., 2019	Spatial trends and drivers of marine debris accumulation on shorelines in South Eleuthera, The Bahamas using citizen science	Marine ecology. Best practices and challenges of citizen science projects on plastics in aquatic environments. "Citizen science is a cost-effective way to gather data over a large geographical range while simultaneously raising public awareness on the problem".

5.6.4 Economic information in the context of CS Track

Having presented above the various economic concepts and variables that we currently deem relevant for our project (which, for the most part and as supported by existing research, are also relevant for citizen science in general), we refer below to some questions that we expect will guide us on the way to use this information profitably in CS Track. Even if discussions on those and other questions are underway, having identified the central concepts to work on will provide additional focus to those discussions, making them useful for the further determination of the elements that will have to be converted into real, measurable data for our multidisciplinary analysis. The questions, as we tentatively conceive them at this moment, refer to:

- What is the real weight of economic considerations in citizen science?

What kind of economic information would a user of our results be interested in? (Given also alternative sources of information, which may exist and be better suited for the user.)

- How could we approach the task of finding and supplying this information given the means and tools we will employ in our project's work?
- More specifically, how the use of web analytics could contribute to identifying economic data and making sense of it?

Questions of this kind can make the link between economic concepts and the generation of knowledge about the encompassing citizen science field, enriched with economic insight to all needed extent.

6 About categorising citizen science

Michael Strähle & Christine Urban

6.1 Typologies, categorisations, classifications in literature

As we have seen in Chapter 3 the term *citizen science* has different origins in quite different contexts that partly contradict each other. Since then, it has become an umbrella term covering so many different activities that has become impossible to find a definition that summarizes all different kinds of activities, in different settings with all different participant groups that are labelled with it. Hence, categorisations and typologies have been developed in order to get an overview of what the term means and to differentiate between the various forms of citizen science. Like other authors, categorisers implicitly or explicitly choose which activities they deem as citizen science and include into them in their schemes or leave them out. In the following we review some of the strategies to categorise or classify citizen science and examine their usefulness for answering CS Track's research questions.

Several scholars use the "degree" or "intensity" of involving "citizens" as a basis of their categorisation. Originally this approach was inspired by Arnstein's ladder of participation (Arnstein, 1969), which she developed for the context of urban planning. Such an approach is frequently normative, suggesting that more participation is always better, advocating the ideal that citizens should be involved in all stages of research and be in as much control as possible.

Bonney et al. (2009) choose the term "public participation in scientific research" or PPSR. In contrast to many other authors, they see "citizen science" as a different form of involving the public than "volunteer monitoring" and "community science". They also exclude participatory action research, which is sometimes included in citizen science definitions. (Bonney et al., 2009a, p. 16)

> *Citizen science is not the only model for public involvement in research, however. Other models include volunteer monitoring, community science, and participatory action research (Cornwall and Jewkes, 1995; Wilderman et al., 2004; Lawrence, 2006; Cooper et al., 2007; Ely, 2008). Often these models provide participants with a more comprehensive exposure to scientific methodology than do the projects typically operated by science institutions. For example, in most participatory action research, participants help to ask the research question, design the study, and interpret results in addition to collecting data. The various models and terms often blur, however, and defining each one precisely is challenging.* (Bonney et al., 2009a, p. 16)
>
> *Scientific investigations include many processes, steps, or activities in which the public can be involved. These include:*
>
> - *Choosing or defining questions for study*
> - *Gathering information and resources*
> - *Developing explanations (hypotheses) about possible answers to research questions*
> - *Designing data collection methodologies (both experimental and observational)*

- *Collecting data*
- *Analyzing data*
- *Interpreting data and drawing conclusions*
- *Disseminating conclusions*
- *Discussing results and asking new questions*

  (Bonney et al., 2009a, p. 11)

"Disseminating conclusions" is listed among the activities defined as citizen science (Bonney et al., 2009a). Theoretically, this could make individuals who just spread the word on any research project as "citizen scientists", even if they had no other connection to a project.

The authors identify three major categories according to the "control that participants have over the different steps" in respect to "an educational perspective" (p. 17).

> *From an educational perspective, PPSR models differ chiefly by involving the public in these steps to varying degrees and by altering the amount of control that participants have over the different steps. For this report we have divided PPSR projects into three major categories:*
>
> 1) ***Contributory projects**, which are generally designed by scientists and for which members of the public primarily contribute data*
> 2) ***Collaborative projects**, which are generally designed by scientists and for which members of the public contribute data but also may help to refine project design, analyze data, or disseminate findings*
> 3) ***Co-created projects**, which are designed by scientists and members of the public working together and for which at least some of the public participants are actively involved in most or all steps of the scientific process*
>
> (Bonney et al., 2009a, p. 11)

The authors developed these categories by assessing characteristics of participation in 10 projects; quite a low number. (They identify 5 contributory, 3 cooperative and 2 co-created projects.)

This scheme is quantifying the degree of involvement but without taking into account the percentage of participants who are involved to such a degree, which is inconsequent for a quantification. According to this model, the ideal of a "co-created" project would already be fulfilled if a few "members of the public" contribute to most or all steps in the research process. Correspondingly, if three or four citizens out of thousands are willing and resourceful enough to realise this intense degree of participation, it would be more "co-created" than a project that succeeds in involving most or all of their "citizens" in a few important steps. But who co-creates? The fewer take part in co-creating the whole research process, the more powerful they are compared to other participants. How can it be assured that "at least some members of the public participants" are independent from economic enterprises, political parties or other particular interests? The active involvement in "most or all steps of the scientific process" (Bonney et al. 2009a, p. 11) could constitute a considerable influence on what research questions are investigated and which are dropped. In extremis, in a project of wider impact a few participants could co-determine what

data are collected, the methodology, and the results to be expected. Giving a few so much say could have unintended side effects. In other sectors of society than research and development, where public participation takes places, too, in policy making or urban planning, just to name two of them, there are vivid discussions about how legitimate and egalitarian such approaches really are. What is said above also holds true for other categorisations that are based on a ranking of intensity of participation.

In 2012 the scheme was further developed by **Shirk et al.** These authors are mostly the same that have written the original categorisation.

> ***Five Project Models***
>
> *We divide PPSR projects into five models based on degree of participation*
>
> - *Contractual projects, where communities ask professional researchers to conduct a specific scientific investigation and report on the results;*
> - *Contributory projects, which are generally designed by scientists and for which members of the public primarily contribute data;*
> - *Collaborative projects, which are generally designed by scientists and for which members of the public contribute data but also help to refine project design, analyze data, and/or disseminate findings;*
> - *Co-Created projects, which are designed by scientists and members of the public working together and for which at least some of the public participants are actively involved in most or all aspects of the research process;*
>
> *and*
>
> - *Collegial contributions, where non-credentialed individuals conduct research independently with varying degrees of expected recognition by institutionalized science and/or professionals."*
>
> (Shirk et al., 2012, p. 29)

While the categorisation by Bonney et al. (2009a) has been developed from an educational point of view, the now coined "models" constitute a "framework for deliberate design". Shirk et al (2012) make two additions: "*Contractual projects, where communities ask professional researchers to conduct a specific scientific investigation and report on the results*" are deemed as the lowest degree of participation. The highest degree of participation becomes "*collegial contributions, where non-credentialed individuals conduct research independently with varying degrees of expected recognition by institutionalized science and/or professionals*" (Shirk et al., 2012)

Again, the quantification by degree of participation is not convincing. If citizens can commission research (even if they do not pay for it), then they make a core decision: Determining what topics are chosen for investigation means determining how research funds are spent. Indirectly, these questions also determine the methodical choices and much of the rest of the project. Hence, the chronology of steps taken in a research process does not necessarily mirror the influence of citizen scientists on research. In other contexts, there would not be any doubt that those who decide how the budget is invested are in control and not those who do the work.

Another typology based on level of participation was developed by **Haklay** in 2013, which is focused on citizens contributing to geographic information in different ways. He suggests to differentiate between 4 levels of engagement, with crowdsourcing as the lowest and "extreme citizen science" as the highest level, which requires participation in "problem definition, data collection and analysis". (Haklay, 2013, p. 116)

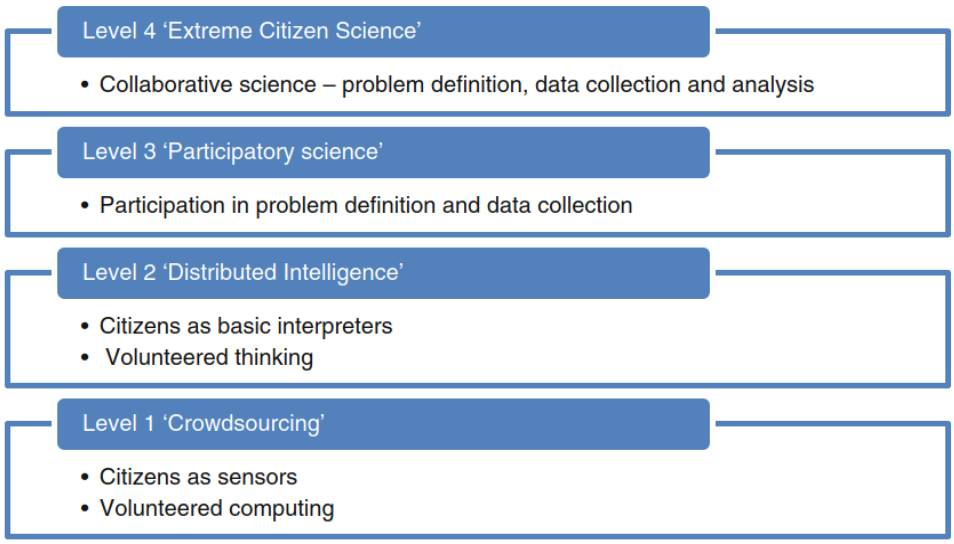
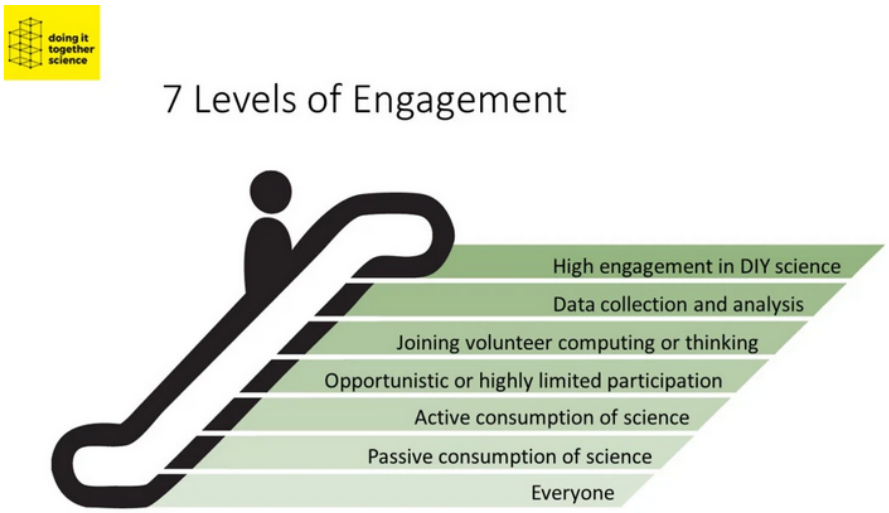


Fig. 7.2 Levels of participation and engagement in citizen science projects

(Haklay, 2013, p. 116)

In his scheme, Haklay groups the activities of citizens engaging in research differently than Bonney and Shirk and their teams. However, the central problem remains the same: Apart from lay participants remaining more or less passive and contributing only resources, as Haklay depicts in his lowest level 1 ("crowdsourcing") and which many scholars do not label as citizen science at all, any ranking of citizen science activities remains a little artificial and highly normative. Later Haklay himself rejects ladders as he finds them judgmental: He adapts the escalator that was developed in the DITO project (Doing It Together Science) and which is not intended as a hierarchy: Being on the top of the escalator is not better than any other position, Haklay says in his blog (Haklay, 2018).



(Haklay, 2018)

The original escalator model had been developed 2017 by **Lotte Kleijssen, Pieter van Boheemen, Pauline Appels and Ester van der Geest** in the scope of the Horizon project DITO (Doing It Together Science) and presented in project deliverable D3.1.

Figure 1 - The Escalator Model. The range of ways citizens participate in science

(Kleijssen et al., 2017, p. 10)

> *A central model to DITOs is the 'escalator' of participation (Figure 1) in which a citizen in any walk of life may become aware of different levels of participation and choose that which is best for them, while being encouraged to try other levels - either toward higher or lower levels of engagement, in accordance to their needs, interests and availability of free time.* (Kleijssen et al. 2017, p. 9)

Hence, the escalator still maintains the hierarchy of participation levels from Arnstein, although it is less normative than other citizen science categorisations as it refrains from a judgement which level would be the best.

Wiggins & Crowston started their work with a systematic review of the typologies of Cooper et al., Wilderman and Bonney et al. and developed a categorisation which they refined later on.

They used landscape sampling and coded 80 facets of projects. By clustering, they

> *identified five mutually exclusive and exhaustive types of projects, which we labelled Action, Conservation, Investigation, Virtual and Education. Action projects employ volunteer-initiated participatory action research to encourage participant intervention in local concerns. Conservation projects address natural resource management goals, involving citizens in stewardship for outreach and increased scope. Investigation projects focus on scientific research goals in a physical setting, while Virtual projects have goals similar to Investigation projects, but are entirely ICT-mediated and differ in a number of other characteristics. Finally, Education projects make education and outreach primary goals […].* (Wiggins & Crowston 2011, p. 3428)

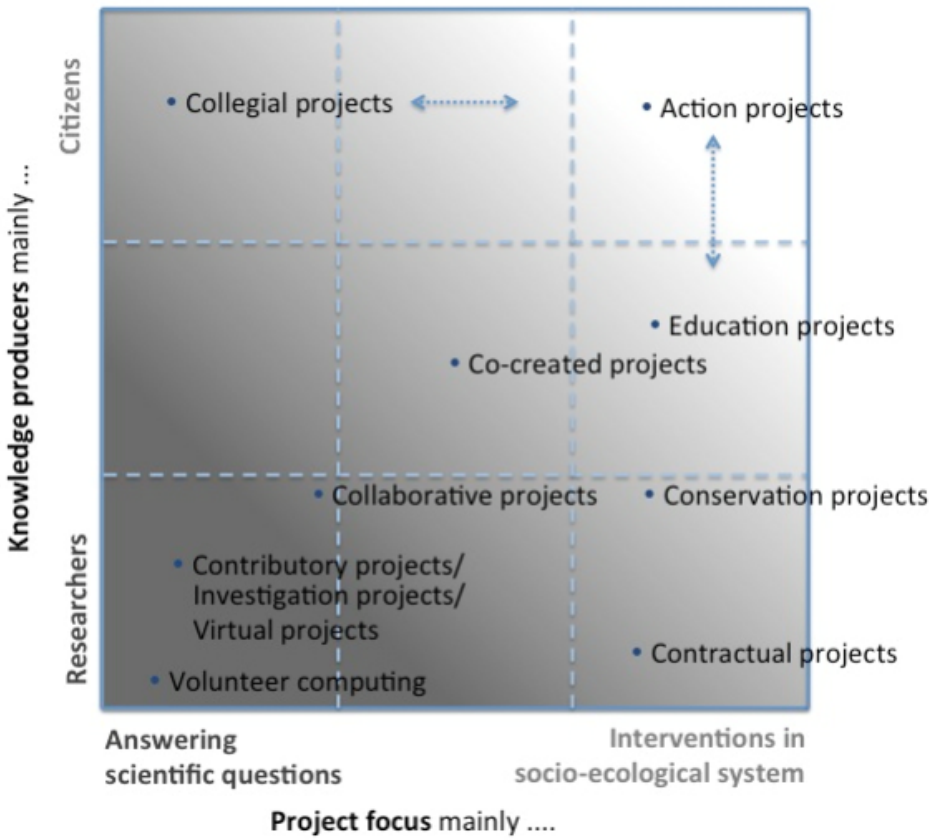
Instead of categorising citizen science projects according to participation structures, they decided to categorise them according to how volunteer participation in these projects is designed and managed. Grouping projects with common characteristics, they established two main categories: primary project goals and the degree of virtuality, respectively physical environment (Wiggins & Crowston 2012).

But the mutually exclusiveness remains questionable, mixes are not only possible, but also probable, and this first typology mixed dimensions. Why should a "virtual" project not contain elements of education? Virtual refers to the place where a project takes place, while "education" or "investigation" refers to project goals. It is also not plausible to assume only one primary goal in a project.

Two years later they developed a new and much more multi-layered categorisation that shows the complexity and diversity of citizen science. They analysed responses from 77 projects, and this time they categorised separately according to several different dimensions. They concluded:

> *We saw greater diversity among citizen science projects responding to our survey than is typically represented in stories about citizen science that appear in news media and popular science outlets. Although our sample included primarily observational projects in research areas related to ecology, there was an impressive range of types of participation, social opportunities, technologies in use, approaches to data validation, ways to measure contribution, and project goals.* (Wiggins & Crowston 2015)

Schäfer and Kieslinger follow a differentiated conception of typologies. Taking into account previous categorisations, they integrate different approaches by a two-dimensional scheme that allows to place project types between 2 axes, with the first one showing to what degree researchers or citizens produce knowledge and the second one the extent to which a project tries to answer research questions or to intervene in the social-economic system (Schäfer & Kieslinger, 2016, p. 3 et seq.). They adopt Bonney et al. (2009a)'s three levels of citizen science - contributory, collaborative and co-created citizen science. Goals like "education" or "conservation" are included, too. Following Shirk et al. (2012), they explain contractual projects as those where citizens delegate the research to be done.



(Schäfer & Kieslinger, 2016, p. 3)

A radically different approach is chosen by **Strasser et al**. in 2019: Based on a typology by Francois Grey, they distinguish five epistemic practices, which they call sensing, computing, analysing, self-reporting and making (Strasser et al. 2019). They regard this typology explicitly not a classification, as there can be hybrids between the practices, but as ideal types. The team shows some scepticism how far the different types can be grouped under the label citizen science:

> *This typology, like all typologies, has an agenda: by staying close to the actual knowledge practices of the actors, it avoids presupposing that they are all related and forms a thing called "citizen science.* (Strasser et al. 2019, p. 56)

Later it is explained that this typology includes practices their proponents do not necessarily label citizen science:

> *This typology also draws attention to practices not carried out under the banner of "citizen science," such as "participatory action research" and "community-based research," but that might nevertheless be essential to understanding public participation in the production of scientific knowledge.* (Strasser et al. 2019, p. 58)

In their essay on institutional oversight of citizen science, **Cooper et al. (2019)** classify projects in a different way for a very concrete and practical purpose that has important consequences: Their goal is to tackle the problem of institutional oversight to ensure the responsible conduct of institutional professional researchers involved in citizen science projects. They differentiate between research projects on three different dimensions: determining if a project is conducted by an institution, if humans

are subjects of research and if personally identifiable is provided. They characterise 5 different types of projects and focus on type 4 projects as those which are wide-spread in citizen science:

	Institutional Research				Non-Institutional Research
Subject Matter	Humans	Humans	Not Humans	Not Humans	All subjects
PII	Private	Open	No	Yes	Yes/No
Type	1	2	3	4	5

Figure 1: Categories of citizen science projects. We categorized projects through several levels, first based on whether they are institutional research, second on whether the subject matter was human subjects or other subjects, and third related to the handling of personally identifiable information (PII).

(Cooper et al., 2019, p. 2)

Only the first four types of activities take place in an institutional frame: Type 1 describes projects in which participants remain anonymous and contribute personal data to classical research projects, such as responding to questionnaires or online tests. In Type 2 projects citizens have two roles, they are subjects of research and active citizen scientists at the same time. Type 3 projects are those in which citizens carry out research (or related tasks), but are not subjected to research and they do not contribute personal data because they can participate anonymously. Type 4 projects are similar to Type 3 projects, although citizen scientists are not subjects of research - they give access to personal data by participation. Either their contact data are needed to organise the project, or they provide geolocated data without which the usefulness of their observations or collected data would be compromised (Cooper et al., 2019, p. 2 et seq.).

6.2 About typologies: Is categorising citizen science possible?

Prainsack (2014) shows the difficulties, if not the impossibility, to classify citizen science due to the many aspects that would have to be taken into account.

> *What all citizen science initiatives share in common is that they involve the participation of non-professional scientists at the stage of funding, data collection/generation, analysis, interpretation, application, dissemination, or evaluation. There are great differences, however, in the activities and formats typically subsumed under the label of citizen science. While some are led by*

non-professional scientists at every stage of the project, in others, 'citizen scientists' have no decision-making power with regard to core strategies but they contribute merely as data collectors, or even only as funders. (Prainsack, 2014, p. 6)

Not a typology, but a list of important questions concerning different dimensions of activities labelled as citizen science is presented by Prainsack (2014). She poses 19 questions in respect to the dimensions: coordination, participation, community, evaluation, openness and entrepreneurship:

Coordination: Who has influence in:
1. Agenda setting
2. Determining the terms of the execution of the idea/procedural aspects
3. Deciding what results are (and what 'good' results are)
4. Deciding what will be done with results
5. Deciding on intellectual property questions

Participation
6. Who participates (demographic and social parameters of those who participate)? Why, and how do they participate?
7. How much, and what kind of, training, skill, or expertise is required to participate in this
project?
8. Are there cultural, institutional, or other differences in perception and framing of core
issues and stakes?

Community
9. What forms of community pre-exist this project, if any? Which new communities does the project facilitate or give rise to? What is the constitutive factor for the feeling of belonging on the side of the participants?

Evaluation:
10. How and by whom is it decided what good outcomes are?
11. What happens to the results of these evaluations?

Openness:
12. Do participants in the project have access to the core datasets?
13. Can participants in the project edit the core datasets?
14. Is the contribution of participants adequately acknowledged in published materials?
15. Are datasets made publicly accessible (open source/open access)?
16. Are main findings made publicly accessible (open source/open access)?

Entrepreneurship:
17. How is the project funded?
18. What is the role of for-profit entities in this project? Are these small, medium-sized, or large entities, and where are they located?
19. How are for-profit and other interests aligned in this project (and/or do they conflict, and where?)

(Prainsack, 2014, p. 7)

Her questions concern mostly questions of power and influence of different actors in citizen science projects, including questions of evaluation and involvement of for-profit organisations.

Concerning the evaluation of outcomes, it is the question if or in what respect the results of citizen science should differ from the evaluation of "traditional" research and how the problem is solved for evaluating research in general. How to measure quality of research is a research area of its own, and there are many voices who see an urgent need for improvement.

In a multivariate analysis of hundreds of environmental and ecological citizen science projects, **Pocock et al. (2017)** did not find defined clusters (with the exception of computer-based projects). Instead, they found a broad diversity of approaches:

> *It seems that any discrete 'classification' or 'typology' of citizen science is one that is imposed upon the diversity of citizen science, rather than being a natural explanation emerging from it. This explains why it is so challenging to create a detailed typology or classification of citizen science or succinctly provide guidance on selecting citizen science approaches [30].* (Pocock et al. 2017, p. 10)

Conclusion

Citizen science, at least in Europe, has turned into an umbrella term for a lot of very different practices. What these have in common is only that they involve people into research who come from different professions or different disciplines than the project deals with. Several scholars have tried to solve the problem with defining the term "citizen science" by differentiating between different forms citizen science can have. They developed categorisations and typologies mostly for theoretical discussion and advancement. However, these categorisations and typologies are too general to assess real research projects that engage with publics. Other scholars do not agree that a typology is even possible (e.g. Prainsack, 2014, Pocock et al., 2019). Any typology can only concentrate on one or few facets of citizen science, leaving out other, equally important dimensions.

Questioning the term "citizen science project"

Most categorisations and typologies refer to "citizen science projects". This implicates a dichotomy between traditional research projects and projects in which lay persons are involved. After reviewing categorisations in literature, we question calling entire projects "citizen science" or "not citizen science". In reality such strict distinctions do not hold. Most existing "citizen science projects" do more than involve citizens in science or innovation. As citizen science contains the term "science", from a linguistic perspective, only those aspects or elements of a project that are related to science can be called citizen science.

For instance, when citizens in a project carry out nature conservation activities on the one hand and collect data for analysis on the other, then the project partially qualifies as environment protection and partially as citizen science. *Plastic Pirates* is an example for such a project: It combines picking up plastic litter with gathering data. The first activity is not a scientific one *per se*, hence only the second falls under "citizen science

activity". Another example is an initiative aiming at improving a community: While much of the project may involve neighbourhood support, the project might also employ citizen science activities to gain knowledge that is important for the project. Examples for this are citizen initiatives in Japan that, after the Fukushima incident, a nuclear disaster caused by an earthquake and a tsunami, began testing everything - e.g. food, water, soil, grass and dust - for radioactivity because they did not trust the official numbers. With mothers as their main proponents, they developed community services. In one case they created a medical care centre whose purpose goes beyond dealing with the aftermaths of the nuclear disaster. The main objective is and was not to contribute to scientific research but to safeguard their families and communities (Kenens et al., 2020; Kimura, 2016). The same is true for a public health project that aims at changing people's living styles and analysing data on them. Only a part of the project falls under science or with citizen science. An initiative thriving for political change and engaging in citizen science to scientifically support their demands, does not turn into citizen science as a whole. It remains political activism that also has an element of citizen science. Citizen science seems to be very often one element of a project among others. According to scholars "co-created" or "extreme citizen science" are rare (see Chapter 6). Even if citizen science is the most prominent characteristic of a project, it rarely might be the only one. Instead of asking if a project is citizen science or not, it might be clearer to ask: Which parts of a project are citizen science and which are something else? And which other activities are often combined with citizen science? Additionally, projects can have more than one part that falls under the umbrella citizen science, and it may be necessary to evaluate them separately, as there are different potential benefits, caveats, barriers, enablers and/or limitations; different guidelines can apply and best practices discussed for them.

7 Categorising citizen science in CS Track

Michael Strähle & Christine Urban

7.1 Why categorisations?

While we were working on it, we saw that fully distinct categories are simply not feasible in citizen science. The field is too broad and there are too many dimensions along which citizen science can be characterised. Previous attempts categorise often along one dimension only (for example degree of participation) and sometimes different dimensions are mixed. As Strasser et al. (2019) state, the existing categorisations and typologies should be regarded rather as ideal types (Strasser et. al., 2019) (The term ideal type has been coined by Max Weber and is used in sociology to describe a pure type showing a bundle of characteristics that are often connected to it, but which probably does not exist in reality.) Ideal types seldom exist in reality or not at all.

CS Track aims at investigating specific questions about benefits and caveats, barriers and enablers, incentives and disincentives in citizen science. These questions cannot be answered by looking at clusters of citizen science projects or at classifications in respect to one or few dimensions. Here, the devil is often in the detail, if a type of citizen science differs in one single characteristic from another, this can change the whole picture in respect to the above issues.

We distinguish four main areas and set up a list of characteristics, but refrained from creating something new, if there existed useful and applicable classifications, which were recognised on an international level. This is the case for instance with research areas and disciplines. Inventing something new would have jeopardised comparability between "traditional" research projects and that integrate citizen science activities. Classifications of academic disciplines and fields of research already exist, and it has taken the hard work of specialists to develop them. Accordingly it was rather a question of finding out, which of them would serve best the objectives of CS Track and fit best into the structure of the database that is created in Work Package 2.

Accuracy demands that one does not allocate a project as a whole to one discipline. Instead, one has to distinguish between at least 3 aspects:

1. disciplinary competences in project organisation teams
2. self-categorisation of the project by its organisers and
3. Reception/acceptance by different academic communities. This can be indicated by publications, conferences, specific social media in academia, etc. (apart from those dealing mainly with citizen science)

To give a fictional example: A group of professional biologists might regard their citizen science project as a research activity in the field of linguistics, while professional linguistics could be (rightfully or not) critical about the used methods and conclusions and the respective research communities would not accept the outcomes.

Distinctions based on research areas and/or disciplines meet some limitations. Not only because many citizen science activities are carried out interdisciplinary and not only because research traditions in different parts of the world make disciplines and areas not always comparable. There is another reason: While concrete tasks/activities for

citizen scientists can be very similar across quite different research areas and disciplines, they can radically differ within the same discipline or research area.

One can see a lot of similarities between finding ragweed (biology), rocks (mineralogy), buildings (architecture), old tools (history). Hence the question to which discipline or research field these activities belong could be relatively small compared to other questions. On the other hand, generalisations in social and cultural sciences across so different methods as analysing texts, interviewing concerned persons, seeking historic evidence in archives, observing behaviour in crowds, surveys or interpreting pictures or films are impossible.

One of the main questions in citizen science is the question of responsibility: Do "citizen scientists" deal with sensitive data of others and how can these others be protected, do they share their own private data and how much are they aware of this, is there direct or indirect contact rare animals and environments – these are more central questions.

Although such ethical and privacy issues can appear much more often in one discipline/field than in another, no general statements on citizen science in "health", "social sciences", "biodiversity" or "environment" can be made in this respect.

The same is true for many other dimensions: The concrete project has to be checked against multiple factors to come to conclusions about potential benefits and caveats, but also what concerns incentives, disincentives, barriers or enablers.

Distinguishing between research areas and disciplines is necessary to get some indication of the quality of research. Do professional scientists contribute their expertise to a citizen science activity? If not, they would participate as a citizen scientist (given the understanding that "citizen scientist" indicates someone with no scientific training relevant to the research project). It would be interesting to investigate, how seldom/often citizen science organisers from other than relevant fields take on which role with what professional background. It is also of interest from which fields professionals, who organise citizen science, come and how it impacts on their reputation in different fields. Can they hope to establish a career or, on the contrary, would engaging professionally in citizen science rather distract them from building a career? We would hesitate to generalise this across disciplines.

7.2 The Activities & Dimensions Grid of Citizen Science

7.2.1 Explanation

The Activities & Dimensions Grid of Citizen Science is based on four distinguished areas of citizen science activities. Depending on circumstances, the respective activities can be different in nature and impact; and their potential benefits and caveats, barriers and enablers, and incentives and disincentives for them - all these are research topics of CS Track - depend on a context they are part of. To mirror differences in context and circumstances, it was decided to assign different dimensions to each activity. Such a differentiation allows for targeted evaluations of citizen science activities and for drafting context-sensitive guidelines and recommendations. Furthermore, closer attention to contexts and differences facilitates a better understanding of actual and potential ethical issues.

The possibilities to categorise citizen science projects are endless. Hence this list of dimensions to distinguish between project characteristics may be enhanced by additions if necessary.

7.2.2 Main areas

We have identified 4 general areas that are in some respect different enough to make overlaps relatively unlikely, but of course they exist.

Area 1: Input for research policy

Main objectives	Consultations on topics to be researched (research agenda setting), development of funding schemes, etc.
Examples	Public consultations, citizen panels, Play Decide games, World Cafés, etc.
Comments	Research policies are part of politics, so they have to be examined in terms of legitimacy and democratic standards.

Area 2: Taking part in research projects

Main objectives	The same as in science in general and related to improving scientific knowledge. (Sometimes additional objectives are given, such as education, personal development, and the process itself, but the research goal is presented as the most important.)
Examples	Any activity of citizens is possible at any stage of research. This broad range can include formulating research questions, observation, taking samples, setting up libraries, recognising patterns, deciphering handwritten documents, carrying out experiments, solving logical puzzles, and many more.
Comment	This is the largest area of citizen science.

Area 3: Development and innovation

Main objectives	A new or improved specific product
Examples	Developing technical devices, software, hardware, chemical compound, a testing instrument, a tool, even genetically modified organisms. Citizens can give feedback on the usability of products and work together with technicians and developers, combine existing technical parts to create an innovation, build something from scratch, etc. This area comprises also parts of the DIY movement and DIY biology, which can vary from conducting experiments and self-examination to self-improvement and sometimes even genetic engineering.
Comments	The boundaries between science and engineering are blurry.

Area 4: School projects with minors

Main objectives	Science education of minors according to a broader curriculum. Other outcomes are targeted, too, but the training of children and youth remains first priority.
Examples	Principally the areas 1-3 can be and are conducted in schools, but are adapted to education as a main goal.
Comments	It was considered to include adult education into the area and call it curriculum-based citizen science. We decided against it, because in a university context research and education are intertwined. Additionally, the school area is specific by addressing the human right of each child to receive a good education.

7.2.3 Categorisation by the dimension "activity"

For each activity, dimensions have to be regarded separately. For a project that comprises different activities an estimation of the rough proportions of the activities has to be made, preferably this information should be given by the project organisers. For example, project activities could consist to 90% of data collection, of which 10%, i.e. 9% of all activities, are done in school projects. Apart from that, each activity has to be regarded separately.

Contributing data encompasses quite different things from, e.g. providing one's personal data to actively collecting data by reporting observations. The authors therefore distinguished between different forms of contributing data. First of all, the authors distinguished between contributions that are characterised by a more passive and ones that are characterised by a more active role of the contributors. "More" indicates that also providing one's personal data might require some activity. If one donates a DNA sample, some activity is required to get the sample. If one provides personal data automatically, e.g. via a tracking device, no wilful activity is required. Passive participation was categorised under "Providing resources" and so was providing personal data. This category includes providing personal data, providing infrastructure (e.g. computing power) and donating materials and tools. In respect to active contributions of data the authors distinguished between data collection, data preparation & processing, and making experiments. Altogether, the authors distinguished between seven forms of data collection: Observation, reporting, taking samples, measuring and counting, searching for artefacts, conducting interviews, and supporting data collection. In respect to data preparation & processing the authors distinguished four forms: Classifying; characterising, describing, localising; matching data; and transcribing.

ACTIVITIES-DIMENSION GRID OF CITIZEN SCIENCE (ADG-CS) *Derived from categorisations, typologies, classifications and listed open questions found in literature*	**Area 1 Research policy**	**Area 2 Participating in research**											**Area 3 D & I**		**Area 4 School**
	Deliberation, consultation …	**Determining research questions**	**Research design**	**Data collection**	**Data preparation & processing**	**Retrieval of scientific literature**	**Experimenting**	**Knowledge management**	**Analysis & problem solving**	**Reviewing & evaluating**	**Action research**	**Passive participation**	**Technical development**	**DIY biology**	**All activities in Areas 0-3 are possible.**
Location of participation															
Physical place															
At home, working place, garden …															
A separate institution (laboratory, garage …)															
Outside in unspecific environments															
Outside in dangerous environments															
Sensible biotopes (Marshes, wildlife parks, …)															
ICT environment															
Online platforms															
Forums															
Social media (Twitter, …)															
Other															
Location not determined															

	Consult-DeliB	Det. quetstions	Research desian	Data collection	Data preparati	Retrieval of sci. lit.	Experime nting	Knowl. MGT	Analysis & problem	Review. & evaluatin	Action research	Passive part.	Tec. develpm.	DIY bio	1-3 in school
Requirements for participation															
Material															
Smartphones															
Specific software															
Measuring devices (sensors, …)															
Laboratory equipment															
Optical instrument (microscope, telescope, etc.)															
Other special devices															
Non-material															
Certain skills or knowledge															
Degree of experience															
Minimum level of education (e.g. high school degree)															
University study (ongoing)															
Specific training															
Scale of the citizen science project															
Number of participating "citizen scientists"															
Intensity of unpaid work															
Working hours per month & duration by month															

	Consult-DeliB	Det. quetstions	Research desian	Data collection	Data preparati	Retrieval of sci. lit.	Experime nting	Knowl. MGT	Analysis & problem	Review. & evaluatin	Action research	Passive part.	Tec. develpm.	DIY bio	1-3 in school
Characteristics of country															
Human development Index (UN)															
Life expectancy below EU Member States (WHO)															
Democracy (EIU)															
Geographic coverage															
Local (L), Regional (R), National (N), Global (G), EU															
Beings and/or objects dealt with															
Objects/non-sentient beings															
Undamagable or ordinary inanimate objects/non-sentient beings															
Damagable, rare or valuable objects/ beings															
Sentient beings															
Domestic animals															
Wildlife															
Endangered or rare species (red list?)															
(Indirect damage possible ---> protected habitats ----> see: locations.)															
Humans															
Identifiable humans															
Non-identifiable humans															

	Consult-DeliB	Det. quetstions	Research desian	Data collection	Data preparati	Retrieval of sci. lit.	Experime nting	Knowl. MGT	Analysis & problem	Review. & evaluatin	Action research	Passive part.	Tec. develpm.	DIY bio	1-3 in school
Funding															
Citizens themselves (no external funding).															
Crowdfunding															
SMEs, their associations or organisations															
Large enterprises, their associations or organisations															
Government (agency, non-military)															
Military															
Publicly funded organisations															
Political parties, religious or other ideologic organisations															
Private persons of wealth															
Socio-economic enterprise/s															
Civil society organisation/s															
Philanthropic foundations															
European Commission															
UN organisation or similar international organisation															
Other															
Initiators of citizen science															
Citizens with no academic education in the field															
Researchers in the field or research organisations															
Other															
Organisers (Who runs the project?)															
See groups in "funding".															

	Consult-DeliB	Det. quetstions	Research desian	Data collection	Data preparati	Retrieval of sci. lit.	Experime nting	Knowl. MGT	Analysis & problem	Review. & evaluatin	Action research	Passive part.	Tec. develpm.	DIY bio	1-3 in school
Citizen scientists are known to															
Organisers															
Everybody in the project															
Publicly															
None of them (anonymous)															
Unknown issue															
Partners cooperating as citizen scientists															
Individual citizens															
NPOs															
Educational institutions															
Other institutions?															
Communities/civil initiatives															
Individuals as citizen scientist(s)															
Lay persons in the field															
Non-academic experts in the field															
Sometimes also: Participants with ongoing (or partially completed) university studies in the field															
Users															
Makers and developers															
School students and pupils (most <18 years old)															

	Consult-DeliB	Det. quetstions	Research desian	Data collection	Data preparati	Retrieval of sci. lit.	Experime nting	Knowl. MGT	Analysis & problem	Review. & evaluatin	Action research	Passive part.	Tec. develpm.	DIY bio	1-3 in school
Individuals as traditional scientist(s)															
No "traditional scientists" involved															
Professional researchers/scientists															
Students in a relevant field.															
Persons who partly completed studies in a field relevant to the project															
Topic areas and/or disciplines															
1. Disciplinary competences in project organisation teams															
2. Self-categorisation of the project by its organisers															
3. Categorisation by research funders, publishers, and other researchers															
Incentives and remunerations promised															
None															
Symbolic (Price, worthless certificate, medals …)															
Monetary remuneration															
Certificate on education/experience															
Recognition by naming															
Other															

7.2.4 Explanations and suggestions to operationalize

In the following, the authors describe the citizen science activities they identified and give some examples of how they may impact on the research questions in CS Track. The suggestions for operationalisations have been developed for the ideal case that these facts about projects are available. At the moment, most projects give much less information about the characteristics of their activities. If citizen science activities are considered for funding or to be supported otherwise, at best the following dimensions and activities should be known.

Activities: Operationalisation & important aspects to consider

	Suggestion for operationalisation	**Important aspects (exemplary)**
Area 1: Research policy		
Deliberation, consultation, etc.		Inclusion and democratic structures of high importance as research policies might be influenced.
Area 2: Participating in research		
Determining research questions	Y/N If YES →%	Inclusion and democratic structures of high importance.
Research design	Y/N If YES →%	Inclusion and democratic structures of high importance.
Data collection	Y/N If YES →%	A broad range of low- to high skilled activities often performed by volunteers.
Data preparation & processing	Y/N If YES →%	See data collection
Retrieval of scientific literature	Y/N If YES →%	See data collection
Experimenting	Y/N If YES →%	See data collection
Knowledge management	Y/N If YES →%	See data collection
Analysis & problem solving	Y/N If YES →%	See data collection
Reviewing & evaluating	Y/N If YES →%	Inclusion and democratic structures of high importance.

Action research	Y/N If YES →%	Specific skills of those who apply methods of group dynamics to avoid risk of psychological damage.
Passive participation	Y/N If YES →%	Many scholars do not consider this as CS.
Area 3: Development & Innovation		
Technical development		Questions of ownership in case of marketable products.
DIY biology		Widely debated when it comes to genetic engineering or health topics.
Area 4: School projects		
All activities in Areas 0-3 are possible.		Activities in Area 1-3 are or can be conducted in schools but with a presumably more rigorous priority of school education of minors.

In the following table the authors exemplify citizen science activities they have found in scientific literature and project databases. These are not clear-cut activities, although at first sight they seemingly are. Take for example the Transcribe Bentham project. Jeremy Bentham was a British philosopher in the 19th century with an extensive legacy consisting of handwritten manuscripts. These manuscripts are transcribed - or shall one say 'deciphered'? - by volunteers. The transcripts form the basis for the critical edition of Bentham's collected works. Bentham is notorious for the poor legibility of his handwriting. One can imagine that transcribing his manuscripts is a demanding task that requires some understanding of such handwritten manuscripts, also of the language Bentham used. Taken this into account, is transcribing Bentham's manuscripts "only" transcribing or is it also decoding? Probably both, but are these two distinct activities? Probably not, but in other projects decoding, deciphering or transcribing could be distinct activities.

Activities: Examples

	Specific activity/task	**Examples**
Area 1: Research policy		
	Participating in public consultation	
	Participating in deliberative formats	E.g. citizen panels, Wisdom Councils

Area 2: Participating in research		
Project development	Determining research questions	Formulating research questions deciding what problems are researched.
	Research design	All other contributions to research development other than determining research questions.
Data collection	Observation	E.g. stars, animal behaviour
	Reporting	E.g. road kills, sighting of rare animals
	Taking samples	E.g. from a river, from earth, or animal droppings
	Measuring and counting	E.g. droppings of animals, people crossing a place at certain times
	Searching for artefacts	E.g. historic documents, photos, films, archaeologic excavations
	Conducting interviews	
	Supporting data collection	E.g. place camera traps
Data preparation & processing	Classifying	E.g. identify species, categorising pictures in a journal
	Characterising, describing, localising	E.g. identify the location of photos, films
	Matching data	E.g. find out to which object data belong
	Transcribing	E.g. decipher handwritten documents, make transcripts of interviews
Retrieval of scientific literature	Searching in scientific libraries and databases	
Experimenting	Carrying out experiments	E.g. raising plants under different conditions, cleaning effect of chemicals
Knowledge management	Setting up, running scientific libraries, archives, etc.	E.g. museums, online libraries, wikis
Analysis & problem solving	Solving theoretical problems	E.g. logical, mathematical problems

	Decoding	E.g. historic languages, scripts
	Serious gaming	E.g. online puzzles
	Pattern recognition	E.g. photos, numbers
Reviewing & evaluating	Two-way discussion of results	(Not negotiation of desired results)
	Detection of flaws concerning methods, conclusions, research design, etc.	
	Detection of conflicts of interest	
Action research	Sometimes labelled as citizen science	
Passive participation	Giving personal data	For instance, citizen scientists are probands, interviewees, fill in questionnaires, etc.
	Providing infrastructure	E.g. providing computer space
	Donating material and tools	
Area 3: Development & Innovation		
	Designing	E.g. taking part in ideation, drawing construction plans
	Providing user feedback	
	Building prototypes	
	Programming and coding	E.g. software, codes for devices
	DIY biology	E.g. self-experimenting, in the extreme implants and genetic engineering
Area 4: School projects		
		All above mentioned activities can take place in school settings with (mostly) minors in the role of citizen scientists.

Dimensions: Operationalisation & important aspects to consider

Dimension	Suggestion for operationalisation	Important aspects (exemplary)
Location of participation		
Physical place		
At home, working place, garden …	Y/N ---> % of project?	
A separate institution (laboratory, garage …)	Y/N ---> % of project?	
Outside in unspecific environments	Y/N ---> % of project?	
Outside in dangerous environments	Y/N ---> % of project?	
Sensible biotopes (marshes, wildlife parks, …)	Y/N ---> % of project?	
		Depending on the physical location, different aspects need attention: precaution to maintain privacy, when personal data (location data, date and time stamps, etc.) are submitted in the first case, in the last case caution to avoid harm is required.
ICT environment		Privacy issues to be considered.
Online platforms	Y/N ---> % of project?	
Forums	Y/N ---> % of project?	
Social media (Twitter, …)	Y/N ---> % of project?	
Other	Y/N ---> % of project?	
Location not determined	Y/N ---> % of project?	Privacy issues to be considered.
Requirements for participation		
Material		
Smartphones	Y/N	
Specific software	Y/N	
Measuring devices (sensors, etc.)	Y/N	
Laboratory equipment	Y/N	

Optical instrument (microscope, telescope, etc.)	Y/N	
Other special devices	Y/N	
Non-material		
Certain skills or knowledge	Y/N	
Degree of experience	Hours per month * duration (in months)	
Minimum level of education (e.g. high school degree)	Y/N	
University study (ongoing)	Hours per month * duration (in months)	
Specific training	Y/N	
		It could be offered to acquire specific skills or experiences. Required equipment can exclude those who cannot afford it. Additionally, if state of the art computers and smartphones are necessary, this might trigger buying new ones, which would go against environmental sustainability. Potential countermeasures are to lend devices to citizen scientists, rely on DIY equipment, and/or to design activities in a way that older equipment is suitable.
Scale of the citizen science project		
Number of participating "citizen scientists"	Absolute number or range (below 10, 11-100, etc.)	
Intensity of unpaid work		
Working hours per month & duration by month	Working hours per month * duration (in months) (0,1 h p.m. * 12 m =1,2 h)	
		Exploitation? Replacing paid work? These questions become relevant with a certain amount of unpaid work. Activities can be scaled between a few minutes per week and almost full-time volunteering.

Characteristics of country		
Human development Index below EU Member States (UN)	Y/N	
Life expectancy below EU Member States (WHO)	Y/N	
Democracy below EU Member States (EIU)	Y/N	
		Specific considerations are needed when projects are conducted in poor countries and/or non-democratic regimes. Such countries can be identified with one of these three indices. Organisers from western democracies may need specific education or to cooperate with experts in development cooperation. Specific risks of citizens in these countries may need informed awareness and attention, too.
Geographic coverage		
Local (L), Regional (R), National (N), Global (G), EU	Specify L, R, N, G or EU	Local projects could have more direct impact on the lives of citizen scientists.
Beings and/or objects dealt with		
Objects/non-sentient beings		
Undamageable or ordinary inanimate objects/non-sentient beings	Y/N	
Damageable, rare or valuable objects/non-sentient beings	Y/N	
Sentient beings		Animal protection issues
Domestic animals	Y/N	
Wildlife	Y/N	
Endangered or rare species (Red List?)	Y/N	
Humans		
Identifiable humans	Y/N	

Non-identifiable humans	Y/N	
		This dimension has strong consequences on possible harm that could be done by non-learned inexperienced lay persons and the degree of responsibility given or delegated to them. It takes also into consideration how persons could be held responsible in case of misconduct if they do not breach the law. Misconduct by traditional scientists can be sanctioned in scientific communities and the person concerned risks reputation and career prospects. Potential ethical issues range from hardly existing to animal protection, privacy issues, and health concerns.
Funding		
Citizens themselves (no external funding).	Y/N ---> % of project?	
Crowdfunding	Y/N ---> % of project?	
SMEs, their associations or organisations	Y/N ---> % of project?	
Large enterprises, their associations or organisations	Y/N ---> % of project?	
Government (agency, non-military)	Y/N ---> % of project?	
Military	Y/N ---> % of project?	
Publicly funded organisations	Y/N ---> % of project?	
Political parties, religious or other ideologic organisations	Y/N ---> % of project?	
Private persons of wealth	Y/N ---> % of project?	
Socio-economic enterprise/s	Y/N ---> % of project?	
Civil society organisation/s	Y/N ---> % of project?	
Philanthropic foundations	Y/N ---> % of project?	
European Commission	Y/N ---> % of project?	

UN organisation or similar international organisation	Y/N ---> % of project?	
Other	Y/N ---> % of project?	
		This dimension is connected to the independence of research and to (precluding) conflicts of interests.
Initiators of citizen science		
Citizens with no academic education in the field	Y/N	
Researchers in the field or research organisations	Y/N	
Other	Y/N	
Organisers (Who runs the project activity?)		
See groups in "funding".		
		A project can consist of several activities which are organised by different groups.
Citizen scientists are known to		
Organisers	Y/N	
Everybody in the project	Y/N	
Publicly	Y/N	
None of them (anonymous)	Y/N	
Unknown issue	Y/N	
Partners cooperating as citizen scientists		
Individual citizens	Y/N ---> % of project?	
NPOs	Y/N ---> % of project?	
Educational institutions	Y/N ---> % of project?	
Other institutions?	Y/N ---> % of project?	
Communities/civil initiatives	Y/N ---> % of project?	
Individuals as citizen scientist(s)		
Lay persons in the field	Y/N ---> % of project?	
Non-academic experts in the field	Y/N ---> % of project?	
Sometimes also: Participants with ongoing (or partially completed) university studies in the field	Y/N ---> % of project?	
Users	Y/N ---> % of project?	

Makers and developers	Y/N ---> % of project?	
School students and pupils (most of them <18 years old)	Y/N ---> % of project?	
Individuals as traditional scientist(s)		
No "traditional scientists" involved	Y/N ---> % of project?	
Professional researchers/scientists	Y/N ---> % of project?	
Students in a relevant field.	Y/N ---> % of project?	
Persons who partly completed studies in a field relevant to the project	Y/N ---> % of project?	
Topic areas and/or disciplines		
1. Disciplinary competences in project organisation teams	Specify	
2. Self-categorisation of the project by its organisers	Specify	
3. Categorisation by research funders, publishers, and other researchers	Specify	
Incentives and remunerations promised		
None	Y/N	
Symbolic (Price, worthless certificate, medals …)	Y/N	
Monetary remuneration	Y/N	
Certificate on training/experience	Y/N	
Recognition by naming	Y/N	
Other	Y/N	
		In the case of monetary remuneration, the question arises, when it turns into (low) payment. A certain amount could be specified related to living costs in a country.

7.2.5 Using the Activities & Dimensions Grid of Citizen Science to differentiate between the various forms of citizen science

With a view on benefits and caveats of citizen science activities, it becomes clear why it is important to differentiate: Benefits, but also caveats, to be minded depend on specific activities and how they are characterised by a specific setting, i.e. by multiple dimensions. However, in scientific literature the benefits of citizen science are generally claimed, often superficially. Strasser et al. (2018) mention three kinds of promises that are made about citizen sciences: "a greater democratisation of science, better scientific literacy, and new scientific breakthroughs" (p. 62). As described in Chapter 5.2, recognizable contributions to scientific research are plausible: by generating new questions (Elliott & Rosenberg, 2019; Schonfeld, 2019; Mah, 2017; Houllier et al., 2017), recognising knowledge gaps (e.g. Elliott & Rosenberg, 2019), making discoveries (e.g. Vohland et al., 2019; Walajahi, 2019), and expanding the scale of data collection and observations (e.g. Quinn, 2021; Resnik et al., 20xx; Riesch & Potter, 2014; Liebenberg et al., 2016; Irwin, 2018; Mah, 2017; Jones et al., 2013; Houlillier et al., 2017; Cohn, 2008; Danielsen et al., 2005; Tulloch et al., 2013). And there might be cost benefits for some research projects (e.g. Jones et al., 2013; Houillier et al., 2017). Also Kimura & Kinchy (2016) mention the promise that citizen science more or less inevitably expands scientific literacy, however, they are sceptical that this claim is fully justified. The promise that citizen science brings greater democratisation of science with it, often goes along with the claim that citizen science runs against elitism and traditionalism (Haklay, 2013, Nascimento et al., 2018, Kimura, 2016) and stands for openness and inclusion (Sauermann & Franzoni, 2015; Schrögel & Kolleck, 2019). And sometimes public engagement is confused with democratisation: The more public engagement, the democratisation there is (Robinson et al., 2018). Considering specific activities and their dimensions, it becomes impossible to make such assertions because one begins to see the intricacies of these activities.

For example, a possible impact of a citizen science activity on enhancing democratisation of science or society at large is most likely to be had in Area 1, which deals with influencing research policies, and also in Area 2 as far as citizens determine the research questions in a project or have a say in the project design. However, a positive impact is not given, on the contrary, deliberative regimes can advantage even further those who are already cumulatively advantaged. In these cases, one will have to ask which procedures are put in place and what concrete measures are taken to include people in a credibly democratic way. This is not an easy task. It is a different story, if citizens are volunteers who contribute free labour without having influence on decisions. As long as citizens have no more control over a project than volunteers in charity contexts, inclusion might not play such a crucial role. Depending on the extent to which unpaid work is given by individuals and their expertise, different, questions appear, e.g. about a potential exploitation of cheap labour force, the elimination of paid jobs, the appropriation of the extensive knowledge of practical experts and many more. A project conducted only in stable democracies is not the same as one under an authoritarian regime or in countries with unreliable administrations compared to industrialised countries. To avoid unintended effects of their activities, put people to risk or avoid strengthening non-egalitarian power structures, organisers of citizen science in the global south, who "fly in" from the global north, are well-advised to cooperate with local experts and experts on development cooperation.

7.2.6 Some categories & typologies taken into account in the Activities & Dimensions Grid of Citizen Science (ADG-CS)

	Bonney et al. (2009)	**Used in the ADG-CS**
What is considered as citizen science?	No concrete specification found	
Categories/dimensions/ types/characteristics	Contributory projects	Data collection, passive participation
	Collaborative projects	Project development, data collection, data preparation & processing, analysis & problem solving
	Co-created projects	Project development, data collection, data preparation & processing, retrieval of scientific literature, experimenting, analysis & problem solving
	Activities listed (p. 11)	
	Choosing or defining questions for study	Determining research questions
	Gathering information and resources	Knowledge management
	Developing explanations (hypotheses) about possible *answers to research questions*	Project design
	Designing data collection methodologies (both *experimental and observational)*	Project design
	Collecting data	Data collection
	Analysing data	Analysis & problem solving
	Interpreting data and drawing conclusions	Analysis & problem solving
	Disseminating conclusions	No
	Discussing results and asking new questions	No
	(Bonney et al., 2009a, p. 11)	

Useful for empiric research in CS Track?	In this general form the models cannot be operationalised, hence they needed to be concretised.
Used in categories?	The general categories are broken down to concrete activities. Most of the activities named are also part of the Activities & Dimensions Grid of Citizen Science. Exceptions are "disseminating conclusions" and "discussing results", which the authors consider rather as a possible impact of research than a direct part of it. Asking new questions could be part of a follow-up project and then belong to the activity "determining research questions".

	Shirk et al. (2012)	**Used in the ADG-CS**
What is considered as CS?	"Intentional collaborations in which members of the public engage in the process of research to generate new science-based knowledge"	
Categories/dimensions/ types/characteristics	Contractual projects	Determining research questions
	Contributory projects	Data collection
	Collaborative projects	project development, data collection, data preparation & processing, analysis & problem solving
	Co-created projects	All activities
	Collegial contributions	All activities
Useful for empiric research in CS Track?	Two categories were introduced by Shirk et al., namely projects requested by citizens (contractual projects) without much further input and projects which are performed only by citizen scientists ("collegial contributions").	
Used in categories?	Both distinctions added to Bonney et al (2009) were integrated into the ADG-CS. "Contractual projects" mirror the original science shop concept according to which citizens/NPOs request - but do not perform - research on certain issues. In the ADG-CS they are identified by doing only one activity, which is deciding on research questions. "Collegial contributions" are identifiable by the non-involvement of traditional scientists in the respective field.	
Additional remarks:	Shirk et al. (2012) also mention 5 dimensions: Inputs, Activities, Outputs, Outcomes, Impacts. While "activities" are an essential part of the ADG-CS, the others are not suitable for differentiating within the diversity of what is called citizen science but for the evaluation of projects.	

	Haklay (2013)	Used in the ADG-CS
What is considered as CS?	"Scientific activities in which non-professional scientists voluntarily participate in data collection: analysis and dissemination of a scientific project" (p. 106). (Adapted from Cohn 2008 und Silvertown 2009)	
Categories/dimensions/ types/characteristics	Crowdsourcing	Data collection, passive participation
	Distributed intelligence	Data preparation & processing, Analysis & problem solving
	Participatory science	Determining research questions, project development, data collection,
	Extreme citizen science	All activities
Useful for empiric research in CS Track?	Too unspecific, not operationalizable in this form.	
Used in categories?	The general categories are broken down to concrete activities.	
Additional remarks	At this time, Haklay considered "extreme citizen science" as on top of a hierarchy of the different forms of participation.	

	Haklay (2018)	Used in the ADG-CS
What is considered as CS?	Not indicated	
Categories/dimensions/ types/characteristics	Whole population	Not applicable
	Passively consume information about science	Not applicable
	Active consumption of science	Not applicable
	Active engagement in citizen science but to a limited degree	Data collection, (+ Intensity)
	Projects that require remote engagement	Location of participation
	Regular data collection	Data collection (+ intensity)
	Engaged in DIY Science	DIY or activities without traditional scientists?

Useful for empiric research in CS Track?	The usefulness for the categorisation is limited.
Used in categories?	The first step of the escalator applies to everybody being last four categories are broken down to concrete activities.
Additional remarks	Haklay presented the escalator in his blog and has refined it since then. It goes beyond citizen science by including how everybody (the whole population) is affected by science in their lives as well as how citizens consume science actively or passively. (It might be debatable though if reading scientific articles is a less active consumption than visiting a museum, e. g.)

	Wiggins & Crowston (2011)	**Used in the ADG-CS**
What is considered as CS?	"Citizen science is a form of research collaboration involving members of the public in scientific research projects to address real-world problems." (p. 1)	
Categories/dimensions/ types/characteristics	primary goal orientation	
	TYPOLOGY	
	Action	no
	Conservation	No
	Investigation	No
	Virtual	Dimension "location"
	Education	Partially, Area 4 School
	Not used in their typology yet: They identified several key dimensions to be discussed (p. 8 f.):	
	Degree of virtuality	Part of dimension "location"
	Project demographics	Dimension "considered as citizen scientists"
	Organisational affiliations	Funding/Initiators/Organisers
	Funding sources	Funding
	Multiple types of outcomes	---> Evaluation
	Features of processes and technologies	Openness - barriers?
	Numerous specific aspects of project and task design	

Useful for empiric research in CS Track?	Their typology according to primary goal orientation is more useful for a post-evaluation of the benefits of certain activities than for a distinction between different forms of citizen science.
Used in categories?	Only "virtual" (dimension "location") and "education" (Area 4)
Additional remarks	The primary goal orientation was not included in the ADG-CS with the exception of activities in Area 4: schools: where "education" can be identified as primary goal orientation. Firstly, if citizen science is deemed science: "investigation" should always be a goal. Secondly, a prioritisation of goals may not be present in all activities, which can be a mixture of different aims. Thirdly, different views on the primary goals by different individuals or groups are possible. Instead of using "primary goals" as a mean to distinguish between forms of citizen science, it is useful for investigating outcomes and impacts. Additionally, it should be part of post-evaluation which outcomes/impacts were intended, which were transparently communicated and which were unforeseen effects of a project.

	Wiggins & Crowston (2012)	**Used in the ADG-CS**
Categories/dimensions/ types/characteristics	Established 5 clusters (A - E) which show different patterns of the weight given to different goals. Below the relation between the weight of these goals is shown.	
	Goals: Science : Management : Action : Education : Conservation : Monitoring : Restoration : Outreach : Stewardship and Discovery	
	Cluster A: 0.1 : 0.09 : 0.1 : 0.1 : 0.1 : 0.11 : 0.09 : 0.1 : 0.11 : 0.09	
	Cluster B: B: 0.17 : 0.01 : 0.01 : 0.16 : 0.09 : 0.16 : 0.01 : 0.14 : 0.11 : 0.15	
	Cluster C: 0.13 : 0.08 : 0.09 : 0.12 : 0.1 : 0.12 : 0.05 : 0.11 : 0.09 : 0.12	
	Cluster D: 0.16 : 0.1 : 0.1 : 0.1 : 0.12 : 0.14 : 0.06 : 0.08 : 0.12 : 0.02	
	Cluster E: 0 : 0.21 : 0 : 0 : 0 : 0.21 : 0.21 : 0.17 : 0.21 : 0	

Useful for empiric research in CS Track?	It confirms that goal orientation is not a clear-cut issue and categorising citizen science by goal is not practical. The goals above could be rather used to evaluate outcomes of citizen science.
Used in categories?	Partially (see comments on Wiggins & Crowston (2011))

	Wiggins & Crowston (2015)	**Used in the ADG-CS**
Categories/dimensions/ types/characteristics	Funding	Dimension "Funding" in the ADG-CS, more detailed operationalisation.
	Sustainable mix	
	Grants & membership	
	Private donations	
	Entrepreneurial	
	Goals	See above.
	Resource management & conservation	
	Scientific knowledge	
	Education	
	Participation activities	Activities and disciplines/research areas are 2 different dimensions in the Activities & Dimensions Grid of Citizen Science.
	Natural history observation	
	Environmental quality monitoring	
	Content processing	
	Data quality processes	Rather evaluation issue than distinction. Data quality to be decided by review by scientific community.
	Observational data	
	Measurement data	
	Replication	

	Communication media	Partially in dimension "location"
	Science & data	
	Basic coordination	
	Social networking	
	Rewards	Dimension "incentives"
	None	
	Competitive participation	
	Volunteer appreciation	
	Social opportunities	
	In person	
	Distributed socialisation	
	Formal education	Dimension "incentives"
Useful for empiric research in CS Track?	Among others, their multidimensional approach is mirrored in the Activities & Dimensions Grid of Citizen Science, although in a different structure.	
Used in categories?	Several of their dimensions/activities can be found in the Activities & Dimensions Grid of Citizen Science.	
Additional remarks	Wiggins and Crowston show how many dimensions citizen science activities have, since they have been developing more complex models over the years.	

	Cooper et al. (2019)	**Used in the ADG-CS**
What is considered as CS?	"Globally, citizen science encompasses an enormous range of activities in which millions of people contribute to research in science, technology, engineering, and mathematic (STEM) fields." (p. 1)	
Categories/dimensions/ types/characteristics	Institutional research / human subjects / personally identifiable data	Several dimensions
	Institutional research / human subjects / open, if personally identifiable data	Several dimensions

	Institutional research / no human subjects / no personally identifiable data	Several dimensions
	Institutional research / no human subjects / personally identifiable data	Several dimensions
	Non-institutional research / human subjects or no human subjects/ personally identifiable data or not	Several dimensions
Useful for empiric research in CS Track?	Cooper et al. (2019) show how with different combinations of dimensions have a have a strong impact on which ethical considerations are necessary.	
Used in categories?	Their model appears in the Activities & Dimensions Grid of Citizen Science by combining "Organisers (Who runs the project?)" and "Beings dealt with", where a subcategory are humans which are split into identifiable/non-identifiable.	
Additional remarks	Cooper et al. (2019) demonstrate that differentiation between forms of citizen science and settings in which they can takes place are more than theoretical reflections. They have or at least should have real consequences for ethical standards.	

	Franzoni & Sauermann (2013)	**Used in the ADG-CS**
What is considered as CS?	"While a common term for these projects has yet to be found, they are variously referred to as "crowd science", "citizen science", "networked science", or "massively-collaborative science" (Young, 2010; Nielsen, 2011; Wiggins & Crowston, 2011). Even though there is significant heterogeneity across projects, they are largely characterised by two important features: participation in a project is open to a wide base of potential contributors, and intermediate inputs such as data or problem-solving algorithms are made openly available." (p. 1)	
Categories/dimensions/ types/characteristics	Openness with respect to project participation	Requirements
	Openness with respect to intermediate inputs	No

	Nature of the task outsourced to the crowd (Task complexity & task structure)	Activities (+ dimensions)
	Typical skill requirement: domain specific expert skills, specialised human skills, common human skills	Requirements
Useful for empiric research in CS Track?	Their model emphasises the importance of distinguishing between the broad range of possible involvement of participants.	
Used in categories?	In the Activities & Dimensions Grid of Citizen Science the complexity and structure of tasks are further specified by different dimensions that can characterise different activities: e.g. intensity, location, beings or objects dealt with.	
Additional remarks	They refer to the vagueness of the terms and prefer the term "crowd science" which they use synonymous to "citizen science".	

	Schrögel & Kolleck (2019)	**Used in the ADG-CS**
What is considered as CS?	"Inclusion of non-traditional, non-institutionalised and non-professional researchers in the process of knowledge generation, including research processes conducted without institutionalised scientists at all" (p. 81)	
Categories/dimensions/ types/characteristics	Dimensions of the Participatory Science Cube	
	Normative Focus (Public decision making, public collaboration, public consultation, public discussion)	
	Epistemic Focus (crowdsourcing, public input for analysis, public collaboration for interpretation, public problem definition & interpretation)	
	Reach (Other experts, Organized Civil Society, Interested Public, Broad Public)	
Useful for empiric research in CS Track?	Schrögel & Kolleck (2019) conducted a meta-analysis of several models of public engagement in science scholars, which are often referred to and developed a model that brings them together. A project is placed in their cube according to their three dimensions, which shows how multiple the facets of what is considered citizen science can be.	

Used in categories?	The multi-dimensional approach is reflected in the Activities & Dimensions Grid of Citizen Science.
Additional remarks	The authors adapt the democracy cube by Archon Fung to develop a 3-dimensional model, their "participatory science cube".

	White paper SOCIENTIZE (2014)	**Used in the ADG-CS**
What is considered as CS?	Citizen Science refers to the general public engagement in scientific research activities when citizens actively contribute to science either with their intellectual effort or surrounding knowledge or with their tools and resources. (p. 8)	
Categories/dimensions/ types/characteristics	MODELS OF CITIZEN ENGAGEMENT IN SCIENCE	
	Pooling of Resources	Passive participation
	Serious Games	Part of analysis & problem solving
	Participatory Experiments	Action research or experiments?
	Grassroots Activities	Dimension "Organisers (Who runs the project?)"
	Collective Intelligence	Part of analysis & problem solving
	Data Collection	Data collection
	Analysis Tasks	Part of analysis & problem solving
Useful for empiric research in CS Track?	The White Paper gives a strong impression of how many facets activities can have that are considered as citizen engagement in science.	
Used in categories?	The models are reflected in the Activities & Dimensions Grid of Citizen Science. However, the ADG-CS does not list serious games, furthermore, the ADG-CS does not differentiate between collective intelligence and analysis tasks.	
Additional remarks	The names of the models seem to be highly self-explaining. Nevertheless, it has to be remarked that no detailed descriptions of the models have been found in the document, hence misinterpretation from our side cannot be precluded.	

8 Conceptual models for computer analytics

Sven Manske, Ulrich Hoppe, Nils Malzahn

8.1 The role and context of computational analytics in CS Track

As many other scientific activities also citizen science and its results are nowadays to a large extent projected to digital spaces for purposes of collaboration, communication and publication. These "digital traces" can be submitted to computational data analysis, which can reveal such aspects as the roles of and relationships between actors involved, the interaction with other areas of public life and society as well as thematic trends and alliances. This is an important ingredient to CS Track's approach to monitoring and analysing citizen science activities. The core of this work is conducted in Work Package 3. A first report on this approach is available in the form of deliverable D3.1, which assembles and documents relevant analytic methods, including techniques of social network analysis, information mining as well as visualisation techniques. These techniques will be used systematically to gain insights on different levels of granularity or scales: On the micro-level, data from internal forum interactions in citizen science projects can be used to identify roles and interaction patterns between professional scientists and volunteers. A specific question here is the "richness" of the volunteers' activities in terms of initiative and reflection. These studies are typically of case-based nature. On a meso-level, larger collections of project descriptions can be analysed together using web crawling and text mining techniques. On the highest level of aggregation, one can analyse the interactions between projects, groups of projects and other entities (such as public media) relying on Twitter data including mentions, retweets, or follower relationships. This allows for reaching out even beyond the set of projects originally collected.

We are aware that computational methods applied to digital traces have "blind spots", for instance in relation to gender distribution, individual motivation, and satisfaction. Accordingly, computational approaches of analytics have to be complemented and combined with other types of quantitative and qualitative analyses used in social studies. Accordingly, CS Track adopts a "triangulation approach" to monitoring and analysing citizen science as a social, collaborative activity. The actual synthesis of preliminary and intermediate results takes place in the context of Work Package 4. This integrated and synergetic perspective is the basis for formulating quality statements and policy recommendations for different stakeholder groups.

In this overall context, the quest for conceptual models aims at clarifying the building blocks and main targets of the different kinds of analyses. In the social science tradition, this would lead to the question of defining the unit(s) of observation and analysis. Certainly, an overarching interest lies in studying CS Track activities in terms of collaboration and community interactions. However, the primary entities that are susceptible to digital data harvesting are concrete citizen science projects, possibly also project clusters (as part of platforms or program initiatives). Once a project has been found and selected, individual actors may be identified in specific digital manifestations such as publications, forums or discussion pages. According to the

ethical standards established for CS Track (see deliverables D8.1 and D8.2), we would not perform analyses aiming at the individual profiling of actors. Another extension beyond the project level would be possible through the analysis of Twitter data and cross-media analyses (Hecking et al., 2019). The objects of primary interest here are actors, content items (or "memes" - cf. Shifman, 2014) as well as their relationships and trajectories.

Building blocks for computational representation and analytics

From a technical point of view, the design of databases and processing schemes builds in the identification of certain types of entities, together with their attributes and relationships (Chen, 1976; Thalheim, 2013). The first prerequisite here is the mapping of a domain-specific vocabulary to entities that should be computationally represented and analysed. As for the entities, we have to clarify our language definitions regarding concepts such as "citizen science project platforms", "citizen science projects", "citizen science activities", different types of participants ("professional scientists" vs. "volunteers") and types and roles of participation in citizen science projects or activities. The current version of the CS Track database built up as part of Work Package 2 is essentially centred around projects as primary entities.

As a next step, we need features or attributes as descriptors associated with the identified basic entities. To build up a comprehensive collection we first need to focus on easily available information that does not require a high degree of subjective interpretation, analytic (semantic) processing or empirical research beyond direct observation and simple questionnaires. This kind of information is currently being gathered in the Work Package 2 database. Typical features or attributes for the primary entity of type "project" would be <project name>, <website URL>, <start date>, <location(s)>, <platform(s) on which the project is listed>, etc. The identification of (multiple) disciplines relevant for a given project is already a challenge, but I would still see it in this group of basic descriptors. Simple analysis techniques based on keyword extraction and matching against keyword lists can achieve this. Characterising activities as "online" vs. physical or "in the field" is also among the not too difficult options. This is quite easy to observe from available descriptions of projects but it is not just "binary": E.g. you may have field observations (on the part of volunteers) that are encoded, uploaded and possibly geo-mapped in an online environment. We need description categories for such situations. A more difficult point is the demographics of the participants, number, gender and age distribution etc. Although it is a basic and important descriptor it may be difficult to get access to this kind of information.

Based on projects as the primary unit of description, we can subsequently model important relations of projects with other entities. These may be abstract entities such as purposes, for instance SDGs or educational goals, come into mind immediately. Also institutions may be important here ("associations for conservation of XYZ"), as well as items taken from political agendas. The relation of different citizen science projects among each other is another potentially relevant "relational" feature. Here, analytic tools (as described in D3.1) can help by analysing micro-blogs (such as following, retweets of mentions on Twitter) or cross references between project web pages. Such analyses would involve larger sets of projects. Different in scale but still on this level of distance from basic observations is the analysis and characterisation of roles, discourse and working relations inside projects. These analyses are confined to a smaller sample of projects and need substantial effort for each single case.

The highest degree of processing and interpretation, i.e. the largest distance from basic observations, would be related to (comparative) quality judgements, identification of deficits and societal benefits. The mapping to MoRRI indicators would be part of this kind of work. In CS Track, this work is mainly allocated in Work Package 4 as a later step in the synergetic triangulation process.

Specific methods

The actual computational methods adopted within CS Track are described in D3.1. One group of methods belongs to the field of Social Network Analysis or SNA (Wasserman & Faust, 1994; Borgatti et al., 2009). Network analysis techniques are means to study the impact and inter-connection of projects in terms of information exchange through web-based and other media ("information diffusion", cf. Hecking et al., 2019). If we see projects/initiatives as nodes in a network linked through information exchange and ensuing communication relations (inter-linking of websites, mentions of Y on pages created by X, Twitter connections through retweets of follower relationships etc.), we can apply network-based measures of relevance in terms of different types of centrality and we can identify certain levels of cohesion or inter-connectedness in larger group of projects. This gives us measures of "influence" that can be interpreted as indicators of impact or success.

A second group of methods aims at analysing content from a semantic point of view. The prevalent type of content in this line of analysis is text. Textual data can be retrieved from the public pages of projects or platforms from the world-wide web or social media. Technically, it is also possible to analyse videos relying on automatic voice-to-text transcription for pre-processing. The primary outcome of these content is a characterisation of the given object of study (e.g. a citizen science project) in terms of topics or themes. Specific methods also allow the extraction of relational structures in the form of semantic networks or concept maps. "Epistemic Network Analysis" (ENA, cf. Shaffer et al., 2016) combines the extraction of semantic networks with a statistical analysis that allows for characterising the importance of certain topics in comparison between different example texts. Also newly emerging relationships and topics may be considered as an indicator of recent trends, which in turn can guide the revising and adaptation of science curricula in the light of new developments.

Other more general techniques of web analytics such as web crawling and basic statistics can already provide survey information. These combine well with information visualisation techniques to display statistical findings, render networks or to present data in a geo-mapping context.

Regarding the added value and benefits originating from web analytics, we would particularly mention the following targets:

- Automatic extraction of basic information from project web pages using basic techniques such as named entity recognition, keyword extraction in combination with crawling and scraping of web pages;
- Assessment of key research areas as well as type of scientific discourse using semantic methods of analysis such as ESA ("Explicit Semantic Analysis") or ENA;
- Detection of connection and inter-relations between different citizen science projects and possibly public media based and Twitter and other social media channels;
- Assessment of public visibility of citizen science activities and projects in digital media.

9 Some open research questions

Michael Strähle & Christine Urban

During the work on this report, it became apparent that many questions remain unanswered regarding citizen science due to the lack of empirical evidence. In order to stimulate further research, the authors list below questions that they consider urgent to answer in order to gain a basis for policy decisions on citizen science based on sufficient empirical evidence.

These questions were formulated against the background of the expertise available in the consortium in humanities, social and computer sciences. This is not a final list of open research questions; the next report (D1.2) will contain additional ones.

As already noted, the scientific literature on citizen science consists largely of case studies and project presentations; cross-project comparative analyses are rare. Such analyses are a desideratum. For instance, a secondary analysis of case studies and (self-)presentations of citizen science activities could be performed. Were the authors involved in these activities? Which case studies represent (self-)reflection and to what extent?

Generally, in research on citizen science only some geographic areas are covered. Compared to research on citizen science in the English- and German-speaking area, there is only little research on citizen science in Africa, Asia, Latin America and also many European countries, especially the Slav regions.

Terminology questions

- It seems that some prominent terms and concepts used to describe citizen science are only used by certain actors. Who uses the following terms and concepts: citizen science, open science, participation in research, public engagement in science, participatory research, and similar expressions, how and in which contexts? What other terms, concepts and attributes are used to describe citizen science?
- In what contexts and publications - e.g. scientific literature, policy papers, and social media - do terms and phrases such as co-creation, co-production, co-design, extreme citizen science appear? Who uses them?
- Who says they do citizen science? How do lay person use the term "citizen science"? Are there differences in terms of terminology how professional scientists organising citizen science activities and lay persons participating in them describe what they do?
- What do lay participants in citizen science think about the term "citizen science"? To what attributes for citizen scientists do they agree?
- Should the term "citizen science" be kept at all and if yes, for which forms of citizen science?

- What definitions and explanations of citizen science do policy makers and citizen science projects, associations, platforms and funders present? If they refer to sources, what are they?)
- Who claims to define citizen science? And who actually defines it?

Participation issues

- When is the frequency of contributions by individual participants (upload of photos, etc.) increasing? When the frequency is decreasing or contributions stop abruptly, are reasons given for it by participants?
- Can withdrawal patterns be detected? Are they connected with requirements or restrictions for participation, such as technical requirements? For instance, because smartphones, cameras, tablets, etc. citizen scientists use, have become outdated.
- Retention issues: Why do participants drop out of citizen science activities? If some barriers can be identified, removing or mitigating them, they would become possible "enablers".
- Who is actually involved in citizen science activities? What characterises these participants?
- Who are the "citizens"? Shall we call citizen scientists depending on industry sponsorship citizen scientists?
- Image analyses: In what roles are different participants presented in images? What people are visible on images? (=Image analyses: In what roles are different participants presented in images? Which people are visible on images?)

Integrity and transparency issues

- Transparency of citizen science projects: What means (website, etc.) do project organisers use to disclose information about projects? And what information is given?
- Are there differences and contradictions between the objectives and use of the results as they are presented to citizen scientists and those indicated in academic presentations?
- Are there differences between the self-presentation of a project and how it is described by project coordinators, citizen scientists, other researchers and other actors?
- How can citizen science safeguard itself against instrumentalisation?
- Which forms of citizen science with which characteristics should be safeguarded against which risks and misconduct?
- When it comes to decision-making in research, when is it desirable and when is it not desirable that "citizens" should be involved? When would it give concerned groups a voice, when would it allow powerful groups to influence research? In what kind of citizen science activities and under what conditions?
- What research activities should not be tackled by citizen science? Can ethical conduct be ensured to a necessary degree for all involved people, if they do not risk their professional reputation?

- What citizen science can be considered Responsible Research & Innovation (RRI) and in which respect? What are their characteristics?
- What is the dark side of what kinds of citizen science? (non-intended adverse effects, limitations, deficit models, opacity)

Educational issues

- Evaluation of citizen science as a teaching method: How does it compare to other teaching methods?
- Citizen science in schools: To what extent is citizen science an appropriate didactic tool for weaker, disadvantaged pupils or those from families less inclined to education or with little education? For this question one could ask teachers and parents what advantages and disadvantages they see in using citizen science in the classroom. For what reasons do they embrace/reject or (not) consider citizen science for teaching?
- To what extent is citizen science suitable for science education on subjects that are less often favoured by pupils, such as STEM subjects like physics and chemistry?

Other questions

- Several claims are made about the benefits of citizen science. Which citizen science activities have which benefits? What are the characteristics of these activities? What are the necessary conditions and requirements for bringing about these benefits?

10 Concluding remarks

Michael Strähle & Christine Urban

To provide a framework for the research to be conducted in Work Packages 2-4, the research reported in this deliverable has investigated various conceptualisations of citizen science and issues of actual, potential and claimed benefits brought by citizen science for science, ethical and integrity issues, caveats and potential pitfalls. Issues of participation in citizen science that are discussed in this report include participation patterns, demographic and gender aspects, and barriers, enablers, incentives and disincentives for scientists and volunteers participating in citizen science. The chapter on education and citizen science discusses aspects of informal and formal, school and after-school, and online education. Furthermore, the visibility of citizen science activities and economic aspects of citizen science such as potential cost benefits, as they are presented in scientific literature, are assessed.

Information presented in this report is based on critical analysis of scientific literature. Although publications on citizen science activities and citizen science in general go into thousands, empirical evidence on benefits for science and society at large, caveats and pitfalls, educational, ethical, gender and economic aspects, barriers, incentives, disincentives and enablers for citizen science, and on who actually voluntarily participates in citizen science activities can mostly be found in project owners' reports about their citizen science activities and in case studies. Systematic and comparative analyses about these issues are very rare and limited to specific thematic areas. (A similar remark could be made about investigations of public engagement in science.) The empirical evidence available does not allow for generalisations in respect to the aforementioned topics. The authors therefore had to restrict themselves to exemplary presentations.

D1.1 contains a grid of important dimensions to differentiate between citizen science activities, the Activities & Dimensions Grid of Citizen Science, which was developed as a kind of checklist that builds upon the explanation of citizen science in the Science with and for Society Work Programme 2018 - 2020 and is tailored to research activities in the aforementioned work packages. The chapter on conceptual models for computer analytics describes the role and context of computational analytics in CS Track, building blocks for computational representation and analytics, and the specific methods to be applied in Work Package 3.

Among other things, the report following this deliverable discusses policy aspects of citizen science and perspectives of policy makers on it. Furthermore, it extends and refines the different identified variables into actionable rubrics for the analytics tools and highlights issues for future research on citizen science.

11 Note on contributions

Michael Strähle, Christine Urban and Kathy Kikis-Papadakis are editors of this report. Kathy edited 4.3 and 4.4, Christine and Michael the other chapters they did not contribute to. Contributors to this report are indicated under the headings of chapters (except Chapters 10 and 11).

Christine Urban and Michael Strähle developed a report structure which was adapted according to feedback by the contributors. At the beginning of working on this deliverable, Christine and Michael sent contributors their results of information retrieval in Scopus, which contributors supplemented with the results of their own information retrieval. Authors' names to their contributions are indicated alphabetically.

4.4.3 Julia Lorke: contextualisation, literature search, search for suitable project examples, synopsis of the findings and the writing of the subchapter

4.5 Sven Manske and Julia Lorke both contributed almost equally to the contextualisation, literature search, search for suitable project examples, synopsis of the findings and the writing of the subchapter

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A "HOW TO" GUIDE FOR RESEARCHERS

PATIENT AND PUBLIC INVOLVEMENT AND ENGAGEMENT IN RESEARCH

LUDWIG BOLTZMANN GESELLSCHAFT

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Preface

Research shows that early and continuous involvement of the public and patients has a positive impact both on conducting more patient-centered research and on how research is conducted, namely towards more involvement of patients in research activities, and that this significantly impacts research findings. Involving the public in research empowers people with lived experience and improves the quality and impact of research (Staley, 2009).

Providing a 'How to' guide for Patient & Public Involvement and Engagement (PPIE) is relevant to aligning the mission of the Ludwig Boltzmann Gesellschaft (LBG) to conduct more patient-centered research in the medical field and more inclusive research in social sciences and the humanities that addresses societal needs. The LBG therefore co-created this document for conducting research based on PPIE principles including various perspectives from all involved stakeholders to serve as a central entry point for research based on PPIE principles. In this document, you will find a detailed description about what PPIE stands for, why it is necessary to get involved, and how we co-created this 'How to' guide (Chapter 1). In Chapter 2, you will find the main outcomes from all co-creation workshops regarding PPIE principles. This includes patient and public interaction, relevant governance structures (including budget and project oversight) and the organizational framework that facilitates PPIE activities. In chapter 3, we provide self-assessment checklists and present self-assessment PPIE tools. Chapter 4 covers suggestions on how to monitor and assess PPIE activities, followed by additional resources such as key papers, databases or other important guides (Chapter 5).

The target audience for this 'How to' guide is people working in research. Therefore, please read this guide through the "researchers' lens," as it is intended to be a manual that will ultimately help and support research projects in applying PPIE principles. Please remember this perspective when browsing through the document. Be aware that PPIE research projects all started from scratch and took a step-by-step approach. You do not have to change the world - in your case, your research - overnight. Start by introducing minor changes in your scientific workflow depending on your level of PPIE activities. We are convinced that every small step towards more patient/public involvement will lead to better outcomes. We hope this guide supports you in developing meaningful PPIE into your projects, and we are happy to receive feedback and hear about your experiences applying PPIE principles in your own research.

The PPIE Consortium.

1. Public and patient involvement and engagement (PPIE)

Engaging citizens and patients in research co-design is one of the key tools to drive innovation processes within the European research landscape (Mazzucato, 2019). In order to ensure that research is highly relevant to the public, there is a need for meaningful involvement of end-users with the aim to reduce 'research waste' and bring science and society closer together (Glasziou 2016; Chalmers 2009). Involving the public in research empowers people with lived experience and improves the quality and impact of research (Staley, 2009).

1.1. Characteristics of PPIE

PPIE stands for 'Public and Patient Involvement and Engagement' in research. PPIE aims to actively involve citizens and patients in research processes and activities. According to the definition of the National Institute of Health Research (NIHR, UK):

"User or public and patient involvement in research means doing research 'with' patients and the public so they are not just participants in the research. This requires users to have a say in the decisions made about research, so that the methods and outcomes are more appropriate to research participants and patients."

LEVELS OF INVOLVEMENT

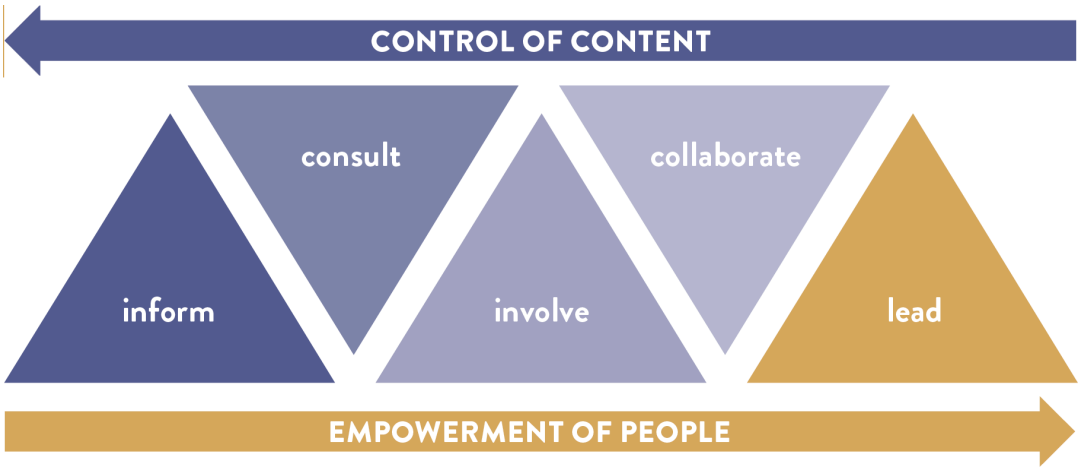
The degree of interaction between researchers, patients, and the public is measured by the ways in which they are involved. This can include patients and the public taking part in research studies, patients actively providing and disseminating research to the general public through different formats, or even patients and the public becoming actively involved in the research process. We distinguish between three levels of activities (INVOLVE NIHR, UK):

- **PARTICIPATION: Citizens and patients take part in research studies.**
  - E.g., being recruited in clinical trials, completing questionnaires, participation in interviews and focus groups.
- **ENGAGEMENT: Information and knowledge about research is provided and disseminated.**
  - E.g., dissemination of research to public (via media, social media), raising awareness of research through media, science festivals and open days at universities and research centers.
- **INVOLVEMENT: Citizens and patients are actively involved in research.**
  - E.g., as grant holders and co-applicants, through identifying research opportunities, agenda setting, members of project advisory and steering groups, co-developing patient information or materials, undertaking interviews with participants, and carrying out research.

Depending on the activity and degree of involving patients and public members in research, several levels of involvement can be differentiated: from purely receiving information about research projects (passive) to getting involved in research decision-making and becoming equal collaboration partners (active). From the perspective of a researcher, introducing PPIE components into research projects may increase the general empowerment of those who are affected by research and introduce a shift of power and ownership towards patients and the public (see Figure 1).

FIGURE 1: LEVELS OF INVOLVEMENT

(Modified from Arnstein, 1969)



1.2. Organizational framework to facilitate PPIE

The following chapter describes the benefits and challenges of involving patients and the public in research on an individual and organizational level. Challenges may promote future opportunities and professional development for researchers, patients and organizations.

1.2.1. Benefits and challenges for researchers

WHAT ARE THE BENEFITS FOR RESEARCHERS IN USING PPIE?

- **Identification of the most socially relevant research questions**
- **Improvement in socially relevant research outcomes**
- **Increased participant enrolment**
- **Decreased participant attrition**
- **Wider impact and applicability of findings**
- **Stronger rapport with patient/public communities**
- **Better understanding of and insights into gaps and priorities in the research area**
- **Overall improvement in research effectiveness**
- **Increasingly a requirement for funders**

WHAT ARE THE BARRIERS AND CHALLENGES FOR RESEARCHERS IN USING PPIE?

- **Not knowing how to involve patients or the public**
- **Limited understanding of potential roles and levels of involvement**
- **Investment of time, effort and other resources**
- **Lack of organizational support and processes (coordination, policies)**
- **Special considerations for involving people with lived experience (individual and organizational readiness, support structures, policies etc.)**
- **Fear of doing it wrong and consequences of this**
- **Lack of buy-in as to the benefits of PPIE**
- **Backlash from colleagues / resistance to change**

1.2.2. Benefits and challenges for patients and the public

WHAT ARE THE BENEFITS FOR PATIENTS AND THE PUBLIC?

- **Intrinsic motivation: provide a valuable contribution to society and make an impact**
- **Space to share personal experiences and stories**
- **Influencing questions explored and researched**

- **Opportunity to develop their own voices and become empowered**
- **Gaining research skills and research language**
- **Enriching personal resumes and building networks**
- **Having their own experience recognized as expertise**
- **Building trust and rapport with researchers and other stakeholders (e.g., clinicians, policy makers)**
- **Receiving improved care through application of research findings**
- **Recognition of time (incentives, reimbursement, etc.)**

WHAT ARE THE BARRIERS AND CHALLENGES FOR PATIENTS AND THE PUBLIC?

- **Unfamiliarity with research and jargon**
- **Lack of confidence in research abilities and literacy**
- **Perception of being in a disadvantaged position on the research team**
- **Uncertainty of the potential roles and importance they could have**
- **Time and costs of involvement**
- **Negative previous experiences with research/academia or with the (healthcare) system**

1.2.3. Benefits and challenges for organizations

WHAT ARE THE BENEFITS FOR ORGANIZATIONS?

- **Demonstrate broader engagement, societal impact of research outputs**
- **Cultural change by including external knowledge, opportunity to reflect structures and team culture**
- **Innovative research, patient-centered research**
- **Address gaps in system: priority setting**
- **Informed decisions by patients/youths in residence (as staff)**
- **Involvement of patients and the public in hiring staff to help select people who will better meet the needs of the PPIE process/values**
- **Performance reviews: patients and the public in leadership roles, societal relevant topics addressed**
- **Fundraising and charity work if patients are involved in a meaningful role**

WHAT ARE THE BARRIERS AND CHALLENGES FOR ORGANIZATIONS?

- **Organizational policies (e.g., recruitment HR, board structures, categorization of employees, etc.)**
- **Lacking support structures (e.g., supervision, safety plan etc.)**
- **Hierarchies in research teams and lack of clarity regarding roles**
- **Cost investments (time and money)**
- **Lack of management buy-in**

1.3. Why PPIE at Ludwig Boltzmann Gesellschaft?

The Ludwig Boltzmann Gesellschaft (LBG) is a non-profit research organization that covers a variety of different fields (medicine, life sciences, humanities, social sciences, and cultural sciences) and specifically targets innovative research topics in Austria. Together with partners from academic and applied research, the LBG is currently running 19 research units and develops and tests new forms of collaboration between science and society (LBG Open Innovation in Science Center).

Previous projects established within the LBG Open Innovation in Science Center set out to experiment with new forms of stakeholder involvement in research in standalone projects, i.e. through crowdsourcing research questions as a priority setting exercise (Tell-us.online), developing innovative formats for conceptualizing research projects (Ideas Lab) and experimenting with new forms of governance (LBG Research Group), LBG Research Group DOT).

PPIE takes a more systematic approach by providing a 'How to' guide that can serve every researcher within the LBG research ecosystem across all disciplines. With this approach, we aim to step beyond previous implementation projects at the Open Innovation in Science Center (as described above) by co-creating the design and content of the project with multiple stakeholders. This PPIE 'How to' Guide for Researchers might be also helpful to other researchers applying PPIE in their research activities. We welcome other researchers to use this guide.

MISSION STATEMENT

LBG supports PPIE activities across the LBG research ecosystem. The PPIE mission of LBG aims to:

- **Create awareness about the importance and possible impact of including PPIE elements in research activities**
- **Provide consulting services and resources to support PPIE activities on an individual level and for Ludwig Boltzmann Institutes**
- **Support PPIE capacity building for LBG researchers and beyond**
- **Create a PPIE-friendly infrastructure to implement PPIE activities in research projects**

The co-created PPIE 'How to' guide and principles serve as a basis for future PPIE funding schemes at LBG and suggest assessment criteria for monitoring the implementation of PPIE in research projects.

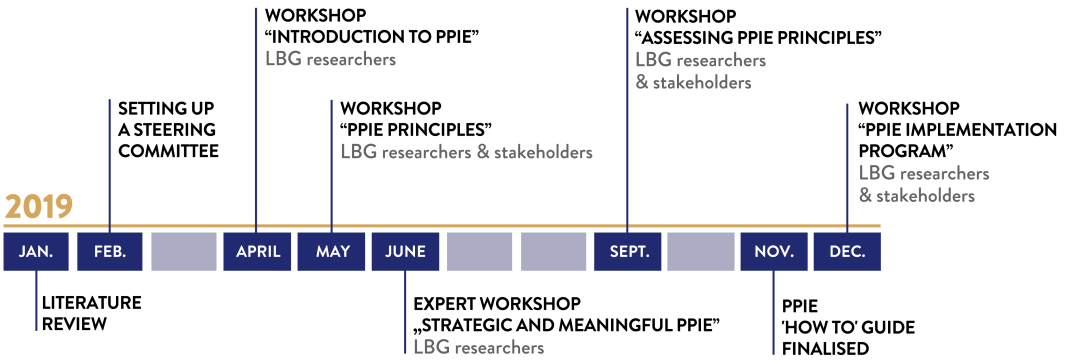
1.4. Co-creation process: A multi-stakeholder approach

According to our mission, LBG's aim is to prioritize public and patient involvement and engagement in research. The systematic implementation of PPIE activities started in the beginning of 2019 with a literature review and thorough co-creation process conducted by researchers from the LBG research ecosystem, patients, and the public. This process aimed to co-create a shared vision of future PPIE activities by considering several different perspectives.

A MULTI-STEP PROCESS (SEE FIG. 2):

- **Literature review: As a first step, we conducted a literature review on public and patient involvement and engagement. In total, we analyzed 63 articles published in academic journals and databases (e.g., PubMed, Web of Science) between 1969-2019; these informed the design of workshops and the information given.**
- **Setting up a Steering Committee: We invited all LBG Institutes to express interest in being part of the PPIE Steering Committee to co-create a PPIE 'How to' Guide and learn from existing PPIE activities and initiatives. Representatives from 11 LBG Institutes from various disciplines formed the PPIE Steering Committee.**
- **Co-creation workshops:**
  - In the first workshop, we introduced PPIE to LBG researchers covering disciplines ranging from the natural and life sciences to humanities and social sciences. In this workshop, expectations and needs were interactively co-developed and discussed from the perspective of researchers.
  - In a second workshop, we organized a stakeholder meeting that brought together researchers, patient advocates and citizens interested in research. The goal of the second workshop was to co-create principles and needs for future PPIE projects in a partnership between representatives of researchers and patients/the public.
  - In a third workshop, we invited the internationally recognized and highly experienced PPIE expert Ian Manion (Canada) to cover the big picture of PPIE importance on an organizational and strategic level. The workshop participants and interested members of the LBG Institutes attended the event.
  - In a fourth step, we conducted a workshop on defining assessment criteria of good PPIE practice together with representatives of youths, researchers, and patients/the public.
- **Co-writing the PPIE 'How to' Guide for Researchers: The PPIE Steering Committee and PPIE Core team was invited to co-write and give feedback on the structure and content of the PPIE 'How to' Guide.**

FIGURE 2: CO-CREATION PROCESS & TIMELINE



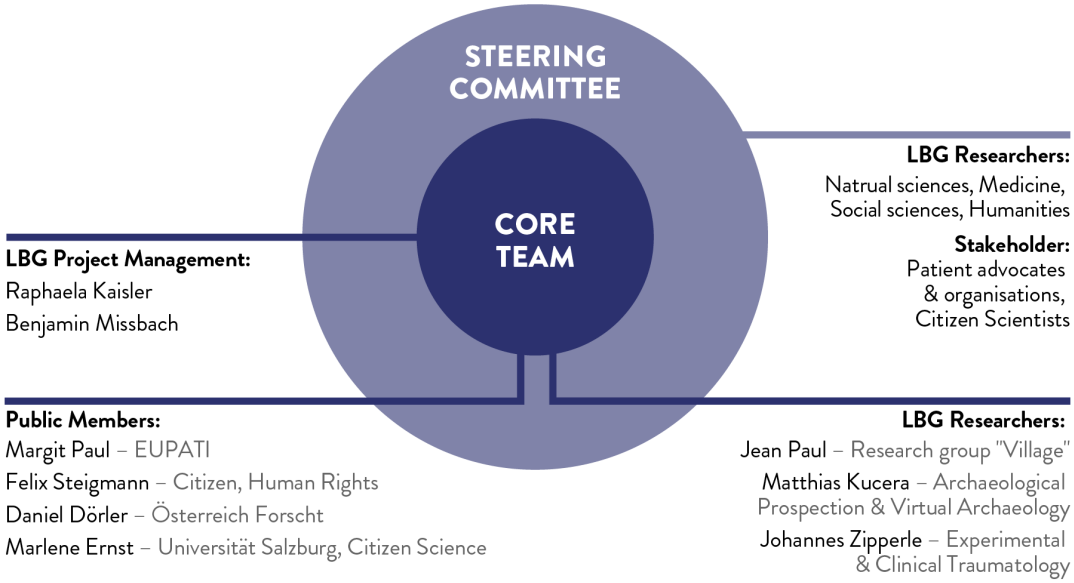
WHO WAS INVOLVED?

The management of the project was co-developed in the first and second workshops by recruiting stakeholders from research groups and the public to join the core team. The core team worked closely with the project management team from LBG. Typically through online collaboration, we strived to co-design workshops topics and activities to address PPIE principles across various disciplines. All other representatives and workshop participants were part of the PPIE Steering Committee (see Figure 3) and co-created the PPIE principles in the workshops.

Throughout the multi-step process, 24 different stakeholders ranging from young students to researchers from different fields were involved:

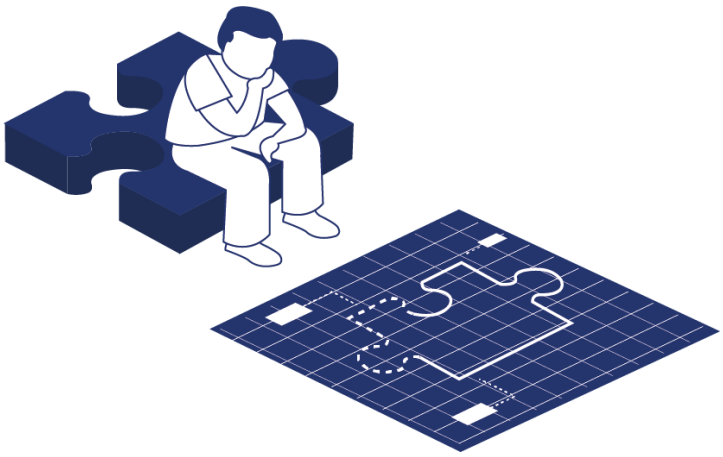
- **11 researchers from various fields and different levels of PPIE experience**
  - Natural & Life Sciences
  - Humanities
  - Artistic Research
  - Medicine
- **13 public members with different backgrounds**
  - Citizen Scientists
  - Patients
  - Patient Advocates
  - Undergraduate students
  - Youths (16-18 years)

FIGURE 3: PPIE PROJECT MANAGEMENT



2. PPIE principles for research projects

The following chapter describes the PPIE principles that have been co-created with multiple stakeholders, addressing two overarching themes to involve patients and the public throughout the research process: interactions between researchers and the public/patients, and governance that facilitates active involvement. It describes the necessary considerations to meaningfully involve patients and the public on individual, project-based, and organizational levels.



2.1. Interaction with patients and the public in research

Interaction between researchers, patients and the public in research is key for this user-centered approach and in actively and meaningfully involving the latter in specific research activities. By "patients," we mean people with a mental or physical illness or people with lived experience in a certain area, and by "the public," we mean people with a general interest in research or those people affected by research. The following PPIE principles and considerations have been identified regarding involving the public and patients in research.

2.1.1. General considerations

In general, patients and the public can be involved in every step of the research cycle (e.g., agenda setting, research design and methods, data collection, data analysis and interpretation, dissemination of results). Depending on your discipline or research area, involvement may be more or less reasonable in some of the steps (see chapter 3).

WHAT GENERAL PRINCIPLES SHOULD BE CONSIDERED WHEN INVOLVING PATIENTS AND THE PUBLIC IN THE RESEARCH CYCLE?

- **Consider offering involvement to patients and the public at different steps of the research process (one-time or multiple events of patient/public participation are possible)**
- **Check current research activity with respect to societal relevance**
- **Assign a mentor (i.e., researcher, person with lived experience) to guide patient/public work in the research team**
- **Involve patients and the public from the beginning (e.g., in the ideation phase, grant/funding application writing), before the project starts**
- **Provide mutual learning activities for researchers and patients/public and career development opportunities (e.g., talks, visit events and workshops, conferences, etc.)**
- **Make patient and public contributions to the project visible (i.e., authorship for patients/ public and/or consortium on publications)**
- **Make meetings as easy to get to as possible (e.g., in community center, patient organizations, etc.)**
- **Consider availability of patients/public if appropriate (e.g., late afternoon, weekends, public holidays)**
- **Focus on societal relevant outcomes for patients/public**
- **Use CC licensing for contributions (https://creativecommons.org/licenses/)**
- **Co-write grant/funding applications and (peer-reviewed) publications, folders for patients and the public (ensure official co-authorship)**

Organizations may consider negotiating a "research leave" with employers in order to enable patients and the public to take part in research.

2.1.2. Interactions between researchers and the public/patients

Involvement of patients and the public should consider:

- **Open and honest communication (act on a level playing field)**
  - Provide informational documents, informational events
  - Contact details and clarify availability
  - Nominate a representative in case of absence/leave
  - Use informal language instead of addressing each other with academic titles
- **Build trust (e.g., investing time on getting to know each other)**
  - Stay in regular contact with patients/the public
  - Value time commitments and offer 'work-friendly' appointments
  - Consider choosing a neutral location for a first meeting or contact
- **Flat hierarchies among researchers and patients/public members (e.g., informal language, no academic titles)**
- **Comprehend and value each other's expertise by providing clear expectations (also regarding reimbursement of time) and job descriptions**
- **Avoid the use of (academic/research/medical) jargon to describe the research project and results (especially when disseminated to the wider public)**
  - Avoid abbreviations
  - Consider language barriers
- **Continuous and transparent communication throughout and after the project**
  - e.g., regular in person meetings between researchers and patient/public members, regular project updates, annual conferences with stakeholders, newsletters, informal and official events for stakeholders, social media, etc.
  - make project updates and decision visible for the project team and the public (e.g., platform, website)
  - celebrate the project kick-off and the end of the project, big milestones and achievements
  - foster peer to peer exchange among the patients/public members
- **Offer different communication strategies in order to cater to individual expectations and needs**
- **Address potential conflicts of interest (e.g., funding, cooperation partners)**
- **Describe and agree on their roles in different phases of the project (job description) - adapt role during cooperation if necessary, opt-out/in options for**

different tasks

- **Always inform patients/the public about the adoption of research activities based on their feedback (demonstrate value of public/patient input and communicate ways in which feedback has been incorporated into research processes)**

2.1.3. Recruiting patients and public members

Identify knowledge gaps and experience that is needed in the project and recruit a suitable number of patients (broader network) in order to add different perspectives to the project if needed. The following strategies may be used to find patients and members of the public to recruit for projects.

RECRUITMENT STRATEGIES

- **Local societies, associations (e.g., hobby historians), community/youth centers**
- **Patient support groups**
- **Patient organizations**
- **Patients recruiting other patients**
- **Other research organizations and existing networks from previous projects**
- **News, media, special interest publications**
- **Networks and platforms (snowball effect)**
- **Roadshows, science festivals and fairs (i.e., Lange Nacht der Forschung, Forschungsfest, European Researcher's Night)**
- **Platforms for patients, forums and online hubs (i.e., patent innovation platforms)**
- **Social media, influencer relations (i.e., Twitter, Instagram, Facebook)**
- **Existing citizen science platforms (i.e., Österreich *forscht*)**

WHAT SHOULD BE CONSIDERED IN RECRUITMENT?

- **Define target group (potential people to involve)**
- **Consider relevant demographics (e.g., age, patients with the same context, geography, previous experiences)**
- **Never recruit just a single individual for a task or in the project**
- **Tactics and approaches differ by group**
- **If recruiting patients: think about their stage of recovery**
- **Think about diversity and equity**
- **Think about individual existing skills matrices**
- **Invest in support and orientation processes**

2.2. Governance that facilitates active involvement

Meaningful Patient and Public Involvement and Engagement follows a systematic approach, implementing involvement activities in all phases of the research cycle, not as single instances of involvement. It can help to "build the new relationships and shifts of power and resources required for 21st century governance, and develop individuals' skills, confidence, ambition and vision." (INVOLVE, People and Participation, 2005)

In order to implement successful PPIE activities, organizations need to provide appropriate organizational structures to enable meaningful involvement in research. Organizations need to be structured in a way that maintains long-term direction of involvement activities and provides adequate space for experimentation. The organization's and researchers' readiness for involvement activities is essential for the implementation of PPIE activities in research. To enable patients and the public to get actively involved in research, the following governance structure should be established in each project.

2.2.1. Project oversight

IN THE INVOLVEMENT OF PATIENTS AND THE PUBLIC, CONSIDER:

- **PROJECT STEERING BOARD (PSB):** The PSB should include at least two patients or people with lived experience or members of the public. The board meets regularly (recommended twice a year) and makes decisions or advises the research team about the planned project activities and cooperation (see chapter 4.1 for details)
- **STUDY ADVISORY GROUP (SAG):** The SAG consists of 3-6 patients or members of the public with lived experience on a specific topic needed in the project. The SAG consults and advises the project team on a regular basis (i.e., once a month as appropriate and feasible for the individuals and the research project). The SAG should be established before the project starts. Each project establishes their own SAG. Similar research projects might share the same SAG, depending on their availability. The SAG may recruit new members and exchange members if needed (see chapter 4.1 for details).
    - **SAG Speaker:** One or two persons could be nominated to represent the SAG in meetings with the researchers and others. This person might be part of the research team as a co-researchers/research fellow and act as a role model for other members of the SAG.
- **SAFETY PLAN:** Working with patients or people with lived experience requires an appropriate safety plan (depending on the topic and research area), for example, for physical or mental wellbeing, a clinician should be on call in case of emergency and should be present at big events.
- **SUPERVISION:** External supervision should be provided for patients and the public on demand and on a regular basis (e.g., every 8 weeks). Supervision should be provided by an external coach, supervisor or psychotherapist. The PPIE Officer

may coordinate this action (see chapter 2.3.4)

2.2.2. Budget

IN THE INVOLVEMENT OF PATIENTS AND THE PUBLIC, CONSIDER:

- **Allocating budget for PPIE activities in the funding application**
- **Honoring and valuing expertise by asking what would be beneficial for the patients and the public (monetary and non-monetary)**
- **Reimbursing travel costs and cover expenses**
- **Reimbursing childcare if needed**

2.2.3. Training for researchers and patients/the public

A "one-size-fits-all" training approach may not be useful for PPIE projects. Instead, individual training formats, content design and the process need to be co-developed together with the research team and participating patients/members of the public. Generally speaking, training should be tailor-made, modular, needs-oriented and co-creative.

Consider co-leading the training with an experienced patient or a member of the public interested in research. Patient or public "champions" may also provide support in recruitment and could act as an entry point for new members. The training might be outsourced depending on the available facilitation skills, including a person with lived experience/from the public.

IN DESIGNING TRAININGS FOR/WITH PATIENTS AND THE PUBLIC, CONSIDER:

- **Customize the training with an experienced patient or member of the public for the specific patient and public group in the project**
- **Provide a comprehensive training at the start, including an introduction to the research project (or planned project) and research process, and training for specific tasks if necessary**
- **Agree on a communication structure within the project team**
- **Address conflicts of interests, concrete next steps and use of data in the project**

TRAINING EVALUATION TOOLBOX

In order to assess the training success, all training efforts need evaluation. For this, an "Evaluation Toolbox" can serve as the basis for evaluating the success of implemented trainings. An "Evaluation Toolbox" should consist of both quantitative measures (e.g., questionnaires) and qualitative measures (e.g., group feedback). The "Evaluation Toolbox" should be accompanied by a handbook of good practices and a "How to" guide in order to create a thorough, useful evaluation.

IF TRAINING IS PROVIDED BY RESEARCHERS, THEY SHOULD:

- **Be open-minded, modest and respectful**

- **Value different experiences and perspectives**
- **Communicate transparently and without jargon**

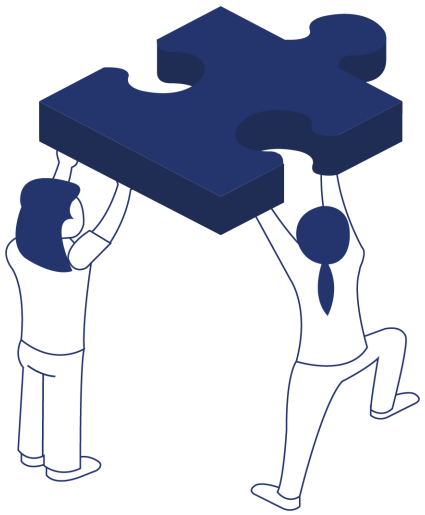
2.3.4. Support structures

In order to enable patients and the public to be involved in research, support structures must be provided both on an individual and organizational level:

- **PATIENT OMBUDSMAN: The Patient Ombudsman is a neutral contact person that can be addressed in the event of complaints and concerns. He or she is an independent, external person. He or she investigates complaints from individuals and organizations about maladministration by the research organization. Maladministration is present if an institution or researcher fails to act in accordance with the Declaration of Helsinki or the principles of PPIE or violates human rights. Maladministration can include administrative irregularities, unfairness, discrimination or the abuse of power, such as in the management of PPIE funds, procurement, or recruitment policies. It also includes the failure to reply, or refusal to grant access or unnecessary delay in granting access to information in the public interest. Complainants do not have to have been affected by the issue(s) complained about.**
  - The Patient Ombudsman should be available in person and via a hotline if complaints occur.
  - The ombudsman may support mediation between the patients/the public and researchers and provides guidelines for complaints and concerns.
- **PPIE OFFICER:** The PPIE Officer coordinates PPIE activities at an organizational level and has an oversight of all PPIE activities in the organization. The PPIE officer acts as a consultant or advisor. The PPIE officer may be approached by researchers and interested patients and members of the public.
- **NETWORK MEETINGS:** The PPIE Officer organizes regular network meetings and learning events to foster mutual exchange among researchers, patients and members of the public participating in PPIE activities throughout the organization.
- **CHILD CARE:** It is important to provide a child-friendly work environment by setting up childcare or reimbursing participants for childcare, so patients and the public can take part in research activities. This action may be coordinated by the PPIE officer.
- **PUBLIC PLATFORM:** This introduces PPIE projects and activities for the wider public. The platform should inform and connect different stakeholders, interested public members and patients regarding available research projects and their opportunities to be involved and matchmaking with researchers and research projects. The platform might be provided by the organization or in synergy with existing platforms.

3. Assessing my PPIE activities

The following chapter provides tools to prepare for and assess your PPIE activities in research projects. It describes general considerations for implementing PPIE principles and activities before, at the beginning of, during and after research projects. We provide a step-by-step checklist and self-assessment tool to monitor your PPIE activities.



3.1. Preparing for PPIE activities

Every PPIE project is different. Not only can the content of the project vary, but researchers' PPIE skill levels and the skill levels of patients and/or the public can vary as well. This should be kept in mind in any training activity and effort. For this reason, a tailor-made approach is necessary. One option is a step-by-step approach:

- **Step #1: Co-developing the PPIE project**
  - Is my research project a PPIE project at all?
  - What changes in the project are necessary for a PPIE project and what kind of training do researchers need in order to fulfill this goal?
- **Step #2: Training for the target group**
  - What is the main target group of my project?
  - Who do we want to involve - what are inclusion and exclusion criteria for training (e.g. basic IT skill level)?
  - What are the main needs of the target group?
- **Step #3: Define the organization & administration criteria**
  - How do we want to work together during training?
  - How should roles and responsibilities be clarified?
  - How can we communicate and develop a timeline that is feasible and practicable?
  - How should the training to be documented and shared?
  - What are the main training goals in general and for each training session?
  - What are the expected outcomes for all involved groups?
- **Step #4: Co-Development of training content & process design**
  - Will training be offered for researchers and the public together or separately?
  - Is there a common training module that is useful for working together (e.g., social skills and/or communication)?

A portfolio of different training modules is necessary in order to cover a wide range of training needs. With this approach, trainings will be based on formats that have already been developed and can be developed further. Each step of the training should reflect a co-creative approach. This includes shared leadership and steering, co-creative decision-making, co-defining common goals and co-selection of the forms and scope of evaluation.

3.2. Checklist for my PPIE activities

The checklist describes the major steps of PPIE activities before, in the beginning of, during and after the research project. This list should support you in preparing to involve patients and the public in your research project.

BEFORE THE RESEARCH PROJECTS STARTS:

- ☐ **Clarify the organization's management buy-in and eligibility of costs for funders**
- ☐ **Clarify researchers' motivation for including patients/the public before approaching organizations/individuals**
- ☐ **Clarify the role and expectations of patients/the public**
- ☐ **Job description for patients/public: tasks and responsibilities, terms of reference**
- ☐ **Training for members of the research team that will be in direct contact with patients/the public**
- ☐ **Guideline for raising complaints and concerns (provided by the 'Ombudsman')**
- ☐ **Academic credit: what to contribute and how to receive authorship**
- ☐ **Safety plan: emotional, psychological and physical safety plan developed and set up**
- ☐ **Evaluation plan and assessment of activities (may be co-created with patients/the public)**
- ☐ **Recruitment of patients/the public: define search strategy for patients/public and how many people are needed to support the project**
- ☐ **Establish Study Advisory Group: e.g., for consultation on agenda setting before the project starts**

BEGINNING OF THE RESEARCH PROJECT:

- ☐ **Training patients/the public (research project and research process)**
- ☐ **Clear the legalities with patients/the public (e.g. usage of data)**
- ☐ **Align your description of the role and expectations with patients/the public and adapt if necessary**
- ☐ **Set up monetary and non-monetary honorarium (agreement or subcontracting)**
- ☐ **Check societal relevance of your research plan with patients/the public**

- [ ] **Assign an experienced and trained 'mentor' to serve as a point of contact with patients/the public**
- [ ] **Establish the Project Steering Board: experts in the field and patients/the public**
- [ ] **Set up supervision for patients/the public (PPIE Officer)**

DURING THE RESEARCH PROJECT:

- [ ] **Regular updates on project progress, results and plans**
- [ ] **Meet regularly with the Study Advisory Group for feedback and consultation on current activities**
- [ ] **Meet annually with the Project Steering Board to discuss progress**
- [ ] **Co-design and co-analyze elements of the research**
- [ ] **Co-write (scientific) publications and media coverage**
- [ ] **Co-lead (scientific) presentations**
- [ ] **Co-convene conferences and events**
- [ ] **Create learning opportunities and further career development (e.g., experts on patient boards)**

AFTER THE RESEARCH PROJECT:

- [ ] **Updates and dissemination of research outcomes and future opportunities to be involved**
- [ ] **Co-lead in conference presentations and events**
- [ ] **Co-write funding applications for future projects**
- [ ] **Updates and dissemination of research outcomes and future opportunities to be involved**
- [ ] **Co-lead in conference presentations and events**
- [ ] **Co-write funding applications for future projects**

3.2. PPIE self-assessment tool

Assess your PPIE activities and level of involvement of patients and the public in research based on the following tables. You may use the self-assessment tool to evaluate your performance before, during and after the research projects. Please be honest, it is an opportunity for improvement!

TABLE 1: CURRENT STATE OF PATIENT/ THE PUBLIC INVOLVEMENT – RESEARCHERS AND STUDY LEVEL

(Modified from Ian Manion)

Research cycle activity	LEVEL OF INVOLVMENT				
	never	rarely	occasionally	frequently	always
Identifying the relevant research question					
Developing the research design and strategy					
Choosing research methods and measures					
Collecting and analyzing research data					
Interpreting research data					
Participating in knowledge translation and dissemination activities					
Receiving academic credit (e.g. publications)					

TABLE 2: CURRENT LEVEL OF INVOLVEMENT – ORGANIZATIONAL LEVEL

(Modified from Ian Manion)

Level of involvement	FREQUENCY OF PRACTICE				
	never	rarely	occasionally	frequently	always
Inform					
Consult					
Involve					
Collaborate					
Lead					

LEGEND:

Inform: Patients/the public are informed about the different aspects of the study (press, study descriptions) in lay terms. Patients/the public participate in the study as subjects only.

Consult: Patients/the public shape the study through consultation (e.g., interviews, focus groups, public forums)

Involve: Patients/the public are actively involved in specific research activities.

Collaborate: Patients/the public are active members of the research team (co-researchers).

Lead: Patients/the public drive the research study, own the process and are self-organized.

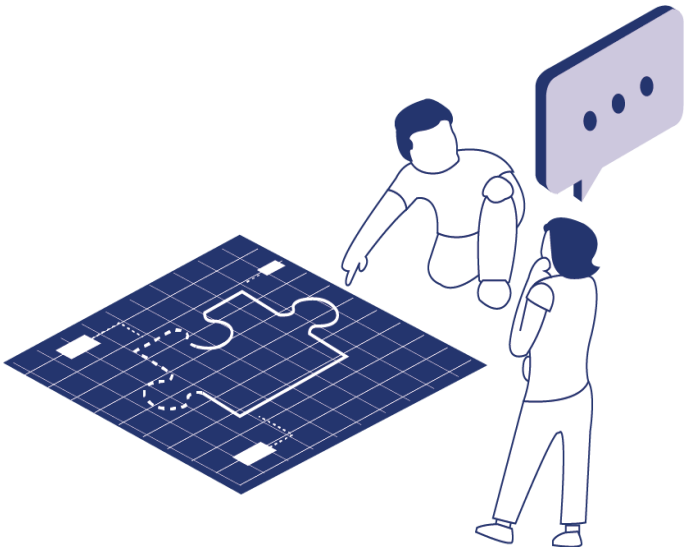
TABLE 3: CURRENT STATE OF PATIENT/ PUBLIC INVOLVEMENT – ORGANIZATIONAL LEVEL

(Modified from Ian Manion)

Organizational activity	FREQUENCY OF PRACTICE				
	never	rarely	occasionally	frequently	always
Project steering, governance structure					
Policies and guidelines					
Setting the research agenda					
As staff members					
Hiring staff					
Performance reviews					
Allocation of resources (i.e., budget, personnel)					
Communications/ public relations					
Fundraising					

4. Monitoring and assessment of PPIE activities

Successful PPIE activities and projects in research need a structured method for monitoring the quality and implementation of PPIE activities. The following chapter describes suggestions on who to involve in the monitoring process and how to assess these PPIE activities.



4.1. Monitoring of PPIE activities

The monitoring of PPIE activities aims to ensure high quality standards of implementing PPIE activities in research projects. It may be used as a regular self-assessement of actvities or assessment process of funded PPIE projects.

4.1.1. Who monitors PPIE activities?

The monitoring team consists of one public/patient representative from the Study Advisory Group, the PPIE Officer coordinating public invovlement activities and the principal investigator of the research project.

- **STUDY ADVISORY GROUP (SAG) Speaker:** The SAG Speaker is part of the Study Advisory Group and acts on behalf of the group. He or she is the contact point for the PPIE Officer and research team. The group elects the speaker for a term of 6 months. After this period, the group will elect a new speaker (shared leadership) for the next 6 months. The SAG speaker is responsible for:
  - Coordinating and facilitating the SAG activities
  - Providing aligned feedback to the research team
  - Acting as a contact point to the PPIE Officer and Patient Ombudsman if necessary
  - Providing information for monitoring meetings
- **PPIE OFFICER:** The PPIE Officer is part of the organization to support researchers and helping interested patients and the public to be involved in research activities. He or she offers tailor-made training concepts for research units and individual consultation for researchers. The PPIE Officer is responsible for co-developing funding schemes and quality criteria to monitor PPIE activities. The PPIE Officer is responsible for:
  - Being the contact person for the SAG speaker
  - Offering individual consultation for project applications
  - Advising interested researchers on how to do PPIE activities and allocate budgets
  - Coordinating and collecting information from all PPIE projects and activities
  - Coordinating exchanges and learning events for PPIE project members
  - Providing infrastructure to support PPIE activities (e.g., public forums, platforms, etc.)
  - Updating the PPIE 'how to' guide for researchers and other guidelines
  - Promoting current projects in public (e.g., website, social media, etc.)
- **PRINICPAL INVESTIGATOR: The Principal Investigator leads the research team and the research program/activities. He or she acts as a contact point for the PPIE Officer and the SAG Speaker. The Principal Investigator is responsible for:**

- Providing opportunities for patients/public to be involved in research activities
- Providing funding to honor patient/public members for their time
- Providing information for monitoring meetings

4.1.2. 'How to' monitor PPIE activities

The Study Advisory Group (SAG) Speaker, PPIE Officer and the Principal Investigator jointly monitor the implementation of PPIE activities in the research project. In regular meetings (e.g., we suggest 2-4x per year and on demand), the team evaluates past and current PPIE activities and discusses further steps for implementation and improvement. They may consult with the Patient Ombudsman regarding conflicts between the parties and/or individual complaints, should they occur. The team will document their results, give recommendations for promoting the implementation of future PPIE activities and inform their colleagues about the outcomes.

MONITORING TEAM

- **Study Advisory Group (SAG) Speaker (patient/member of the public)**
- **PPIE Officer (from the organization)**
- **Principal Investigator (researcher)**

THE MONITORING SHOULD INCLUDE: 2-4X PER YEAR

- **Self-assessment: to ensure the quality of PPIE activities**
  - Reflect on current activities regarding their 'level of involvement' and 'frequency of practice' (Table 1-3, see chapter 3.2)
  - Reflect on each project phase (before, in the beginning, during and after the project, 'Checklist for my PPIE activities,' see chapter 3.1.)
- **Check PPIE expenditures / budget**
- **Recommendation for future activities: to improve and successfully implement planned activities**
- **Report (documentation) and action plan: to achieve these goals**

4.2. Assessement of PPIE activities

The assessment of PPIE activities aims to measure the quality of involvement in research projects. The assessment of public involvement activities should include views from all stakeholder groups that participated in the activities (researchers, patients, public members). In addition, PPIE principles should be reflected in all phases and applied where appropriate – from applying for research funding to assessing the quality of PPIE projects.

FUNDING APPLICATION

Funding opportunities including PPIE activities should address following additional PPIE items in the application:

- **Abstract using plain language**
- **Expected societal impact of PPIE on research (e.g., rational and benefit of PPIE in research projects)**
- **Implementation of PPIE in research projects**
  - Description of participatory methods used for PPIE activities and why
  - Description of planned tasks and contributions of all stakeholder groups (researchers, patients, public members)
  - Description of reward systems for citizen's contribution (e.g., monetary or non-monetary reward, such as vouchers, research training, co-authorship etc.)
  - Inclusion or continuation of trust building activities between researchers and citzens

FUNDING CRITERIA

The funding agency should conduct a formal check before assessing the applications by an external jury to ensure the inclusion of PPIE in research projects. The funding agency should aim at involving the patients and the public at the level "involve" at least in one step of the research cycle.

- **Level of involvement (participate, consult, involve, collaborate, lead)**
- **Study level - research cycle (research question, research design, data collection, data analysis, dissemination, project steering)**

Funding criteria should include following PPIE principles in order to assess the quality of involvement:

- **Impact: added value of project for scientific and public community**
- **Implementation of PPIE activity: e.g., participatory method, diversity of team, frequency of involvement, etc.**
- **Feasibility of PPIE project with planned budget and timeframe**

ASSESSMENT OF QUALITY

The following dimensions should address among others the **'quality of invovlement'** of PPIE activities applied in research projects. These dimensions should be refelecetd by all stakeholder groups (researchers, patients, public members) involved in the PPIE activities.

- **Implementation of PPIE activity**
  - Satisfaction with the PPIE activities (e.g., my role, my expectations, personal aim reached)
  - Communication (e.g., atmosphere in the team, frequency and formats, use of easy langauge, support by research team, acting on a playing level field)
  - Connectedness to others (e.g., in the project team, among peers, to other stakeholders)
  - Gain of knowledge from the PPIE activity and individual learnings (e.g., raise of curiosity in the research area, participation in new educational programme in this area)
  - Project outcome - use for all stakeholders
  - Sustainability (e.g., recommend and communicate project to others, gain new contacts and network, informal exchange, co-lead of peer training)
- **Feasibilty of the PPIE activity**
  - Resources (e.g., personal and travel time spent apporiate to outcome, cover of expenditures, offer of child care if needed, training material provided, diversity of team)
  - Track change over time (e.g., fluctuations of team/peers, change if motivation and enthusiasm during project duration, change of own values and perspectives during project duration)
- **Societal impact of PPIE activity**
  - Impact of outcomes for the scientific and public community
  - Reflection on new insights gained and individual initiatives started (e.g., additional outcomes other than expected through PPIE activtiy, new research question)

5. Resources

In this chapter, we provide additional PPIE resources such as key articles and short summaries, links to literature databases, other PPIE guides and 'good practice' examples, case studies and important journals and blogs in this field.

5.1. Literature

Arnstein, S. R. (1969). A ladder of citizen participation. Journal of the American Institute of Planners, 35(4), 216-224.http://tiny.cc/Arnstein1969

Short Summary:

In this classic paper, Arnstein describes the different levels of participation in science and society. In this work, Arnstein makes an attempt to discuss the typology of citizen's participation from her experiences with federal social programs, including urban renewal, anti-poverty, and Model Cities. Based on this, Arnstein developed levels of citizen participation arranged as rungs on a ladder, with each rung corresponding to the amount of "citizen control" within the process of determining a program or policy.

Deane, K., Delbecque, L., Gorbenko, O., Hamoir, A. M., Hoos, A., Nafria, B., et al. & Brooke, N. (2019). Co-creation of patient engagement quality guidance for medicines development: an international multistakeholder initiative. Bmj Innovations, bmjinnov-2018. http://tiny.cc/hge49y

Short summary:

Meaningful patient engagement (PE) can enhance the development of medicines. However, the current PE landscape is fragmented and lacks comprehensive guidance. The authors systematically searched for PE initiatives. Multistakeholder groups integrated these with their own PE expertise to co-create a draft of PE Quality Guidance which was evaluated by public consultation. Projects exemplifying good PE practice were identified and assessed against the PE Quality Criteria to create a Book of Good Practices. Seventy-six participants from 51 organizations participated in nine multistakeholder meetings (2016–2018). The co-created INVOLVE guidelines provided the main framework for PE Quality Guidance and were enriched with the analysis of the PE initiatives and the PE expertise of stakeholders. Seven key PE Quality Criteria were identified. The PE Quality Guidance was generally agreed to be useful for achieving quality PE in practice, understandable, easy to use, and comprehensive.

Greenhalgh, T., Hinton, L., Finlay, T., Macfarlane, A., Fahy, N., Clyde, B., & Chant, A. (2019). Frameworks for supporting patient and public involvement in research: Systematic review and co-design pilot. Health Expectations. shorturl.at/bqR15

Short summary:

There are numerous frameworks for supporting, evaluating and reporting patient and public involvement in research. The literature is diverse and theoretically heterogeneous. This article aims to identify and synthesize published frameworks, consider whether and how these have been used, and apply design principles to improve usability. The plethora of frameworks combined with evidence of limited transferability suggests that a single,

off-the-shelf framework may be less useful than a menu of evidence-based resources which stakeholders can use to co-design their own frameworks.

Kaisler, R. E. & Missbach, B. 2020. Co-creating a patient and public involvement and engagement 'how to' guide for researchers. Research Involvement and Engagement (2020) 6:32. https://doi.org/10.1186/s40900-020-00208-3

Short summary:

Research should benefit society at large. Involving citizens those who are affected by research may not only increase the quality, but can also push research towards generating greater societal benefits and relevant outcomes for citizens. Including citizens in research also has ethical implications, which necessitate structured guidance on 'how to' meaningfully involve them. In our project, we invited a multi-stakeholder group consisting of researchers from multiple disciplines, citizen scientists, youth and patient advocates to co-create a guide on 'how to' meaningfully involve citizens in research. In five consecutive workshops, we discussed how the characteristics of interactions between researchers and citizens (e.g., building trustful relationships and communication) and what a possible project steering structure enabling meaningful involvement in research could look like. As a result of these workshops, the 'How to' Guide for Researchers was developed to support the implementation of 'Patient and Public Involvement and Engagement' (PPIE) activities and informed a PPIE Implementation Programme funding public involvement activities in Austria.

Slattery, P., Saeri, A. K., & Bragge, P. (2019). Research co-design in health: a rapid review. Open Science Framework. https://doi.org/10.31219/osf.io/q5tyk

Short summary:

In this rapid review, a systematic approach to research papers covering co-design processes along the research cycle is depicted. Results show that research co-design appears to be widely used but seldom described or evaluated in detail. Though it has rarely been tested empirically or experimentally, existing research suggests that it can benefit researchers, practitioners, research processes and research outcomes. Realizing the potential of research co-design may require the development of clearer and more consistent terminology, better reporting of the activities involved, and better evaluation.

Staley, K. (2015). 'Is it worth doing?' Measuring the impact of patient and public involvement in research. Research involvement and engagement, 1(1), 6. http://tiny.cc/staley2015

Short summary:

In recent years, there has been considerable interest in finding out what difference patient and public involvement makes in research projects. Researchers gain an understanding of involvement through their direct experience of working with patients and the public. This

is ‘knowledge in context’ or ‘insight’ gained in the same way that patients gain expertise through their direct experience of a health condition. This means that detailed accounts of involvement from researchers already provide valuable learning to others, in the same way that patients’ insights help shape research. However, the impact of involvement will always be somewhat unpredictable, because at the start of any project, researchers ‘don’t know what they don’t know’—they do not know precisely what problems they might anticipate until the patients/members of the public tell them.

Staniszewska, S., Brett, J., Simera, I., Seers, K., Mockford, C., Goodlad, S. et al. & Tysall, C. (2017) GRIPP2 reporting checklists: tools to improve reporting of patient and public involvement in research, BMJ 2017; 358 :j3453. https://doi.org/10.1136/bmj.j3453

Short summary:

GRIPP2 (short form and long form) is the first international guidance for reporting of patient and public involvement in health and social care research. This paper describes the development of the GRIPP2 reporting checklists, which aim to improve the quality, transparency, and consistency of the international patient and public involvement (PPI) evidence base, to ensure that PPI practice is based on the best evidence.

5.2. Guides and databases

LITERATURE DATABASE

- **Patient-Centered Outcomes Research Institute (PCORI) Literature Database https://www.pcori.org/literature/engagement-literature**
- **NICE - National Institute for Health and Care Excellence Literature Database https://www.evidence.nhs.uk/search?q=patient+and+public+engagement**
- **NIHR INVOLVE evidence library**

  https://www.invo.org.uk/resource-centre/libraries/evidence-library/

OTHER PPIE GUIDES

- **NIHR INVOLVE Briefing Notes for Researchers http://tiny.cc/BriefingNotes**
- **NIHR INVOLVE: Guidance on co-producing a research project** https://www.invo.org.uk/wp-content/uploads/2019/04/Copro_Guidance_Feb19.pdf
- **NHS: Public Engagement - a practical guide** https://senseaboutscience.org/wp-content/uploads/2017/11/Public-engagement-a-practical-guide.pdf
- **How to partner with young people, Orygen, Australia** https://www.orygen.org.au/About/Youth Engagement/Resources/YouthPartnershipToolkit.aspx

PPIE CASE STUDIES

- **NIHR INVOLVE: Case Studies https://www.invo.org.uk/resource-for-researchers-case-studies/**
- **NHS Impact of Patient, Carer and Public Involvement in Cancer Research http://www.ncri.org.uk/wp-content/uploads/2013/07/2012-NCRI-PPI-report.pdf**
- **Gordon, J., Franklin, S., & Eltringham, S. A. (2018). Service user reflections on the impact of involvement in research. Research involvement and engagement, 4(1).**

INTERESTING BLOGS & JOURNALS

- **https://www.pcori.org/establishing-definition-patient-centered-outcomes-research**
- **https://blogs.bmj.com/bmj/category/patient-perspectives/**
- **https://simondenegri.com/**
- **https://oxfordbrc.nihr.ac.uk/blog/**
- **https://patientfocusedmedicine.org/blog/**
- **https://kristinastaley.com/**

5.3. Case Study: LBG Mental Health Research Groups

The LBG Open Innovation in Science Center (www.ois.lbg.ac.at) is an integral part of the Ludwig Boltzmann Gesellschaft (LBG), which operates 19 research institutes with about 550 employees. The LBG Open Innovation in Science Center investigates and experiments with open research practices. It generates and disseminates insights into the use of Open Innovation principles and methods along the entire research process. The goal is to establish and provide knowledge about the qualified implementation of Open Innovation in Science (OIS):

- **Re-thinking and re-designing scientific research through a shift towards making research more open, collaborative, and interdisciplinary**
- **Developing and testing new methods for integrating Open Innovation principles into scientific research and innovation processes**
- **Establishing new forms of stakeholder interactions and collaborations within science**

The OIS initiative has led to various outcomes, such as:

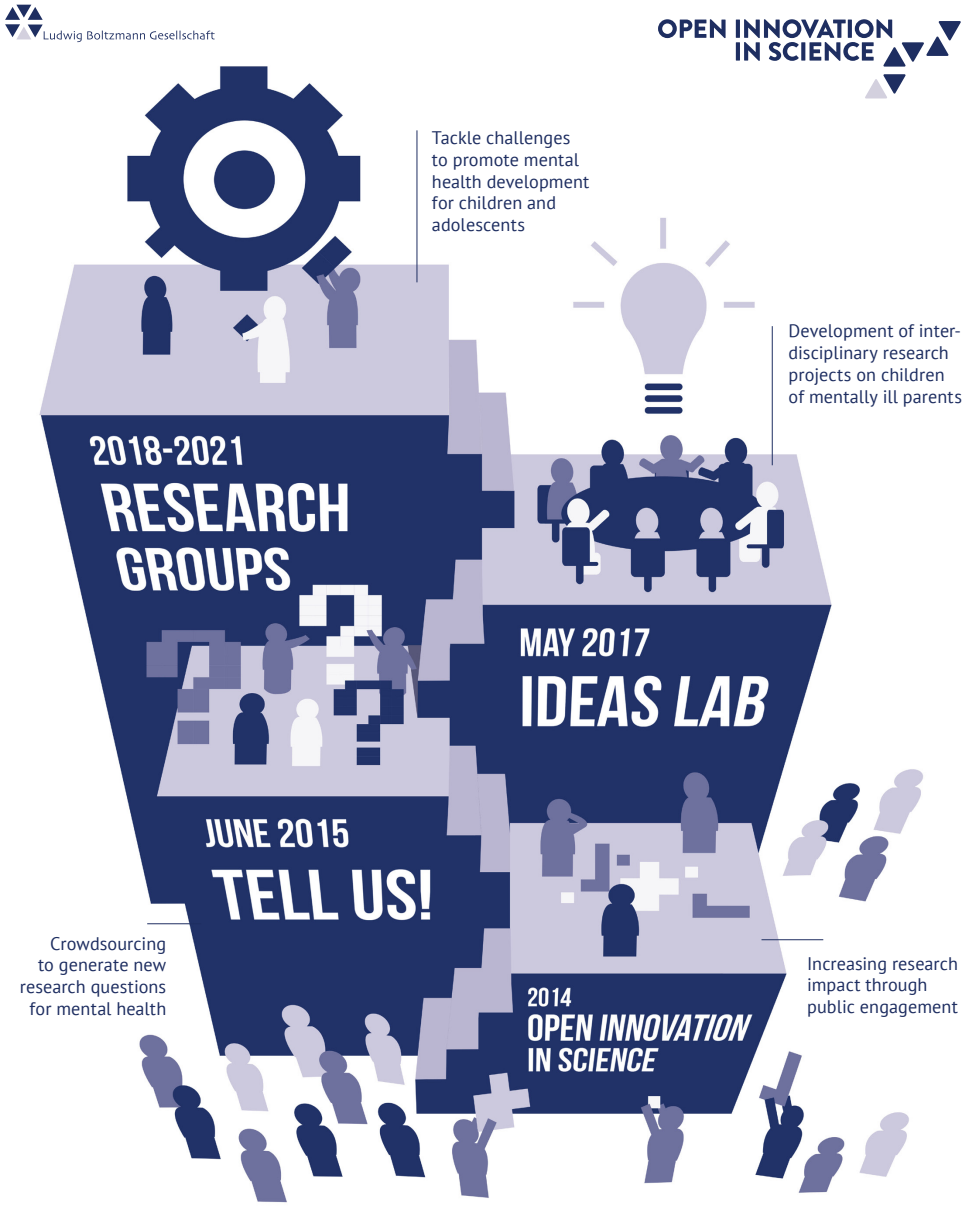
- **New ways of learning about and experimenting with Open Innovation in Science (LOIS - Lab for Open Innovation in Science)**
- **New forms of generating research questions (CRIS - Crowdsourcing Research Questions in Science) for basic and applied sciences**
- **New ways of conceptualizing research projects and forming interdisciplinary research groups (Ideas Lab)**
- **Introducing new governance structures (Advisory Board including people with lived experience and competence group – experts by experience consulting and co-creating research projects)**

MAKING AN IMPACT THROUGH PUBLIC INVOLVEMENT

In an example of applying OIS principles in the field of mental health, the LBG involved the public and patients in several phases of the research cycle. LBG took a novel approach towards creating interdisciplinary Research Groups on Mental Health. “Tell Us!” was Europe’s first crowdsourcing project to generate research questions in collaboration with patients, family members and health care professionals. Out of 400 high-quality contributions, the topic “Children of mentally ill parents” emerged as highly societal relevant. LBG announced a research call representing an interactive workshop, Ideas Lab, to bring together 30 researchers for a five-day event, during which researchers were specifically encouraged to think out of the box and dissolve disciplinary boundaries. Novel evaluation criteria focusing on interdisciplinary and involvement were applied to find innovative solutions to existing challenges by co-creating research with the public. Two Research Groups were funded with a budget of EUR 6 million (2018-2021). To ensure public engagement and interdisciplinary research throughout the research process, the Research Groups are embedded in a dynamic network and supported by a Research Group and Relationship Manager to foster community engagement and collective impact. The

Research Groups operate with a new governance structure, and people with lived experience are represented in the Advisory Board and on Study Advisory Group, called the Competence Group.

FIGURE 4. TIMELINE OF THE NOVEL APPROACH TO FORM RESEARCH GROUPS ON MENTAL HEALTH WITH AN OPEN INNOVATION METHODOLOGY.



5.4. PPIE Implementation Program

Based on this PPIE 'How to' Guide for Researchers, the LBG Open Innvovation in Science Center established a 'public involvement' focus aiming to support researchers to implement PPIE actvities in their research projects. As part of the involvement focus, the PPIE Implementation Program (https://ppie.lbg.ac.at) funds and facilitates PPIE activities in research in the area of 'active involvement' across different phases of the research cycle (from setting the agenda to interpreting data) and its governance.

FUNDING

In a first pilot call, it supports public involvement activities with EUR 20.000 up to EUR 60.000 over a project period of 6-12 months implemented at Austrian research organisations and universities. An independent panel of experts, consisting of two scientific experts in the field public involvement, a citizen and patient in the field of health, and two young people (16-25 years) with basic scientific knowledge, assesses the applications based on

- **the quality of involvement,**
- **societal impact,**
- **implementation plan, and**
- **feasibility within this time frame given.**

The evaluation of public involvement activities includes views from all stakeholders that participated in the activities (researchers and citizens) and addresses the following dimensions:

- **Quality of involvement**
- **Learnings from activities**
- **Future and sustainability of activities**
- **Scientific and societal impact of activities on individual and organisational level**
- **Implementation of activities**
- **Satisfaction with the activities**

FACILITATION

In addition, and at the core of the programme is the aim to build an institutionalised support at LBG. This support will take form of offering

- **individual consultation for researchers and citizens,**
- **training opportunities, such as webinars and co-creation workshops with different stakeholder groups, and**
- **learning opportunities through a peer network to establish a public involvement community and embed public involvement in the Austrian research landscape.**

FOLLOW-UP (EVALUATING PPIE ACTIVITIES)

The funded PPIE projects will be assessed according to the assessment criteria when the project ends. Researchers and all stakeholders involved in the PPIE activities will be asked to answer a questionnaire in order to give feedback and check the quality of involvement, implementation and societal impact of the PPIE activities. This information gathered from researchers and stakeholders will inform and shape the second pilot call that will be launched in September 2021.

The questionnaire will cover the following dimensions:

- **Basic information (e.g., number of participants)**
- **Participation (e.g., assessment of the PI)**
- **Learning (e.g., acquired skills and knowledge)**
- **Sustainability (e.g., anchoring participation in exisitng processes)**
- **Societal and scientific benefit (e.g., added value created by participation)**
- **Personal satisfaction (e.g., personal expectations met)**

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Additional resource: Kaisler, R.E., Missbach, B. Co-creating a patient and public involvement and engagement 'how to' guide for researchers. Res Involv Engagem 6, 32 (2020). https://doi.org/10.1186/s40900-020-00208-3

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Iceland Liechtenstein Norway **Active citizens** fund

UNIVERZALNO DOSTUPNE TEMELJNE SOCIJALNE USLUGE U REPUBLICI HRVATSKOJ: MODEL IZVEDIVOSTI

Ana Opačić i Dragana Knezić

Iceland Liechtenstein Norway **Active citizens** fund

Projekt ZAJEDNICE UKLJUČUJU – Inicijativa za univerzalno dostupne temeljne socijalne usluge u zajednici je financiran iz Programa Fonda za aktivno građanstvo u Hrvatskoj, kroz financijske mehanizme Europskog gospodarskog prostora u iznosu od 149.157 €.

Projekt sufinanciraju Ured za udruge Vlade Republike Hrvatske i Grad Zagreb.

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IMPRESSUM

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Model izvedivosti

Zagreb, 2022.

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SADRŽAJ

SAŽETAK

Ova publikacija je nastala kao dio projekta *Zajednice uključuju: Inicijativa za univerzalno dostupne temeljne socijalne usluge u zajednici* s ciljem stvaranja baze podataka za zagovaranje politika univerzalne dostupnosti temeljnih i kvalitetnih socijalnih usluga. Dostupne i kvalitetne socijalne usluge jamac su očuvanja kvalitete života i socijalne uključenosti osoba koje su u ranjivom položaju. Važnost dostupnih i kvalitetnih socijalnih usluga potvrđuju brojni međunarodni, europski i nacionalni strateški dokumenti.

U publikaciji polazimo od pretpostavke da se socijalne usluge razlikuju po prioritetnosti, odnosno po važnosti za očuvanje kvalitete života i dobrobiti. Usluge koje imaju najvišu razinu prioritetnosti - bez kojih osobe kojima su potrebne ne mogu kvalitetno živjeti i sudjelovati u životu zajednice, smatramo temeljnim socijalnim uslugama. Obzirom na stupanj njihove važnosti, te socijalne usluge trebaju biti univerzalno dostupne – sve osobe kojima su potrebne trebaju im imati jednaki pristup, neovisno o tome gdje žive ili o svojim drugim karakteristikama, pripadnostima i statusu.

Socijalne usluge, u ovoj publikaciji, određujemo kao sve one aktivnosti koje pridonose kvaliteti života i socijalnom uključivanju građana koje tradicionalno smatramo ranjivima, temelje se na dobrovoljnosti i individualiziranom pristupu i imaju cilj omogućiti korisniku/ci život u obitelji i lokalnoj zajednici. Socijalne usluge organiziraju se dominantno u okviru sustava socijalne skrbi, no univerzalnu dostupnost temeljnih socijalnih usluga nije moguće ostvariti bez kvalitetnog međusektorskog povezivanja. Predlažemo tipologiju i klasifikaciju socijalnih usluga, koja nudi sveobuhvatni i multidimenzonalni okvir za razumijevanje socijalnih usluga u njihovoj raznovrsnosti i dinamičnom razvoju. Prema primarnoj svrsi i razini institucionalizacije korisnika, socijalne usluge se mogu podijeliti na četiri osnovna tipa: 1) socijalne usluge primarno usmjerene na stanovanje i svakodnevni život osoba koje imaju prepreke ili teškoće u samostalnom življenju ili življenju u vlastitoj obitelji - poput stanovanja uz podršku, privremenog/povremenog smještaja ili udomiteljstva, 2) socijalne usluge primarno usmjerene na stvaranje poticajnog okruženja te podršku socijalizaciji i socijalnom uključivanju u zajednicu - poput poludnevnih/cjelodnevnih boravaka, klubova i centara u zajednici za korisnike s određenom vrstom rizika, 3) socijalne usluge s primarnom svrhom psihosocijalnog osnaživanja radi prevencije točno određenih rizika i/ili prevladavanja već nastalih teškoća - kao što su psihosocijalna podrška, mentorstvo, savjetovanje ili druge tretmanske usluge, te 4) socijalne usluge asistencije za funkcioniranje u svakodnevnom životu i pomoć u domu korisnika - poput pomoći i njege u kući, osobne asistencije ili asistencije u nastavi. Prema razini rada s korisnicima razlikujemo izravne socijalne usluge, u koje spadaju usluge iz sva četiri navedena tipa te neizravne usluge, koje korisnicima omogućavaju pristup i korištenje izravnih socijalnih usluga, poput specijaliziranog prijevoza ili kapacitiranja stručnjaka u svrhu prevladavanja komunikacijskih barijera. Prema modalitetu pružanja, socijalne usluge mogu se pružati u namjenskim prostorima u zajednici, u izdvojenim prostorima ili posebno opremljenim vozilima, u domu korisnika/ce odnosno posredovano tehnologijom – na daljinu.

Radi utvrđivanja što čini paket temeljnih socijalnih usluga koje trebaju biti univerzalno dostupne, provedeno je opsežno istraživanje utemeljeno u Q metodologiji, a podaci su dodatno validirani u okviru osam stručnih panela i ekstenzivnim izučavanjem znanstvene i stručne literature. Na taj način postignut je potreban stručni konsenzus i prema predloženoj tipologiji u paket temeljnih socijalnih usluga spadaju:

- usluge smještaja izvan vlastitog doma: udomiteljstvo, organizirano stanovanje, odnosno stanovanje uz podršku, privremeni ili povremeni smještaj u zajednici te smještaj u kriznim situacijama za različite korisničke skupine; prihvatilište/prenoćište za osobe u beskućništvu, stacionarna palijativna skrb te sigurna kuća za žrtve obiteljskog nasilja

- usluge u zajednici za uključivanje u obrazovanje, zapošljavanje i život zajednice: boravak za različite skupine korisnika, socijalizacijske i razvojne aktivnosti za djecu u riziku, usluge strukturiranog provođenja slobodnog vremena za starije osobe, mlade te osobe s teškoćama mentalnog zdravlja, besplatna pravna pomoć, usluge pomoći i podrške u obrazovanju i

zapošljavanju za građane u siromaštvu, posebno za djecu i mlade, žrtve obiteljskog nasilja, osobe s invaliditetom te osobe s teškoćama mentalnog zdravlja

- usluge psihosocijalnog osnaživanja korisnika: psihosocijalno savjetovanje, multidisciplinarna psihosocijalna podrška, mentorstvo, grupe podrške i terapijske grupe, vođenje slučaja (*case management*), specifične terapijske usluge (logopedska terapija, radna terapija, individualni socio-pedagoški rad, rana razvojna podrška) te preventivni programi za mlade, uključujući mlade s problemom ovisnosti, osobe s teškoćama mentalnog zdravlja te roditelje iz obitelji u riziku

- usluge asistencije za funkcioniranje u svakodnevnom životu i pomoć u domu korisnika: pomoć i podrška u kući, njega i palijativna skrb u kući za starije osobe i osobe s invaliditetom, uključujući i radi odmora od skrbi primarnog njegovatelja; usluge asistencije i posredovanja u prevladavanju komunikacijskih teškoća, poput osobnih i radnih asistenata te komunikacijskih posrednika za osobe s invaliditetom ili osobe koje ne govore hrvatski jezik; servisi u zajednici za prevladavanje funkcionalnih teškoća i podmirenje osnovnih potreba građana, poput specijaliziranog i prilagođenog prijevoza, usluge osiguravanja prehrane i osnovnih potrepština za građane u siromaštvu te usluge podrške i/ili informiranja na daljinu (pr. dojavni sustavi za starije osobe i osobe s invaliditetom i SOS-telefoni)

Od neizravnih socijalnih usluga, među temeljne, po rezultatima istraživanja, spadaju međusektorska pomoć pri uključivanju u programe odgoja i redovitog obrazovanja djece s teškoćama u razvoju, međusektorski programi rane prevencije siromaštva te edukacije i supervizija stručnjaka za rad s osobama različitog etničkog/kulturnog porijekla. Paket temeljnih socijalnih usluga čini ukupno 130 usluga raspoređenih za osam korisničkih skupina: djecu u riziku, mlade u riziku, obitelji u riziku, građane u siromaštvu, osobe s teškoćama mentalnog zdravlja, osobe s invaliditetom, izbjeglice i pripadnike nacionalnih manjina te starije i nemoćne osobe.

U publikaciji smo pokušali dati odgovor i na pitanje što je potrebno kako bi sve temeljne socijalne usluge bile dostupne građanima u ranjivom položaju u zajednici u kojoj žive. U svrhu izračuna resursa za pružanje temeljnih socijalnih usluga, napravljena je projekcija broja korisnika kojima je potrebna svaka od navedenih usluga te procjena potrebnih resursa - ljudskih/stručnih, prostornih, stambenih i vozila, na temelju opisa sadržaja usluge. Publikacija nudi alate pomoću kojih svaka općina i grad u Hrvatskoj može predvidjeti broj građana u potrebi za pojedinu uslugu. Polazeći od izrazite teritorijalne rascjepkanosti Hrvatske, a s obzirom na dostupne resurse i očekivane potrebe, utvrđeno je da se socijalne usluge trebaju organizirati na tri razine. Na razini jedinice lokalne samouprave potrebno je organizirati 37 usluga; na razini klastera jedinica lokalne samouprave (koji smo operacionalizirali na temelju trenutnog ustrojstva centara za socijalnu skrb) potrebno je organizirati 58 usluga; na regionalnoj/županijskoj razini potrebno je organizirati 35 usluga. Od osobite je važnosti osigurati socijalne usluge na razini jedinice lokalne samouprave i klastera jedinica lokalne samouprave i učiniti ih dostupnima u neposrednom okruženju građana.

Da bi građani u svojoj lokalnoj zajednici dobili potrebne temeljne socijalne usluge, to podrazumijeva angažman u punom radnom vremenu okvirno:

- 5824 visoko obrazovanih profesionalnih pomagača – socijalnih radnika/ca, psihologa/inja, edukacijskih rehabilitatora/ica, socijalnih pedagoga/inja te psihosocijalnih savjetovatelja/ica

- 2573 stručnjaka u odgoju i obrazovanju – odgojitelja/ica predškolskog odgoja, učitelja/ica i nastavnika/ica, kineziologa/inja, pedagoga/inja, pomoćnika/ica u nastavi i stručnih komunikacijskih posrednika/ca

- 13607 stručnjaka iz sektora zdravstva, od čega 9734 njegovatelja/ica i 2084 medicinskih sestara/tehničara te liječnika/ca, fizioterapeuta/kinja i radnih terapeuta/kinja

- 4348 stručnjaka nepomažućih djelatnosti (neprofesionalnih pomagača),
- 21 695 paraprofesionalnih pomagača u sektoru skrbi (bez udomitelja), od kojih najveći udio gerontodomaćina/ca - 12138, i
- 6229 volontera.

Ukupan trošak ljudskih resursa, za osiguravanje univerzalne dostupnosti temeljnih socijalnih usluga u zajednici, na godišnjoj razini bi iznosio 5 284 142 020,00 kuna. Najveći pojedinačni udio je za usluge skrbi i njege - 2 225 057 930,00 kuna godišnje za rad 21 872 pružatelja/ica usluga, za koje procjenjujemo da trenutno nedostaju u sustavu socijalne skrbi odnosno zdravstva. No, i sustavu socijalne skrbi i zdravstva potrebna su značajnija kadrovska ojačanja, kao i rastrećenje stručnjaka od administrativnog posla kako bi svoje kapacitete mogli snažnije usmjeriti na pružanje socijalnih usluga.

Kako bi temeljne socijalne usluge bile zajamčene, tj. univerzalno dostupne za sve korisnike u potrebi, pored financijskih ulaganja potrebno je njihovim planiranjem, organiziranjem i razvojem učinkovito i fleksibilno upravljati. Za razliku od postojećeg trenda centralizacije, u ovoj publikaciji predlažemo koordinirani sustav podijeljene odgovornosti u kojemu će se aktivirati različiti dionici na nacionalnoj i lokalnoj razini. Takav sustav čine podsustavi: 1) uspostave regulatornog okvira (odgovornost središnje države), 2) praćenja potreba i planiranja usluga u lokalnoj zajednici (odgovornost stručnih tijela na lokalnoj razini i lokalne/regionalne koordinacije dionika, uključujući JL(R)S), 3) financiranja održivih i univerzalno dostupnih socijalnih usluga (odgovornost središnje i lokalne države), 4) organiziranja i pružanja socijalnih usluga (osiguravaju javni, civilni i privatni pružatelji usluga iz različitih sektora), 5) nadzora i praćenja usklađenosti sa standardima kvalitete socijalnih usluga (odgovornost središnje države i JL(R)S), i 6) koordinacije pružatelja i praćenja dostupnosti socijalnih usluga (odgovorna stručna tijela na lokalnoj razini i lokalna/regionalna koordinacija dionika uz praćenje od strane središnje države). Organizacija socijalnih usluga u Hrvatskoj primarno je u nadležnosti sustava socijalne skrbi koji treba izgraditi održive mehanizme za međusektorsku suradnju i povezivanje sa drugim sektorima kako bi se najbolje mobilizirali dostupni resursi te podmirile brojne i goruće potrebe građana u Republici Hrvatskoj. U ovaj izračun nisu uključene temeljne socijalne usluge koje treba organizirati na regionalnoj razini.

I

ODREĐENJE SOCIJALNIH USLUGA I IZAZOVI U UPRAVLJANJU RAZVOJEM SOCIJALNIH USLUGA

1.1 ZNAČAJ SOCIJALNIH USLUGA U SOCIJALNOJ DRŽAVI

Socijalne usluge jedan su od temelja socijalne države i socijalne sigurnosti jer omogućuju podršku u prevladavanju izazovnih životnih situacija te su zasigurno najučinkovitiji mehanizam protiv socijalne isključenosti. Dostupne i kvalitetne socijalne usluge jamac su očuvanja kvalitete života i dobrobiti građana koji se nalaze u osobito ranjivom položaju. Iako ne postoji suglasnost u definiranju socijalnih usluga, važan element njihova određenja jest da je često riječ o javnim ili privatnim uslugama koje su ciljano usmjerene na ranjive skupine građana kako bi ublažile njihove teškoće ili prepreke u svakodnevnom funkcioniranju i socijalnom uključivanju (Pinker, 2016.).

U ovom radu govoriti ćemo o univerzalnoj dostupnosti temeljnih socijalnih usluga te je važno pojasniti koncept univerzalnosti u kontekstu socijalnih usluga. Poimanje univerzalnosti kao normativnog koncepta se mijenjalo u povijesti socijalne politike, osobito pod utjecajem kritika koje su naglašavale potrebu za većom osjetljivosti prema društvenim različitostima. Tako se u kontekstu socijalnih usluga napušta shvaćanje univerzalnosti kao ˝dostupnog svima˝ ili ˝dostupnog svima u određenoj fazi života˝ te prihvaća da univerzalnost može uključivati određenu razinu selektivnosti. U ovoj publikaciji mi ćemo se prikloniti shvaćanju univerzalnosti prema Martinelli (2017.: 16) kao ˝jednakog pristupa uslugama svim onim osobama koje imaju određenu potrebu, na istoj razini kvalitete i priuštivosti, a neovisno o spolu, etnicitetu, dohotku ili mjestu stanovanja˝, pri čemu univerzalnost ne znači da ne postoji diferencirana ponuda ili da korisnici nemaju mogućnost izbora unutar te ponude. Autorica ističe kako je ovako shvaćena univerzalnost jamac socijalne uključenosti ranjivih skupina te teritorijalne kohezije. Slijedeći ovakvo tumačenje, projekcija broja korisnika socijalnih usluga (u poglavlju IV) dominantno će se temeljiti na potrebama (*needs-tested),* a tek u ponekim slučajevima uzet je u obzir ekonomski status kao ograničavajući faktor ponajviše radi izvedivosti modela (*means-tested)* (Anttonen, 2017.).

Drugi konceptualni problem kojega je potrebno razriješiti na početku publikacije je razgraničenje socijalnih usluga u korpusu javnih usluga te u okviru instrumenata socijalne politike. Javne politike svoje ciljeve ostvaruju kroz četiri skupine instrumenata: dijeljenje informacija, ovlasti koje se propisuju normativnim okvirom, distribucija financijskih dobara te izravno ili neizravno sudjelovanje u organizaciji usluga od javnog interesa (Petak i Kekez Koštro, 2014.). Martinelli (2017.) također ukazuje da je uobičajena podjela instrumenata sustava socijalne zaštite na a) novčane transfere (najčešće proizlaze iz socijalnog osiguranja) i novčane naknade te b) naknade u naturi ili usluge. U teoriji granica je jasna, no u praksi nije rijetkost da će se granice zamutiti, primjerice da određene naknade budu ciljano usmjerene kako bi korisnik lakše ostvario potrebnu uslugu.

Iako se u ovoj publikaciji priklanjamo shvaćanju da su usluge drugačiji instrument od novčanih transfera i naknada, u političkoj praksi nailazimo na neke drugačije primjere. Primjerice Europska komisija (2006.) praktički sve instrumente socijalne zaštite podvodi pod socijalne usluge što nije uobičajeni pristup u znanstvenoj literaturi.

Europska komisija (2006.) tako razlikuje dvije glavne kategorije socijalnih usluga:

1. obvezne i dopunske sheme socijalnog osiguranja koje pokrivaju glavne životne rizike, poput onih povezanih sa zdravljem, starenjem, nesrećama na radu, nezaposlenošću, mirovinom i invaliditetom

2. ostale esencijalne usluge koje se izravno pružaju osobi (osobne socijalne usluge) i predstavljaju prilagođenu pomoć za olakšavanje socijalnog uključivanja i zaštitu temeljnih prava. To su: a) usluge podrške onima koji se suočavaju s osobnim izazovima i krizama (poput nezaposlenosti, ovisnosti, obiteljskih kriza), b) usluge koje osiguravaju potpuno socijalno uključivanje i uključivanje u tržište rada (rehabilitacija, učenje jezika za imigrante, osposobljavanja i prekvalifikacije), c) aktivnosti integracije osoba s dugotrajnim zdravstvenim teškoćama ili invaliditetom i d) usluge socijalnog stanovanja za građane u nepovoljnom položaju.

Ovu drugu kategoriju osobnih socijalnih usluga Europska socijalna mreža (ESN, 2021.) dodatno dijeli na dvije potkategorije:

1. Socijalne usluge koje se pružaju grupno s ciljem podupiranja razvoja osobe ili njezine autonomije te promicanja usklađivanja poslovnog i obiteljskog života članova obitelji. To su usluge ranog i predškolskog odgoja i obrazovanja, posebno za djecu iz obitelji u nepovoljnom položaju i djecu s poteškoćama, te usluge dugotrajne skrbi za djecu i odrasle ovisne o tuđoj skrbi zbog zdravstvenih teškoća, invaliditeta ili gubitka autonomije.

2. Personalizirane socijale usluge (ili usluge socijalnog rada) odnosno personalizirana podrška kojoj je cilj zaštita temeljnih prava korisnika i poticanje njihove socijalne uključenosti, a namijenjene su pojedincima i obiteljima koji se suočavaju s osobnim izazovima i krizama koji su prijetnja zdravlju, dobrobiti te socijalnoj i radnoj uključenosti.

Drugo konceptualno pitanje koje treba razgraničiti u definiciji socijalnih usluga jest njihov položaj u ukupnoj sferi javnih usluga, odnosno sektorske granice izvan i unutar sustava socijalne zaštite. Tu je situacija kompliciranija, granice između različitih kategorija socijalnih usluga nisu tako čvrste i postoje preklapanja u mnogim slučajevima. Nedostatak konsenzusa o tome koliko široko treba shvatiti socijalne usluge ističu i drugi autori (EC, 2010.; Eurostat, 2011.; BEPA, 2011.; Sirovátka i Greve, 2014., prema Martinelli, 2017.) I dok ih dio socijalnim uslugama smatra široko multidisciplinarno područje koje pokriva skrb, zapošljavanje, stanovanje, obrazovanje pa i sport te slobodne aktivnosti, drugi socijalnim uslugama gotovo isključivo smatraju usluge skrbi (Martinelli, 2017.). Ipak, čak ni u drugom, užem pristupu ne može potpuno ograničiti sektor skrbi od drugih sektora (npr. obrazovanja ili zdravstva). U ovom radu bliži smo širem razumijevanju socijalnih usluga, dozvoljavajući da one uključuju sektor socijalne skrbi u užem smislu, ali i stanovanje, zapošljavanje, obrazovanje, pa i kulturu i sport. Ono što je odlučujući distinktivni element jest da se radi o uslugama usmjerenim ranjivim skupinama građana, a sukladno definiciji korisnika u Zakonu o socijalnoj srbi (čl. 18., NN, 18/22) i to sa svrhom kako ih predviđa isti Zakon: ˝aktivnosti namijenjene prepoznavanju, sprječavanju i rješavanju problema i poteškoća pojedinaca i obitelji te poboljšanju kvalitete njihova života u zajednici˝ (čl. 70). Iako zakonsko određenje nije osobito korisno za razumijevanje što *jesu*, a što *nisu* socijalne usluge, ono ukazuje na ambiciju zakonodavca i sustava socijalne skrbi da osigura široku podršku građanima u najranjivijem položaju. Prema definiciji korisnika i prema činjenici da socijalne usluge uređuje sustav socijalne skrbi, socijalne usluge dominantno su vezane upravo za taj sustav u okviru šireg okvira socijalne zaštite. No, praktično sadržaj socijalnih usluga niti sada niti u budućnosti nije moguće u potpunosti sektorski ograničiti. Naime, i u postojećoj situaciji kada socijalne usluge nisu adekvatno dostupne niti razvijene, u njihovom je pružanju sektor socijalne skrbi povezan su sa sektorom zdravstva, obrazovanja, zapošljavanja, stanovanja, kulture i sporta u zajednici. Svako nastojanje da se poveća dostupnost ovakvo povezivanje čini nužnim.

Imajući u vidu različita tumačenja socijalnih usluga u akademskoj i političkoj zajednici, nacionalni kontekst i u njemu sektorska ograničenja (nekada i prečvrsta), kao i ambiciju da socijalne usluge osiguraju cjeloživotnu, kontinuiranu podršku u zajednici, socijalnim uslugama u smislu ove publikacije smatramo (Opačić, 2018.):

- Usluge koje pridonose kvaliteti života i uključenosti u zajednicu onih skupina građana koje tradicionalno smatramo ranjivima. Radi toga socijalne usluge mogu uključivati aktivnosti iz sektora socijalne skrbi u užem smislu, ali i neke aktivnosti iz sektora zdravstva, odgoja i obrazovanja, stanovanja, zapošljavanja, kulture. Važno je da takve aktivnosti pridonose prevenciji i prevladavanju privremenih ili trajnih teškoća koje dovode do socijalne isključenosti, odnosno da pomognu u zaštiti kvalitete života u zajednici kada je korisnik suočen sa nekim socijalnim problemom ili rizikom u cjeloživotnoj perspektivi (Anttonen, 2017.). Pritom možemo očekivati

da će se poimanje ranjivosti također mijenjati kako se bude mijenjalo razumijevanje socijalnih problema i rizika u određenom vremenu i prostoru (Ajduković, 2008.).

- Socijalne usluge podrazumijevaju da između pružatelja i korisnika postoji odnos koji se temelji na načelu individualizacije i dobrovoljnosti. Prema tome, takvim uslugama ne smatramo mjere (čak i kada je riječ o stručnoj pomoći, uključujući i tretman) koje su prisilne (primjerice u obiteljsko-pravnoj zaštiti, penalnom sustavu, zaštiti maloljetnika s problemima u ponašanju i sl.). Socijalna kontrola može biti posredan, ali ne izravan cilj socijalnih usluga.

- Socijalnim uslugama smatramo one kojima je cilj zadržati korisnike u obitelji i/ili u lokalnoj zajednici uz aktiviranje lokalne podrške, a samo kada to nije moguće uključuju oblike stanovanja najbliže stanovanju u obitelji (npr. organizirano stanovanje, udomiteljska obitelj, krizni smještaj). To znači da se usluge institucionalnog smještaja ne mogu smatrati socijalnim uslugama u zajednici. Trenutno Zakon o socijalnoj skrbi sve usluge smještaja smatra socijalnim uslugama, čak i onda kada je riječ o klasičnom institucionalnom smještaju. Polazeći od teorijskog određenja socijalnih usluga kao usluga u zajednici, u ovom radu nisu razmatrane usluge smještaja u domove socijalne skrbi.

- Socijalne usluge trebaju biti regulirane okvirom javnih politika, što znači da postoje standardi kvalitete koje je važno slijediti, ali pružaju ih raznovrsni akteri (državni, lokalni, privatni, civilni).

- Socijalne usluge ne temelje se na neformalnoj podršci, ali to ne znači da je isključuju. S tim u vezi prepoznaju uključivanje članova obitelji, volontera, vršnjačke podrške i širokog kruga profesionalaca i paraprofesionalaca. Uostalom, svjedočimo tome da tržište socijalnih usluga dovodi na scenu cijeli niz novih zanimanja (njegovatelji, pružatelji usluge pomoći u kući, osobni asistenti, udomitelji, pomoćnici u nastavi, prevoditelji znakovnog jezika, socijalni mentori, kulturni medijatori…).

Naposljetku, u ovom radu uzimamo u obzir popis socijalnih usluga kako je normiran Zakonom o socijalnoj skrbi, ali on nije ograničavajući za ono što ćemo smatrati socijalnim uslugama. Naime, iako je zakonodavac općom definicijom široko utvrdio što su socijalne usluge, njihova operacionalizacija kroz popis socijalnih usluga ukazuje na redukcionistički pristup. Dodatno, vjerujemo da je za razumijevanje socijalnih usluga dovoljno poznavanje njihove svrhe i korisnika te da ih nije nužno taksativno propisivati.

Općenito gledajući, razumijevanje socijalnih usluga praćeno je visokom razinom kompleksnosti (Anttonen, 2017.) te je gotovo nemoguće, pa i nepoželjno, odgovoriti jednoznačno na brojna pitanja. Pritom kompleksnost ne znači da ne postoji komplementarnost između različitih profesija koje sudjeluju u pružanju socijalnih usluga, sektora koji ih organiziraju, potreba korisnika u životnom ciklusu ili odnosa među javnim, privatnim ili nevladinim akterima (Anttonen, 2017.). S tim u vezi moguće je u budućnosti očekivati redefiniranje opsega i sadržaja pojma socijalnih usluga, bilo u smjeru veće specijalizacije ili pak u smjeru snažnijeg međusektorske integracije jer se u stvarnosti radi o organski povezanim procesima.

1.2 PRIJEDLOG TIPOLOGIJE I KLASIFIKACIJE SOCIJALNIH USLUGA

U stručnoj literaturi i normativnom okviru socijalne usluge klasificiraju se po različitim kriterijima, i to najčešće prema primateljima, a rjeđe prema pružateljima socijalnih usluga (Opačić, 2018.). U Zakonu o socijalnoj skrbi (NN 18/2022), socijalne usluge su taksativno pobrojane (čl. 71), pa iako je navedeno da se radi o vrstama socijalnih usluga, to u naravi nije njihova klasifikacija[1]. Ne ulazeći u kritiku zakonodavnog rješenja, smatramo da je nužno ponuditi drugačiji i širi pristup definiranju sadržaja socijalnih usluga. Osim toga, smatramo da nije nužno popisati sve socijalne usluge već je dovoljno izraditi održivu tipologiju koja će biti dovoljno potentna da se iz nje u budućnosti predlažu nove socijalne usluge.

Za izradu modela univerzalne dostupnosti temeljnih socijalnih usluga predlažemo tipologiju socijalnih usluga koja se temelji na dvama kriterijima - razini institucionalizacije korisnika i primarnoj svrsi usluge. Ova tipologija izrađena je kako bi obuhvatila brojne socijalne usluge koje su predložili stručnjaci u okviru panel rasprava o čemu će biti više riječi u narednim poglavljima.

Kombinacijom navedena dva kriterija (svrha i razina institucionalizacije), socijalne usluge u sustavu socijalne skrbi se mogu podijeliti na četiri osnovna tipa:

1. **Socijalne usluge primarno usmjerene na stanovanje** i svakodnevni život osoba koje imaju prepreke ili teškoće u samostalnom življenju ili življenju u vlastitoj obitelji. To su svi oblici stambenog zbrinjavanja/socijalnog stanovanja, organiziranog stanovanja, stanovanja uz podršku u zajednici, sigurna kuća, prenoćište, prihvatilište i udomiteljstvo. Institucionalni smještaj u velikim ustanovama, u kojima se korisnici izmještaju iz svoje zajednice i mreže podrške, ne smatra se socijalnom uslugom u zajednici. Ova skupina usluga ima najvišu razinu institucionalizacije korisnika, a primarna svrha je stambeno zbrinjavanje.

2. **Socijalne usluge primarno usmjerene na stvaranje poticajnog okruženja te podršku socijalizaciji i socijalnom uključivanju u zajednicu.** Ove su usluge namijenjene korisnicima koji imaju teškoće i prepreke u ovim procesima ili su dugo vremena bili isključeni. S obzirom na to da se pružaju grupi korisnika sa sličnim teškoćama, razina institucionalizacije i dalje je visoka, a korisnici su donekle segregirani od ostatka zajednice. Ovaj tip usluga pruža se u okviru poludnevnih/cjelodnevnih boravaka, klubova ili centara u zajednici gdje korisnici dobivaju usluge grupnog informiranja, stjecanja znanja, vještina, stavova i vrijednosti kroz interakciju s drugim korisnicima.

3. Socijalne usluge koje se pružaju izravno korisnicima (individualno ili grupno) s primarnom svrhom **prevencije točno određenih rizika i/ili prevladavanja već nastalih teškoća koje narušavaju njihovu dobrobit**. To su svi oblici selektivne i indicirane prevencije te svi oblici paraprofesionalne i profesionalne psihosocijalne podrške, mentorstva i tretmana – savjetovanja, terapije i rehabilitacije. Svrha je ovih usluga psihosocijalno osnaživanje pa je niska razina institucionalizacije korisnika. Ove su usluge u punom smislu riječi servisi u zajednici.

4. **Usluge asistencije za funkcioniranje u svakodnevnom životu i pomoć u domu korisnika** pružaju se korisnicima s privremenom ili trajnom teškoćom u funkcioniranju, a primarno su usmjerene

1 U Zakonu su navedene sljedeće vrste socijalnih usluga: Socijalne usluge su: 1. prva socijalna usluga; 2. usluga sveobuhvatne procjene i planiranja; 3. savjetovanje; 4. stručna procjena; 5. psihosocijalno savjetovanje; 6. socijalno mentorstvo; 7. obiteljska medijacija; 8. psihosocijalni tretman radi prevencije nasilničkog ponašanja; 9. psihosocijalna podrška; 10. rana razvojna podrška; 11. pomoć pri uključivanju u programe odgoja i redovitog obrazovanja; 12. pomoć u kući; 13. boravak; 14. organizirano stanovanje i 15. smještaj.

na uklanjanje prepreka kako bi osoba funkcionirala što je moguće više kao da te prepreke ili teškoće nema. To su svi oblici asistencije i posredovanja između korisnika i njegova okruženja, a razina institucionalizacije korisnika je najniža.

Osim navedene tipologije, za razumijevanje temeljnih socijalnih usluga u Hrvatskoj predlažemo i dvije klasifikacije socijalnih usluga.

S obzirom na razinu rada s korisnikom, razlikujemo **izravne i neizravne socijalne usluge**. Navedena četiri tipa socijalnih usluga su **izravne socijalne usluge. Neizravne socijalne usluge** treba shvatiti kao potpornu infrastrukturu koja omogućuje ostvarivanje socijalnih i drugih usluga. Primjerice, to su specijalizirani prijevoz i pratnja ili usluge koje pomažu u prevladavanju komunikacijskih ograničenja. U ovu se kategoriju ubrajaju i socijalne usluge namijenjene kapacitiranju pružatelja usluga (poput edukacija, supervizija i transfera znanja).

Druga klasifikacija temelji se **na modalitetu pružanja socijalne usluge** pa tako razlikujemo:

1. usluge koje se pružaju u namjenskim prostorima u zajednici, uključujući i one dislocirane/ dispanzerske
2. usluge koje se pružaju u domu korisnika
3. usluge koje se pružaju posredovanjem tehnologije (tele usluge ili usluge na daljinu).

Usluge o kojima će biti riječi u daljnjem tekstu shvaćene su višedimenzionalno prema predloženoj tipologiji i klasifikacijama.

1.3 IZAZOVI U UPRAVLJANJU RAZVOJEM SOCIJALNIH USLUGA U REPUBLICI HRVATSKOJ

Prije nego što predstavimo ideju univerzalno dostupnih temeljnih socijalnih usluga, primarno je postaviti pitanje: treba li uopće išta mijenjati u načinu upravljanja razvojem socijalnih usluga na nacionalnoj razini u Republici Hrvatskoj? Prateći trendove u razvoju socijalnih usluga u postindustrijskoj Europi, Bode (2017.) nedvojbeno zaključuje da su socijalne usluge doživjele eksploziju rasta, i to u obliku porasta korisnika, sadržaja, javnih izdataka, profesionalizacije socijalnih usluga i činjenice da socijalne usluge predstavljaju novo rastuće tržište rada. No situacija je daleko od idealne pa Bode (2017.) ukazuje i na poteškoće koje su se dogodile u razvoju socijalnih usluga: izrazite nejednakosti između europskih država u razvijenosti i dostupnosti socijalnih usluga, velike nejednakosti u pristupu socijalnim uslugama unutar država, nejednak pristup socijalnim uslugama različitim korisničkim skupinama te postojanje javne i sive zone socijalnih usluga bez praćenja kvalitete. Osim toga, tenzije na razini društava zbog javnog i privatnog financiranja nisu razriješene, a porast aktera u pružanju usluga umjesto integraciji pridonosi dezintegraciji socijalnih usluga. Umnožavanje pružatelja socijalnih usluga dodatno pridonosi kompeticiji među njima i borbi za ograničene resurse, stoga je ključna brzina povlačenja dostupnih sredstava pa tehnički menadžment postaje čak i važniji od stvarne promjene u zajednici (Bode, 2017.). Razvoj socijalnih usluga konstantno prati smanjenje uloge središnje države, iako ona nikada u potpunosti ne izlazi iz sustava upravljanja uslugama (Martinelli, 2017.).

Hrvatska nije iznimka pa brojne izazove prepoznajemo i kod nas. Recentna istraživanja govore u prilog znatnim regionalnim nejednakostima u dostupnosti socijalnih usluga (Berc i sur., 2020.; Knezić i Opačić, 2021.; Matković, 2018.; Svjetska banka, 2019.; Šućur i sur., 2016.). Tako su usluge slabije dostupne u ruralnim sredinama, općinama i gradovima s manje stanovnika, potpomognutim područjima te u Panonskoj Hrvatskoj (Knezić i Opačić, 2021.). Svega nekoliko usluga može se smatrati dostupnima na nacionalnoj razini, a za određene ranjive skupine (primjerice mladi, obitelji u riziku, osobe s invaliditetom, osobe s teškoćama mentalnog zdravlja, pripadnici nacionalnih manjina i izbjeglice) ni jedna usluga ne odgovara kriterijima dostupnosti[2] (Knezić i Opačić, 2021.). Drugim riječima, možemo zaključiti da su usluge nejednako dostupne različitim ranjivim skupinama. Nerijetko svjedočimo i izvjesnoj pomodnosti u razvoju socijalnih usluga, što rezultira time da pripadnici iste ranjive skupine zapravo nemaju pravu mogućnost izbora između različitih usluga.

U Hrvatskoj bilježimo brojne probleme i na razini upravljanja sustavom razvoja socijalnih usluga u okviru socijalne skrbi. Za razliku od europskih trendova decentralizacije i slabljenja utjecaja središnje države u pružanju socijalnih usluga (tzv. *hollowing state*) (Martinelli, 2017.), u Hrvatskoj se odvija suprotan trend. Centralizacija se prvotno ojačavala sve većom kontrolom nad financiranjem socijalnih usluga, čak i kada je riječ o europskim fondovima. Zorni je primjer program „Zaželi" koji je pozivao dionike iz različitih dijelova Hrvatske da apliciraju na natječaj s visokom razinom proskribiranosti projektnih aktivnosti ostavljajući malo prostora za lokalne varijacije. Centralizacija se dodatno formalizirala novim Zakonom o socijalnoj skrbi (NN, 18/22) koji predviđa visoko centraliziran sustav centara za socijalnu skrb osnivanjem Hrvatskog zavoda za socijalni rad kao ključne ustanove zadužene za upućivanje korisnika na socijalne usluge. Ovako centraliziran pristup smanjuje prostor za financiranje razvoja inovativnih socijalnih usluga i programa.

2 U istraživanjima dostupnosti socijalnih usluga, dostupnost je definirana uglavnom kroz dva kriterija: prometne i prostorne dostupnosti u lokalnoj zajednici ili širem okruženju te razini u kojoj usluga podmiruje potrebe stanovništva. U citiranoj studiji (Knezić i Opačić, 2021.), dostupnom uslugom je smatrana ona usluga koja je prometno dostupna građanima u više od 60% JLS u Hrvatskoj, te za koju na skali od 1 do 5 postoji prosječna procjena da podmiruje potrebe stanovništva (stupanj 4 ili 5).

Visoka oslonjenost na projektna sredstva čini financiranje socijalnih usluga neizvjesnima pa i neodrživima. Dio usluga koji bi trebao biti stalni dio proračunskih izdvajanja (primjerice osobni asistenti, pomoćnici u nastavi) financira se iz godine u godinu iz europskih fondova. Osim toga, u Hrvatskoj ne postoji sustav koordinacije, analize i sustavnog praćenja potreba za novim socijalnim uslugama, iako je nominalno ta odgovornost pripadala centrima za socijalnu skrb i jedinicama regionalne samouprave kroz Savjet za socijalnu skrb (Zakon o socijalnoj skrbi, NN, 157/13, 152/14, 99/15, 52/16, 16/17, 130/17, 98/19, 64/20 i 138/20). Možemo slobodno reći da u Hrvatskoj postoje paralelni sustavi socijalnih usluga: jedan je u mreži pružatelja socijalnih usluga koji imaju reguliran ugovorni odnos s resornim Ministarstvom, a drugi je sustav koji se financira dominantno projektnim sredstvima. Ne postoji cjelovita baza pružatelja socijalnih usluga koja obuhvaća oba sustava, čak se nerijetko događa da ista organizacija dio svojih usluga pruža u okviru nacionalne mreže, a dio izvan nje. Sve to dovodi do manjkavog praćenja kvalitete socijalnih usluga te slabog racionalnog korištenja dostupnih resursa i sustavnog razvoja profesionalaca i paraprofesionalaca koji sudjeluju u pružanju socijalnih usluga. Dodamo li tome slabiju međusektorsku suradnju na nacionalnoj razini, možemo s iznimno visokom sigurnosti zaključiti da su potrebe građana u zajednici daleko od zadovoljenih.

Aktualne krize koje će zasigurno produbiti već nepodmirene potrebe građana, u kombinaciji sa sustavom socijalnih usluga koji se razvija stihijski i u određenom je smislu tek u povojima, iziskuju hitne strukturalne promjene. Stoga je naš odgovor na inicijalno postavljeno pitanje *treba li uopće išta mijenjati u načinu upravljanja razvojem socijalnih usluga na nacionalnoj razini u Republici Hrvatskoj* - potvrdan. Vjerujemo da će takve reformske promjene u početku iziskivati znatna ulaganja, ali njihove su dobiti dugoročne i višestruke.

Naša je vizija da Republika Hrvatska treba svakom svom građaninu u potrebi osigurati određene osnovne ili temeljne socijalne usluge kao pravo, bez obzira na to u kojem dijelu Hrvatske živi. Pritom korisniku nije važno tko mu takvu uslugu može pružiti, nego je odgovornost lokalnih, regionalnih, državnih, javnih, privatnih i civilnih sustava da u sinergiji postignu univerzalnu dostupnost temeljnih socijalnih usluga.

1.4 POLITIČKA OPRAVDANOST UNIVERZALNE DOSTUPNOSTI TEMELJNIH SOCIJALNIH USLUGA

Prije smo ukazali na empirijsku utemeljenost potrebe za većom dostupnosti socijalnih usluga u Hrvatskoj. Drugo je pitanje političke legitimiranosti ulaganja u univerzalno dostupne – besplatne ili priuštive socijalne usluge kao dio ulaganja u javne usluge. Martinelli (2017.) zastupa tezu da socijalne usluge ili uopće besplatne javne usluge ne treba shvatiti kao oblik redistribucije društvenih dobara ili ˝trošak˝ države. Dapače, besplatne/priuštive javne usluge smanjuju trošak pojedinca i povećavaju kupovnu moć, predstavljaju novo tržište rada čime se izravno pridonosi nacionalnoj potrošnji te predstavljaju oblik socijalnog ulaganja za razvoj kapaciteta svih dijelova društva. Pristup socijalnih investicija pomaže premostiti uobičajenu raspravu između ekonomskog rasta i izdataka socijalne države, čak i u vrijeme kriza jer se podrazumijeva njegova dvostruka korist: financijski povrat i pozitivni socijalni povrat (Babić i Baturina, 2016.).

Ovaj pristup ima i snažna normativna uporišta u nacionalnim i međunarodnim politikama.

Načelo dostupnosti jedno je od temeljnih načela sustava socijalne skrbi (Zakon o socijalnoj skrbi, NN, 18/2022.) i svojim ustavom Hrvatska kao socijalna država ima ne samo opravdanje nego i obvezu brinuti se za građane u potrebi.

Socijalne usluge apostrofirane su kao strateški cilj brojnih nacionalnih dokumenata (Nacionalna razvojna strategija Republike Hrvatske do 2030. godine, Nacionalni plan oporavka i otpornosti, 2021. – 2026.), a prvi se put razvoj socijalnih usluga artikulira kao strateško pitanje u Nacionalnom planu razvoja socijalnih usluga za razdoblje od 2021. do 2027. godine (Ministarstvo rada mirovinskoga sustava, obitelji i socijalne politike, 2021.). U Nacionalnom planu istaknuta je srednjoročna vizija: *˝Socijalne usluge u Hrvatskoj raznovrsne su, dostupne i kvalitetne te jamče bolje uvjete života svim socijalno osjetljivim skupinama stanovništva. Ravnomjerni regionalni razvoj socijalnih usluga utemeljen je na stvarnim potrebama pojedine lokalne zajednice uz uvažavanje posebnosti svake od njih.˝* (str. 5). Pristup koji ćemo dalje detaljno obrazložiti u ovom dokumentu nudi odgovor na pitanje *kako* se upravo ovako definirana vizija može realizirati.

Na europskoj razini zajamčeni pristup socijalnim uslugama, odnosno uslugama socijalne skrbi propisan je člankom 14. Europske socijalne povelje uz omogućavanje aktivnog sudjelovanja ne-stručnjaka (Zakon o potvrđivanju Europske socijalne povelje, Dodatnog protokola Europskoj socijalnoj povelji, Protokola o izmjenama Europske socijalne povelje i Dodatnog protokola Europskoj socijalnoj povelji kojim se uspostavlja sustav kolektivnih žalbi, NN, 15/2002). Na razini Europske unije politički okvir za dostupne i kvalitetne socijalne usluge daje se kroz koncept socijalnog ulaganja koji je bio osnova za ustroj Europskog socijalnog fonda (Europska komisija, 2013, Communication from the Commission to the European Parliament, the Council, the European economic and social committee and the Committee of the regions: Towards Social Investment for Growth and Cohesion – including implementing the European Social Fund 2014-2020). Zajamčeni pristup socijalnim uslugama vidljiv je i u principima Europskog stupa socijalnih prava (European Pillar of Social Rights, EK, 2019), i to kao dio jednog od šest prioriteta EU za 2019-2024 pod nazivom Ekonomije koja radi za ljude. Specifično, pristup socijalnim uslugama apostrofira se u sljedećim načelima: 3. Jednake mogućnosti, 9. Uspostavljanje ravnoteže obiteljskog i poslovnog života, 17. Uključivanje osoba s invaliditetom, 18. Dugotrajna skrb, 19. Stanovanje i skrb za beskućnike te 20. Pristup osnovnim uslugama. Iz pojedinih načela dalje se razvijaju specifične sektorske politike u kojima se ponovno naglasak stavlja na usluge. To su primjerice Jamstvo za ugroženu djecu iz 2021. godine ili najavljena Europska strategija dugotrajne skrbi.

Na ovaj način Europska unija jasno se određuje prema tome da socijalna ulaganja ne treba shvatiti kao trošak za nacionalne ekonomije i europski proračun, niti da će se samo ekonomskih rastom ostvariti socijalni ciljevi.

Pristup univerzalne dostupnosti temeljnih socijalnih usluga usklađen je s međunarodnom inicijativom uspostave temelja socijalne zaštite (*eng. Social protection floor),* što je jedan od specifičnih ciljeva u okviru prvog cilja održivog razvoja Ujedinjenih naroda: Svijet bez siromaštva (United Nations, 2018.), a njegov su integralni dio upravo osnovne socijalne usluge i sigurnost dohotka za sve (Office of the United Nations High Commissioner for Human Rights, OHCHR, 2014.: 3). Osim međunarodnih organizacija, postoje inicijative ˝odozdo˝. Spomenimo primjer inicijative Socijalnog jamstva (Social guarantee) koji okuplja široku platformu dionika u Ujedinjenom Kraljevstvu, a naglasak je upravo stavljen na usluge (Cohen, 2021.).

Vođeni idejom da postoje normativne podloge na nacionalnoj, europskoj i međunarodnoj razini, kao i da u lokalnim zajednicama postoje brojne potrebe građana na koje treba što prije odgovoriti, u daljnjem tekstu objasnit ćemo kako se u Hrvatskoj može postići univerzalna dostupnost temeljnih socijalnih usluga.

II

OPIS METODOLOGIJE RAZVOJA MODELA IZVEDIVOSTI UNIVERZALNO DOSTUPNIH TEMELJNIH SOCIJALNIH USLUGA

Inicijativa za univerzalno dostupne temeljne socijalne usluge u zajednici temelji se na dvije osnovne pretpostavke:

a) u svakom društvu nužno je da postoji osnovni (minimalni ili temeljni) paket socijalnih usluga koji bi svim građanima trebao biti univerzalno i održivo dostupan

b) Hrvatska ima resurse (proračunske, lokalne, regionalne, institucionalne, privatne; financijske, ljudske, infrastrukturne…) kojima može svim građanima osigurati temeljne socijalne usluge u zajednici sukladno njihovim potrebama.

Ovakav pristup otvara nekoliko ključnih pitanja:

a) o kojim uslugama postoji stručni konsenzus da su temeljne i trebale bi biti univerzalno dostupne

b) koje socijalne usluge predstavljaju standard, a koje nadstandard, odnosno u određenom razdoblju nisu prepoznate kao temeljne iako su njihov razvoj i dostupnost poželjni potencijalnim korisnicima

c) koji su resursi potrebni da bi se ostvarila univerzalna dostupnost temeljnih socijalnih usluga

d) kako uspostaviti mehanizme koordinacije na razini lokalnih zajednica kako bi se povećala dostupnost socijalnih usluga i time u konačnici povećali blagostanje i dobrobit građana.

U projektu *ZAJEDNICE UKLJUČUJU: Inicijativa za univerzalno dostupne temeljne socijalne usluge u zajednici* na ova pitanja nastojat ćemo ponuditi odgovor na temelju istraživanja, strukturiranog dijaloga s ključnim predstavnicima stručne zajednice u području socijalnih usluga te analize statističkih podataka, znanstvene i stručne literature o korisnicima socijalnih usluga.

Razvoju modela univerzalne dostupnosti temeljnih socijalnih usluga u zajednici u ovom projektu pristupili smo u nekoliko koraka:

1. Definiranje ekstenzivne liste socijalnih usluga za osam korisničkih skupina, uzimajući u obzir njihovu interdisciplinarnost i pružatelje iz različitih sektora. Korisničke skupine definirane su temeljem određenja korisnika u sustavu socijalne skrbi (čl. 18 i čl.19., NN, 18/2022.) i to na sljedeći način:

    - Građani u siromaštvu – odgovara zakonskom određenju ˝samac i kućanstvo koji nemaju dovoljno sredstava za podmirenje osnovnih životnih potreba, a nisu ih u mogućnosti ostvariti svojim radom, prihodima, imovinom, od obveznika uzdržavanja ili na drugi način˝ (čl. 18, st.1, t.1.) i ˝beskućnik˝ (čl. 18, st.1, t.11.)

    - Djeca u riziku – odgovara zakonskom određenju ˝dijete bez roditelja ili bez odgovarajuće roditeljske skrbi, dijete žrtva obiteljskog, vršnjačkog ili drugog nasilja, dijete žrtva trgovanja ljudima, dijete rane i predškolske dobi s razvojnim odstupanjem ili razvojnim rizikom, dijete s teškoćama u razvoju, dijete s problemima u ponašanju, dijete bez pratnje koje se zatekne izvan mjesta svog prebivališta bez nadzora roditelja ili druge odrasle osobe koja je odgovorna skrbiti se za njega te dijete strani državljanin koje se zatekne na teritoriju Republike Hrvatske bez nadzora roditelja ili druge odrasle osobe koja je odgovorna skrbiti se za njega˝ (čl.18., st.1, t.2)

    - Mladi u riziku – odgovara zakonskom određenju ˝mlađa punoljetna osoba i mlađa punoljetna osoba s problemima u ponašanju˝ (čl.18., st.1., t.3.) i ˝osoba koja je bila korisnik prava na uslugu smještaja ili organiziranog stanovanja, a kojoj je potrebno osigurati stanovanje dok za to traje potreba, a najduže do 26. godine života˝ (čl.18., st.1., t.4).

- Obitelji u riziku – odgovara zakonskom određenju ˝trudnica ili roditelj s djetetom do godine dana života, iznimno do tri godine života bez obiteljske podrške i odgovarajućih uvjeta za život˝ (čl.18., st.1., t.5.), ˝obitelj kojoj je zbog narušenih odnosa ili drugih nepovoljnih okolnosti potrebna stručna pomoć ili druga podrška˝ (čl.18., st.1., t.6.) i ˝odrasla osoba žrtva obiteljskog ili drugog nasilja te žrtva trgovanja ljudima˝ (čl.18., st.1., t.8.)
- Osobe s invaliditetom – odgovara zakonskom određenju ˝osoba s invaliditetom koja nije u mogućnosti udovoljiti osnovnim životnim potrebama˝ (čl.18., st.1., t.7.)
- Starije i nemoćne osobe – odgovara zakonskom određenju ˝osoba koja zbog starosti ili bolesti ne može samostalno skrbiti o osnovnim životnim potrebama˝ (čl.18., st.1., t.9.)
- Osobe s teškoćama mentalnog zdravlja – ova kategorija je nešto šira od zakonom definirane kao: ˝ osoba ovisna o alkoholu, drogi, kockanju i drugim oblicima ovisnosti˝ (čl.18., st.1., t.10.) te osim ovisnosti obuhvaća i druge teškoće mentalnog zdravlja
- Pripadnici nacionalnih manjina i izbjeglice – zbog prirode socijalnih usluga, dio usluga za pripadnike romske nacionalne manjine, namijenjenih prevladavanju jezičnih i kulturnih barijera, uključen je u u ovu skupinu. Skupina korisnika odgovara zakonskom određenju ˝Stranac pod supsidijarnom zaštitom i azilant te članovi njihove obitelji koji zakonito borave u Republici Hrvatskoj˝ (čl.19., st.2.).

Oformljeni su paneli stručnjaka za socijalne usluge za svaku od korisničkih skupina u koje su pozvani stručnjaci prepoznati kao istaknuti u relevantnom području iz javnog sektora (javnog sustava socijalne skrbi), neprofitnog sektora (udruga u području socijalne djelatnosti) i akademske zajednice (tablica 1).

Tablica 1. Struktura i broj stručnjaka u stručnim panelima

PANEL STRUČNJAKA ZA SOCIJALNE USLUGE ZA DJECU U RIZIKU	6 stručnjaka/kinja	• 1 iz ustanove socijalne skrbi • 5 iz udruga koje pružaju socijalne usluge djeci s različitim vrstama rizika
PANEL STRUČNJAKA ZA SOCIJALNE USLUGE ZA MLADE U RIZIKU	6 stručnjaka/kinja	• 1 iz ustanove socijalne skrbi • 4 iz udruga koje pružaju socijalne usluge mladima s različitim vrstama rizika • 1 iz ustanove u području obrazovanja mladih
PANEL STRUČNJAKA ZA SOCIJALNE USLUGE ZA OBITELJI U RIZIKU	7 stručnjaka/kinja	• 3 iz ustanova socijalne skrbi • 3 iz udruga koje pružaju socijalne usluge obiteljima s različitim vrstama rizika • 1 iz akademske zajednice
PANEL STRUČNJAKA ZA SOCIJALNE USLUGE ZA GRAĐANE U SIROMAŠTVU	6 stručnjaka/kinja	• 2 iz ustanove socijalne skrbi • 3 iz udruga koje pružaju socijalne usluge osobama u siromaštvu • 1 iz akademske zajednice
PANEL STRUČNJAKA ZA SOCIJALNE USLUGE ZA OSOBE S TEŠKOĆAMA MENTALNOG ZDRAVLJA	7 stručnjaka/inja	• 1 iz ustanove zdravstvene skrbi • 1 iz jedinice lokalne samouprave • 1 iz akademske zajednice • 4 iz udruga koje pružaju socijalne usluge osobama s teškoćama mentalnog zdravlja
PANEL STRUČNJAKA ZA SOCIJALNE USLUGE ZA OSOBE S INVALIDITETOM	7 stručnjaka/kinja	• 1 iz ustanove socijalne skrbi • 4 iz udruga koje pružaju socijalne usluge osobama s invaliditetom • 1 iz jedinice lokalne samouprave • 1 iz akademske zajednice
PANEL STRUČNJAKA ZA SOCIJALNE USLUGE ZA PRIPADNIKE NACIONALNIH MANJINA I IZBJEGLICE	5 stručnjaka/inja	• 3 iz ustanove socijalne skrbi • 2 iz udruga koje pružaju usluge pripadnicima nacionalnih manjina i izbjeglicama
PANEL STRUČNJAKA ZA SOCIJALNE USLUGE ZA STARIJE I NEMOĆNE OSOBE	7 stručnjaka/inja	• 1 iz ustanove socijalne skrbi • 5 iz udruga koje pružaju socijalne usluge starijim osobama • 1 iz Ureda pučke pravobraniteljice • 1 iz akademske zajednice

2. Online sastanci navedenih panela stručnjaka održani su od 8. do 12. veljače 2021. godine. Na temelju rasprave na panelima izrađene su ekstenzivne liste socijalnih usluga za svaku od korisničkih skupina koje su uvrštene u dalju proceduru.

3. Provedba istraživanja na uzorku stručnjaka iz različitih profesija i sektora radi rangiranja izlistanih socijalnih usluga prema prioritetima. U ovom znanstvenom istraživanju korištena je Q metodologija radi postizanja stručnog konsenzusa o tome koje socijalne usluge trebaju biti dio temeljnog paketa. Metodologija istraživanja detaljno je opisana u Poglavlju III. Stručnjaci su smatrani ključnim informatorima (Marshall, 1996.) koji mogu na temelju iskustva govoriti u ime zajednice korisnika s kojom rade i za koje se očekuje da će imati uvid u potrebe i onih korisničkih skupina s kojima sada nemaju neposredno iskustvo. S obzirom da je Q metodologija ograničena u veličini uzorka, iz tog razloga je donesena odluka o uključivanju stručnjaka koji nemaju samo svoju individualnu perspektivu.

4. Definiranje paketa temeljnih socijalnih usluga za svaku korisničku skupinu na osnovi rezultata istraživanja prioriteta. Nakon provedenog istraživanja ponovno su organizirani sastanci panela stručnjaka od 17. do 21. svibnja 2021. godine. U ovom ciklusu raspravljalo se o rezultatima rangiranja socijalnih usluga i obrascima rangiranja te je odlučeno koje socijalne usluge trebaju biti univerzalno dostupne.

5. Procjena broja potencijalnih korisnika temeljnih socijalnih usluga i procjena potrebnih resursa. U ovom koraku je na temelju analize sadržaja i različitih izvora podataka – statističkih izvješća, izvješća različitih državnih tijela i javnih institucija, relevantnih istraživanja i drugih znanstvenih izvora, procijenjen broj potencijalnih korisnika svake socijalne usluge. Broj potencijalnih korisnika izražen je na razini od 5000 stanovnika, što u kontekstu ovog rada smatramo lokalnom zajednicom. Tako se željelo premostiti ograničavajući čimbenik vrlo visoke administrativne rascjepkanosti na općine i gradove gdje je izvjesno da dio jedinica lokalne samouprave ne može samostalno, bez funkcionalnog povezivanja sa susjednim jedinicama lokalne samouprave, ostvariti predviđene funkcije u kontekstu osiguravanja dostupnosti temeljnih socijalnih usluga.

6. Istodobno s procjenom broja potencijalnih korisnika sastavljen je opis sadržaja svake socijalne usluge iz temeljnog paketa radi procjene potrebnih resursa, odnosno vrste, intenziteta i trajanja stručnog rada. Procjene su izrađene na temelju normativnih dokumenata i stručne literature. Osim toga, napravljena je i procjena ostalih resursa – prostora za rad i stambenih prostora, vozila i specifične opreme.

7. Izrađene procjene dodatno su provjerene i revidirane u trećem ciklusu rasprava panela stručnjaka koji je održan od 8. do 17. rujna 2021. godine.

8. Izrada modela i analiza troškova univerzalne dostupnosti temeljnih socijalnih usluga u zajednici. Na temelju procijenjenog broja korisnika i potrebnih ljudskih resursa (profesionalnih, para-profesionalnih i neprofesionalnih pomagača), izrađene su projekcije troškova za osiguravanje univerzalne dostupnosti temeljnih socijalnih usluga na nacionalnoj razini te je predložen model organizacije s razinama odgovornosti za pojedine skupine socijalnih usluga.

III

TEMELJNE SOCIJALNE USLUGE

3.1 PROCES POSTIZANJA STRUČNOG KONSENZUSA O TEMELJNIM SOCIJALNIM USLUGAMA

Može se pretpostaviti da postoji stručni pa i društveni konsenzus o tome da određene socijalne usluge trebaju biti univerzalno dostupne građanima kojima su potrebne. Može se očekivati i politički konsenzus o ovom pitanju, posebice ako je podržan stručnom i društvenom suglasnosti.

No koje su to usluge koje trebaju biti univerzalno dostupne, odnosno koje su temeljne socijalne usluge? U vezi s ovim pitanjem može se očekivati teže postizanje konsenzusa, čak i izostanak konsenzusa o kriterijima po kojemu će se birati temeljne socijalne usluge. Tako će, primjerice, dio stručnjaka prednost dati preventivnim uslugama, dok će drugi podržati krizne usluge i one koje se odnose na tretmane. Dio stručnjaka može biti sklon uslugama šireg dosega, dok će drugi zagovarati usluge za višestruko ranjive društvene skupine. Dakako, moguće je da će stručnjaci u različitoj mjeri podržati usluge za pojedine skupine korisnika, odnosno neće se postići konsenzus o tome za koje skupine treba osigurati temeljne socijalne usluge.

Ipak, ako želimo implementirati model koji će osigurati univerzalnu dostupnost temeljnih socijalnih usluga, potrebno je postići stručni konsenzus kao osnovu daljnjeg zagovaranja.

Postupak izgradnje stručnog konsenzusa temelji se na tri postavke:

a) definiranje kriterija po kojemu će stručnjaci odrediti prioritetne socijalne usluge

b) definiranje mehanizma za strukturirano određivanje prioritetnih socijalnih usluga

c) kvalitativna validacija prioritetno odabranih socijalnih usluga među specijaliziranim stručnjacima.

Ispunjavanjem navedenih pretpostavki omogućuje se nedvojbeno donošenje zaključka o tome koji je stručni konsenzus o temeljnim socijalnim uslugama koje bi trebale biti univerzalno dostupne.

3.1.1. Kriterij određivanja prioritetnosti socijalnih usluga

Ulazni kriterij po kojemu će se odrediti prioritetne socijalne usluge definiran je na osnovi teorijske postavke o podjeli socijalnih usluga s obzirom na razmjer izloženosti nekom socijalnom problemu ili riziku (Department of Health 2003c, prema Petch, 2007.). Tako se dijele na: a) preventivne usluge, b) usluge koje pomažu u djelotvornom suočavanju s problemom i unapređuju kvalitete života, c) usluge ključne za zdravlje korisnika i d) usluge koje su od kritične važnosti za život korisnika (Department of Health 2003c, prema Petch, 2007.). Pritom, što je razvijenija socijalna država, to se poimanje ključne ili kritične važnosti za zdravlje/život korisnika proširuje i usluge s nižih razina prioritetnosti ulaze u više razine. Prema takvoj procjeni rizika građanima bi svakako trebale biti zajamčene i dostupne socijalne usluge koje su od ključne važnosti za zdravlje, odnosno od kritične važnosti za život korisnika. Ovaj kriterij preuzet je u izradi predloženog modela i preveden u daljnjem analitičkom postupku. Pritom sve definirane korisničke skupine (djeca u riziku, mladi u riziku, obitelji u riziku, osobe u riziku od siromaštva, osobe s teškoćama mentalnog zdravlja, osobe s invaliditetom, starije osobe te izbjeglice i pripadnici nacionalnih manjina) imaju ravnopravan položaj, odnosno odlučeno je da se za svaku korisničku uslugu zasebno provede postupak određivanja prioriteta socijalnih usluga.

3.1.2. Definiranje mehanizma za strukturirano određivanje prioritetnih socijalnih usluga

Prije razrade primjerenog mehanizma za strukturirano određivanje prioritetnih socijalnih usluga vodila se široka rasprava s više od 50 stručnjaka koji su uključeni u pružanje socijalnih usluga kako bi se dobio sadržajan uvid u relevantnost teme socijalnih usluga i artikulirale socijalne usluge (postojeće i potencijalno nove). Tijekom osam stručnih panela i više od 16 sati rasprave postignuta je sadržajna zasićenost te stečen uvid u širinu različitih perspektiva o važnosti socijalnih usluga.

Kako bi se postigao stručni konsenzus u širem krugu profesionalne zajednice, odlučeno je da će se primijeniti Q metodologiju koja omogućuje strukturirani proces ispitivanja stavova o nekoj temi te uvid u obrasce razmišljanja o prioritetnosti socijalnih usluga (Alderson i sur., 2018.). Q metodologija je pristup koji omogućuje istodobnu kombinaciju kvalitativnog i kvantitativnog pristupa kako bi se dobio uvid u obrasce promišljanja o određenoj temi. Za primjenu Q metodologije važna su dva uzorka: uzorak tvrdnji (Q set) i uzorak ispitanika (P set). Za razliku od klasične kvantitativne ili R metodologije[3] gdje se u faktorskoj analizi oko faktora grupiraju pojedinačne tvrdnje, u Q metodologiji je obrnuto. Naime, u Q metodologiji faktorska analiza trebala bi rezultirati grupiranjem sudionika. Radi toga se uzorkom smatra uzorak tvrdnji (Q set), a ne uzorak ispitanika (P-set). Posljedično, Q metodologija se ne treba raditi na velikim uzorcima, a poželjno je imati i do 3 puta manje ispitanika nego što ima tvrdnji (Alderson i sur., 2018.).

Istovremeno, Q metodologija ima svoja značajna ograničenja. Kako se najčešće temelji na malim uzorcima, ograničene su generalizacije nalaza, reprezentativnost uzorka nije postignuta te nije moguća korelacija s drugim obilježjima važnima za objašnjavanje razlika u obrascima (Danielson, 2009.).

Kako bi se premostila ta ograničenja, napravljena je kombinacija Q metodologije i klasične R metodologije po modelu korelacije profila (Danielson, 2009.). U takvom pristupu zadržana su sljedeća obilježja Q metodologije: kvalitativno i participativno utvrđivanje tvrdnji (tj. usluga čije će se prioritetnosti procjenjivati), faktorska analiza metodom analize glavnih komponenti te ponovna kvalitativna i teorijska validacija utvrđenih obrazaca. S druge strane, obilježja klasične ili R metodologije podrazumijevaju da su tvrdnje prevedene u uobičajene tvrdnje uz primjenu skale procjene od pet stupnjeva, korišten je veći uzorak od uobičajenih u Q metodologiji, u interpretaciji rezultata omogućena je generalizacija nalaza, postignuta je reprezentativnost uzorka te omogućena provedba dodatnih testova razlika kako bi se provjerilo u čemu se još razlikuju ispitanici koji pripadaju istom obrascu.

Tako je stvorena baza dokaza o tome koje su usluge procijenjene kao prioritetne te koji sve obrasci postoje u svrstavanju socijalnih usluga po razinama prioritetnosti.

3 Naziv R metodologije dolazi od Pearsovog koeficijenta korelacije r koji se koristi kao osnova faktorske analize u kojoj se oko faktora saturiraju tvrdnje (a ne ispitanici).

3.1.3. Kvalitativna validacija prioritetno odabranih socijalnih usluga među specijaliziranim stručnjacima

Radi pripreme upitnika i validacije rezultata oformljeni su paneli stručnjaka za pojedine korisničke skupine. Isti stručnjaci nisu sudjelovali u kvantitativnom istraživanju pa je izbjegnut rizik od prevelike zastupljenosti određenih stajališta. Kvalitativna i teorijska validacija rezultata uobičajeni je dio postupka Q metodologije, kako u pripremi Q seta (set tvrdnji) tako i u validaciji rezultata (Paige i Morin, 2016.).

Nakon drugog ciklusa panela u procesu razrade resursa i procijenjenog broja korisnika, teorijski je validiran paket temeljnih socijalnih usluga te po potrebi minimalno korigiran zbog uočenih preklapanja. Finalni popis temeljnih socijalnih usluga koje trebaju biti univerzalno dostupne prikazan je na kraju ovog poglavlja.

3.2

REZULTATI Q ISTRAŽIVANJA O PRIORITETNIM SOCIJALNIM USLUGAMA ZA RANJIVE DRUŠTVENE SKUPINE

3.2.1. Uzorak, postupak provedbe istraživanja i obrada rezultata

Nakon usklađivanja i klasifikacije socijalnih usluga, provedeno je kvantitativno istraživanje na reprezentativnom uzorku stručnjaka koji su za svaku socijalnu uslugu trebali procijeniti razinu njezine prioritetnosti. Ponuđena je skala od pet stupnjeva sa sljedećim značenjem:

1. *- od kritične je važnosti kako se ne bi ozbiljno narušila kvaliteta života i dobrobit korisnika*
2. *- iznimno je važna, pomaže da korisnici imaju koliko-toliko zadovoljavajuću kvalitetu života*
3. *- važna je, pomaže da korisnici unaprijede kvalitetu svog života na još višu razinu*
4. *- sada nije nužna, ali može prevenirati probleme u budućnosti*
5. *- nije uopće važna i ne pridonosi kvaliteti života.*

Istraživanje je provedeno *online* u travnju 2021. godine pomoću Googleova obrazac za izradu upitnika. Upitnik je poslan na adrese ustanova koje su obuhvaćene nacionalnom mrežom pružatelja socijalnih usluga (kontakti dostupni u adresaru resornog ministarstva) te organizacijama civilnog društva koje djeluju izvan nacionalne mreže i pružaju socijalne usluge.

U istraživanju je sudjelovalo 208 stručnjaka. Dodatnom provjerom iz obrade su isključeni ispitanici koji su svim uslugama dali isti stupanj značaja i u čijim odgovorima ne postoji ikakav varijabilitet. U konačnici je analiza napravljena na osnovi 202 ispunjena upitnika.

Prema profesionalnim obilježjima sudionika možemo zaključiti da su zastupljeni stručnjaci različitih profila s obzirom na profesiju, iskustvo i područje rada u sustavu socijalne skrbi. Istraživanjem je bilo obuhvaćeno 28 stručnjaka (14 %) i 171 stručnjakinja (86 %). S obzirom na dob, većina stručnjaka je u srednjoj dobi - od 30 do 64 godine (N = 182 ili 92 %), mlađih stručnjaka je 17 (9 %), a 2 stručnjaka starija su od 65 godina. Stručnjaci u ovom uzorku u prosjeku imaju 16,66 godina staža u pružanju socijalnih usluga (SD = 9,972).

Stručnjaci su na sljedeći način raspoređeni prema regiji u kojoj se nalazi njihova radna organizacija: njih 38 ili 19 % radi u Istočnoj Hrvatskoj, 57 ili 28 % u Jadranskoj Hrvatskoj, 20 ili 10 % u Sjevernoj Hrvatskoj, a 86 ili 43 % u Središnjoj Hrvatskoj. Većina stručnjaka radi u gradu srednje veličine s više od 20 000 stanovnika (N = 88 ili 44 %), njih 79 (39 %) radi u velikom gradu s više od 100 000 stanovnika, 22 stručnjaka (11 %) rade u manjem gradu od 10 000 do 20 000 stanovnika, a njih 13 (6 %) radi u gradu/općini s manje od 10 000 stanovnika.

Prema drugim profesionalnim obilježjima (tablica 2) možemo zaključiti da najviše stručnjaka radi u centrima za socijalnu skrb i u domovima socijalne skrbi kao najvećim ustanovama u sustavu socijalne skrbi. Ipak, znatan je udio stručnjaka iz organizacija civilnog društva i predstavnika akademske zajednice. Najviše su zastupljeni socijalni radnici kao najveća skupina stručnjaka u sustavu socijalne skrbi, a time i u sustavu pružanja socijalnih usluga.

Tablica 2. Profesionalna obilježja stručnjaka u uzorku

TIP ORGANIZACIJE	N	%
Centar za socijalnu skrb	75	37,5
Dom socijalne skrbi ili centar za pružanje usluga u zajednici	53	26,5
Druga ustanova socijalne skrbi	19	9,5
Organizacija civilnog društva	43	21,5
Visoko učilište	10	5
PROFESIJA	**N**	**%**
Edukacijski rehabilitator/ica	11	5,6
Psiholog/inja	21	10,6
Socijalni pedagog/inja	16	8,1
Socijalni radnik/ca	115	58,1
Neka druga pomažuća profesija	18	9,1
Neka druga profesija	17	8,6
S KOJOM GRUPOM KORISNIKA STRUČNJACI RADE	**N**	**%**
S djecom u riziku	83	41,1
S mladima u riziku	71	35,2
S obiteljima u riziku	88	43,6
S osobama s teškoćama mentalnog zdravlja	59	29,2
S osobama s invaliditetom	74	36,6
S osobama u siromaštvu	44	21,8
S izbjeglicama i pripadnicima nacionalnih manjina	11	5,4
Sa starijim osobama	73	36,1

S obzirom na to s kojim skupinama stručnjaci rade, vrlo je rijetka jasna specijalizacija samo s jednom korisničkom skupinom (što odgovara i polivalentnom karakteru centara za socijalnu skrb). Dodatno je provjeravano postoji li statistički značajno grupiranje stručnjaka ovisno o tome rade li s nekom korisničkom skupinom. Kako takvi rezultati nisu dobiveni te s obzirom na činjenicu da u Hrvatskoj stručnjaci najčešće nisu usko specijalizirani za rad s jednom grupom korisnika, bilo je opravdano da svi stručnjaci procjenjuju prioritet usluga za sve korisničke skupine pa su uzeti u obzir odgovori na razini cijelog uzorka.

Iako provedba istraživanja odgovara klasičnoj R metodologiji, analitička podloga temeljena je na Q metodologiji koja je namijenjena dobivanju uvida u obrasce stavova koje ispitanici imaju o nekoj temi (Alderson et al., 2018.). Drugim riječima, faktorskom analizom grupiraju se sudionici, a ne tvrdnje prema obrascima stavova. Time se postiže uvid u implicitnu logiku koju grupa sudionika dijeli kada razmišlja o određenoj temi. Prema modelu korelacije profila koju Danielson (2009.) preporučuje kao jednu od strategija za kombinaciju Q i R metodologija primjerenih većim uzorcima, u postupku obrade utvrđuje se korelacija odgovora ispitanika s ukupnim obrascem, odnosno de facto zasićenje na pojedinom faktoru kao obrascu. Primijenjena je faktorska metoda analize glavnih komponenti (PCA) i pritom je korišten računalni program Ken-Q Analysis (Banasick, 2019.). Grupiranje sudionika dodatno je validirano testovima razlika (t-test, ANOVA i hi-kvadrat). Cjeloviti prikaz rezultata nalazi se u Dopunskoj datoteci 1.

Izvorna skala od 1 do 5 prilikom obrade podataka podešena je na skalu od -2 do 2, pri čemu raspon od -2 do 2 treba shvatiti uvjetno jer su ukupno gledajući procjene stručnjaka za sve usluge pomaknute prema višim vrijednostima. Ovakav raspon omogućio je prepoznavanje obrasca u kojemu su označene one usluge koje su procijenjene statistički značajno prioritetnijima. Pritom je korišten pristup tzv. neprisilnog sortiranja, što je omogućilo da više usluga bude procijenjeno najvišim ili najnižim procjenama prioritetnosti.

Iako su analizom dobiveni različiti obrasci određivanja prioriteta socijalnih usluga, radi činjenice da su odgovori pomaknuti prema višim procjenama prioritetnosti i da na razini ukupnog uzorka postoji konsenzus o prioritetnim socijalnim uslugama, konačni sud o prioritetnim socijalnim uslugama temeljili smo dominantno na procjeni svih ispitanika, i to uzimajući u obzir srednju vrijednost (aritmetičku sredinu) i standardnu devijaciju. To znači da nije bilo potrebe za odabirom pojedinog obrasca rangiranja jer se moglo zaključivati na razini općeg uzorka. Popis temeljnih socijalnih usluga dodatno je provjeren i po potrebi dopunjen na temelju stručnih rasprava u okviru tematskih panela.

Za svaku grupu usluga utvrđen je značajan udio ispitanika (njih 20 - 30 %) koji su svim uslugama u toj korisničkoj kategoriji dali najvišu ocjenu prioritetnosti. Ipak, kako takav obrazac procjenjivanja nisu imali u cijelom upitniku, njihove odgovore prihvatili smo kao valjane i dodatno provjerili njihova obilježja. Ponovljen je izračun srednjih vrijednosti bez ove grupe ispitanika koja može umjetno distribuciju pomaknuti prema višim procjenama prioritetnosti, a time smo dodatno provjerili opravdanost da se ova grupa ispitanika ne isključuje iz finalne obrade.

3.2.2. Procjena prioritetnosti socijalnih usluga za djecu u riziku

Kada govorimo o određivanju prioritetnih socijalnih usluga za djecu, pronađeno je šest obrazaca po kojima su se stručnjaci grupirali.

U prvom obrascu su stručnjaci koji su svim uslugama dali najvišu procjenu prioritetnosti i među kojima ne postoji varijabilitet (N = 31 stručnjak ili 15 %).

Drugi obrazac prepoznat je kod 25 stručnjaka (12 %) koji su u procjeni prioritetnosti prednost dali uslugama za djecu bez odgovarajuće roditeljske skrbi te za djecu s teškoćama u razvoju. To se dominantno odnosi na usluge pomoćnika u nastavi i dječjem vrtiću, ranu intervenciju, terapiju senzorne integracije, logopedsku terapiju te usluge smještaja za obje skupine putem udomiteljstva i organiziranog stanovanja. S obzirom na to da se prioritetne usluge najviše odnose na tretmane, asistenciju te smještaj izvan obitelji, možemo zaključiti da ova skupina stručnjaka preferira usluge koje izravno ciljaju prioritetan problem u obje skupine djece.

U treću skupinu (N = 39 ili 19 %) ulaze stručnjaci koji prednost daju uslugama preventivnog i tretmanskog tipa, i to za djecu ranjivu na osnovi teškoća u razvoju, problema u ponašanju ili obiteljskih rizika. Ovo su sljedeće usluge: socijalizacijske i razvojne aktivnosti, terapijske usluge (logopedska terapija, rana intervencija, senzorna integracija), cjelodnevni ili poludnevni boravci, psihološka pomoć te pomoćnici u nastavi i dječjem vrtiću. Dodatno je testovima razlike utvrđeno da ovi stručnjaci češće rade u organizacijama civilnog društva i na visokim učilištima.

Četvrtu skupinu stručnjaka (N = 31 ili 15 %) povezuje to što veći prioritet daju uslugama smještaja (udomiteljstvo i organizirano stanovanje) te boravcima (poludnevnim ili cjelodnevnim) kao prijelaznim uslugama između institucije i zajednice. Njima su više skloni stručnjaci koji su zaposleni u domovima ili centrima za pružanje usluga u zajednici.

Peti obrazac prepoznat je u određivanju prioriteta usluga smještaja (udomiteljstvo ili organizirano stanovanje) te terapijskim uslugama za djecu s teškoćama u razvoju (rana intervencija, logopedska terapija), odnosno psihološka podrška. Ovaj obrazac prepoznat je kod 38 stručnjaka (19 %), a statistički je znatno češće riječ o stručnjacima iz centara za socijalnu skrb.

Posljednji obrazac prepoznat je kod 38 stručnjaka (19 %) među kojima je veća zastupljenost stručnjaka iz centara za rehabilitaciju. Ova grupa stručnjaka prioritet daje udomiteljstvu kao obliku smještaja primjerenom djeci te terapijskim uslugama, poput rane intervencije, senzorne integracije, psihološke pomoći, logopedske terapije te usluzi pomoći u uključivanju u sustav obrazovanja kroz međusektorsku suradnju.

Imajući u vidu da ni jedan obrazac ne dijeli više od 20 % stručnjaka te da su procjene prioritetnosti socijalnih usluga generalno pomaknute prema višim vrijednostima, bilo je opravdano za odabir prioritetnih socijalnih usluga prihvatiti one čija je srednja vrijednost umanjena za standardnu devijaciju na razini usluga od ključne ili kritične važnosti za život i zdravlje korisnika (tablica 3).

Tablica 3. Srednje vrijednosti ocjene prioritetnosti socijalnih usluga za djecu u riziku

USLUGA	M (1 najmanje važne, 5 najviše važne)	SD
USLUGE O KOJIMA POSTOJI KONSENZUS DA TREBAJU BITI U TEMELJNOM PAKETU		
Organizirano stanovanje za djecu (do 18 godina) s teškoćama u razvoju	4,32	0,840
Pomoćnik u nastavi	4,42	0,744
Organizirano stanovanje za djecu (do 18 godina) bez roditeljske skrbi	4,44	0,822
Cjelodnevni ili poludnevni boravak za djecu s problemima u ponašanju	4,46	0,720
Usluga međusektorskog prijenosa znanja (pomoć pri uključivanju u programe odgoja i redovitog obrazovanja (integracija))	4,46	0,754
Cjelodnevni ili poludnevni boravak za djecu iz obitelji u riziku	4,47	0,734
Socijalizacijske i razvojne aktivnosti za djecu	4,49	0,721
Specijalizirano udomiteljstvo za djecu s problemima u ponašanju	4,51	0,793
Prilagođeni prijevoz u zajednici za učenike s teškoćama u razvoju	4,51	0,735
Cjelodnevni ili poludnevni boravak za djecu s teškoćama u razvoju	4,52	0,678
Terapija senzorne integracije za djecu s teškoćama u razvoju	4,55	0,746
Logopedska terapija	4,56	0,725
Specijalizirano udomiteljstvo za djecu s teškoćama u razvoju	4,62	0,629
Savjetovanje ili psihološka pomoć za djecu	4,66	0,595
Rana intervencija za djecu s teškoćama u razvoju	4,74	0,542
Udomiteljstvo za djecu bez odgovarajuće roditeljske skrbi	4,75	0,509
USLUGE O KOJIMA NE POSTOJI KONSENZUS DA TREBAJU BITI U TEMELJNOM PAKETU		
Organizirano stanovanje za djecu bez pratnje	3,89	1,112
Privremeni smještaj djece s teškoćama u razvoju radi predaha od skrbi primarnog njegovatelja	3,95	1,026
Udomiteljstvo za djecu bez pratnje	4,05	1,042
Privremeni njegovatelj u obitelji za dijete s teškoćama u razvoju radi predaha od skrbi	4,18	0,880
Organizirano stanovanje za djecu s problemima u ponašanju	4,23	0,896
Pomoćnik u dječjem vrtiću	4,23	0,880

Nakon validacije procjena u stručnom panelu dodatno su u paket temeljnih socijalnih usluga uvrštene i sljedeće usluge:

- drugi oblik smještaja za mlade s problemima u ponašanju, tj. organizirano stanovanje za mlade s problemima u ponašanju / u alternativnoj skrbi
- organizirano stanovanje za djecu bez pratnje i djecu žrtve trgovanja ljudima koja su životno ugrožena i nedvojbeno trebaju javnu zaštitu
- usluga predaha od skrbi kao novo područje socijalnih usluga koje će se tek razvijati imajući u vidu rizike i izazove njegovateljskog stresa (Hawken i sur., 2018.). Tako je u temeljni popis uvrštena usluga privremenog njegovatelja u obitelji za dijete s teškoćama u razvoju radi predaha od skrbi.

Daljnjim analizama potrebnih resursa i procijenjenog broja korisnika, a sukladno povratnim informacijama stručnjaka, rana intervencija zamijenjena je nazivom *rana razvojna podrška,* koja je prema dobi djeteta razložena na *ranu razvojnu podršku od 0 do 3 godine, ranu razvojnu podršku djeci s teškoćama predškolske dobi (4 do 7 godina)* te *multidisciplinarnu psihosocijalnu podršku djeci s teškoćama u razvoju školske dobi (8 do 18 godina)*. *Usluga senzorne integracije* u analizi i procjeni potrebnih resursa uključena je u ranu razvojnu podršku od 0 do 3 godine. Ovako operacionalizirana usluga i sukladno postojećim propisima omogućuje uključivanje širokog spektra terapijskih aktivnosti primjerenih potrebama djece, njihovoj dobi i s tim u vezi sustavima podrške koji su na raspolaganju (odgojno-obrazovni sustav sa svojim stručnjacima).

3.2.3. Procjena prioritetnosti socijalnih usluga za mlade u riziku

Stručnjake se može svrstati u pet skupina prema obrascima određivanja prioritetnih usluga za mlade.

Prvu skupinu čini 34 stručnjaka (17 %) koji su bez varijabiliteta sve usluge procijenili prioritetnima.

Drugu skupinu stručnjaka (N = 47 ili 23 %) povezuje to što su najveći prioritet dali uslugama za mlade s problemima u ponašanju ili mladima u alternativnoj skrbi. Specifično je riječ o psihosocijalnoj podršci ili individualnoj i mentorskoj podršci mladima s problemima u ponašanju te maloljetnim trudnicama, uslugama smještaja putem kriznog smještaja ili organiziranog stanovanja. U ovoj skupini više su zastupljeni mlađi stručnjaci te stručnjaci koji dolaze iz manjih gradova (10 000 - 20 000 stanovnika).

U drugoj skupini nalazi se najviše stručnjaka, točnije njih 60 ili 30 % koji najveći prioritet daju uslugama smještaja izvan obitelji (organizirano stanovanje) za sve skupine ranjivih mladih. Što se tiče usluga psihosocijalne podrške u zajednici, tu se prioritet daje takvim uslugama samo za mlade s problemima u ponašanju. U ovom obrascu češće nalazimo starije stručnjake te stručnjake iz velikih urbanih ili malih ruralnih sredina, gdje je ova problematika možda najvidljivija jer je riječ o relativno rijetkim pojavama u zajednici za koje zajednica procjenjuje da nema kapacitete.

Za razliku od prethodne, treća skupina stručnjaka (N = 48 ili 24 %) uslugama smještaja daje manji prioritet, a veći imaju servisi u zajednici namijenjeni psihosocijalnom osnaživanju (multidisciplinarna psihosocijalna podrška, savjetovanje, podrška u obrazovanju i uključivanju na tržište rada, boravak, individualni rad). Ovom obrascu u nešto većoj mjeri pripadaju stručnjaci iz manjih gradova (10 000 do 20 000 stanovnika).

Posljednja grupa stručnjaka je najmanja i čini je samo 13 stručnjaka (6 %) koji imaju potpuno drugačiji pristup i preferiraju preventivne usluge za opću populaciju mladih i cjelovito osnaživanje za mlade u riziku. Primjerice, to su usluge infocentra, psihološko-edukativnih i preventivnih programa, savjetovanja, podrške u obrazovanju i zapošljavanju, klub za mlade te boravci. Njihov je pristup usmjeren na široko shvaćanje rizika i problematika odmičući se od jednog najizraženijeg rizika.

Na osnovi procjene na razini cijelog uzorka usluge koje su prihvaćene kao temeljne iskazane su u tablici 4.

Tablica 4. Srednje vrijednosti ocjene prioritetnosti socijalnih usluga za mlade u riziku

USLUGA	M (1 najmanje važne, 5 najviše važne)	SD
USLUGE O KOJIMA POSTOJI KONSENZUS DA TREBAJU BITI U TEMELJNOM PAKETU		
Cjelodnevni ili poludnevni boravak za mlade s problemima u ponašanju	4,25	0,778
Grupna i vršnjačka podrška mladima s problemom u ponašanju	4,25	0,786
Mentorstvo mladima iz alternativne skrbi	4,28	0,776
Savjetovanje za mlade	4,31	0,764
Psihološko-edukativni i preventivni programi za mlade	4,31	0,782
Mentorstvo mladima s problemima u ponašanju	4,31	0,790
Organizirano stanovanje za mlade s problemima u ponašanju	4,32	0,792
Organizirano stanovanje za mlade s invaliditetom	4,42	0,724
Stambeno zbrinjavanje mladih u kriznim situacijama (gubitak posla, izlazak iz ustanove, katastrofe…)	4,44	0,815
Individualni socijalno-pedagoški rad s mladima s problemima u ponašanju	4,46	0,713
Multidisciplinarna psihosocijalna podrška maloljetnim trudnicama i majkama	4,48	0,748
Organizirano stanovanje za mlade u alternativnoj skrbi (18+ godina)	4,50	0,714
Multidisciplinarna psihosocijalna podrška za mlade s problemima u ponašanju	4,51	0,656
Programi podrške mladima s problemima ovisnosti	4,57	0,652
USLUGE O KOJIMA NE POSTOJI KONSENZUS DA TREBAJU BITI U TEMELJNOM PAKETU		
Klub za mlade	3,81	0,911
Infocentar za mlade	3,83	0,949
Usluge koje promiču aktivno građanstvo mladih u zajednici	3,84	0,944
Podrška i pomoć mladima u procesu cjeloživotnog obrazovanja, stjecanja kvalifikacija i zapošljavanja	4,21	0,779

Na temelju rasprave u stručnom panelu popisu temeljnih usluga dodana je usluga *infocentra za mlade* s uključenim *outreach* programima prema mladima u zajednici. Takva usluga ima snažan komunalni karakter i osigurava postojanje kontaktne točke kako bi se što bolje pratile potrebe mladih u zajednici.

Nakon projekcije broja korisnika i opisa usluga tijekom teorijske validacije modela, usluga *cjelodnevni ili poludnevni boravak za mlade s problemima u ponašanju* spojena je u jednu uslugu koja je predviđena za djecu. Naime, ta je usluga minimalno pružena za mlade starije od 18 godina. Osim toga, na temelju postojeće prakse i činjenice da je populacija koja je u pitanju školske dobi, cjelodnevni boravak je manje vjerojatan, posebno ako se pruža u izvaninstitucionalnom kontekstu, pa je zbog toga definirana nova usluga - *Poludnevni boravak za djecu i mlade s problemima u ponašanju* te se odnosi na djecu i mlade do 18 godina.

Usluga savjetovanja za djecu također je spojena s uslugom savjetovanja za mlade jer dostupni podaci omogućuju uvid u teškoće mentalnog zdravlja za dobnu skupinu zaključno s 19 godina. Stoga je nova usluga *psihosocijalno savjetovanje za djecu i mlade*.

3.2.4. Procjena prioritetnosti socijalnih usluga za obitelji u riziku

Stručnjaci su se u procjeni prioritetnosti socijalnih usluga za obitelji u riziku podijelili na pet skupina.

U prvu skupinu svrstalo se 29 stručnjaka (14 %) u čijim odgovorima nema varijabiliteta, odnosno sve su usluge procijenjene jednako prioritetnima. U ovoj se skupini nešto više nalaze stručnjaci iz Istočne Hrvatske.

Druga skupina je najveća s čak 65 stručnjaka (32 %) koji prioritet daju uslugama za obitelji s najvišom razinom rizika, točnije žrtvama nasilja te obiteljima kojima je potrebna intenzivna psihosocijalna podrška. Osobito visoki prioritet daju uslugama za žrtve nasilja, i to sigurnoj kući, SOS telefonu i pravnoj pomoći. Osim toga, visoki prioritet daju smještaju u kriznim situacijama te multidisciplinarnoj psihosocijalnoj podršci roditeljima njegovateljima i obiteljima u riziku, uključujući udomiteljske i posvojiteljske. U ovoj grupi više su zastupljeni stručnjaci iz Jadranske Hrvatske i Središnje Hrvatske te po profesiji svi drugi stručnjaci (socijalni radnici, rehabilitatori, pedagozi i dr.) izuzev psihologa.

U trećoj skupini nalazi se 36 stručnjaka (18 %) koji prednost daju uslugama koje omogućuju cjelovitu podršku žrtvama nasilja (sigurna kuća, pravna pomoć, pomoć i podrška u zapošljavanju, SOS telefon) te uslugama savjetovanja za obitelji šireg dosega (grupe podrške, obiteljska medijacija i obiteljsko savjetovanje).

U četvrtom obrascu koji dijeli 45 stručnjaka (22 %) ponovno se nalaze usluge za žrtve nasilja (sigurna kuća za žene i muškarce, pravna pomoć i SOS telefon) te usluge smještaja za druge kategorije obitelji (krizni smještaj, udomiteljstvo ili organizirano stanovanje za majke s djecom). Ovim uslugama skloniji su psiholozi, socijalni pedagozi te stručnjaci iz Sjeverne Hrvatske. Ovo je skupina stručnjaka u kojoj su kao prioritetne prepoznate sve ponuđene usluge smještaja.

Posljednja grupa stručnjaka je najmanja (N = 25 ili 12 %), a njihov se obrazac određivanja prioriteta najviše razlikuje od prethodnih. Oni prednost daju dvjema krajnostima, tj. kriznim uslugama, i to uslugama smještaja te najširim preventivnim uslugama. Usluge smještaja odnose se na smještaj za majke s djecom, obitelji pogođene katastrofama i sigurne kuće za žene i muškarce. Najšire preventivne usluge koje ova grupa stručnjaka prepoznaje kao prioritetne su edukativne i preventivne grupne aktivnosti za obitelji te organizirane kreativne, rekreativne i socijalizacijske aktivnosti strukturiranog provođenja slobodnog vremena za obitelji u zajednici.

Na razini ukupnog uzorka stručnjaka definirane temeljne socijalne usluge prikazane su u tablici 5.

Tablica 5. Srednje vrijednosti ocjene prioritetnosti socijalnih usluga za obitelji u riziku

USLUGA	M (1 najmanje važne, 5 najviše važne)	SD
USLUGE O KOJIMA POSTOJI KONSENZUS DA TREBAJU BITI U TEMELJNOM PAKETU		
Grupe podrške za roditelje/članove obitelji djece s različitim vrstama rizika	4,25	0,745
Obiteljsko/partnersko savjetovanje za obitelji	4,29	0,791
Pomoć i podrška u stjecanju kvalifikacija i zapošljavanju za žrtve obiteljskog nasilja	4,29	0,808
Multidisciplinarna psihosocijalna pomoć i podrška roditeljima njegovateljima	4,34	0,696
Udomiteljstvo za majke s djecom	4,35	0,823
Multidisciplinarna psihosocijalna pomoć i podrška obiteljima u riziku (uključujući udomiteljske i posvojiteljske)	4,43	0,689
Organizirano stanovanje za majke s djecom	4,47	0,720
Krizni smještaj za obitelji/građane pogođene katastrofama	4,57	0,731
Besplatna primarna i sekundarna pravna pomoć za žrtve nasilja u obitelji	4,58	0,611
SOS telefon za žrtve nasilja (0 - 24)	4,62	0,674
Sigurna kuća za žene žrtve nasilja u obitelji prilagođena boravku s djecom različite dobi	4,77	0,519
USLUGE O KOJIMA NE POSTOJI KONSENZUS DA TREBAJU BITI U TEMELJNOM PAKETU		
Infocentar za građane	3,80	0,938
Organizirane kreativne, rekreativne i socijalizacijske aktivnosti strukturiranog provođenja slobodnog vremena za obitelji u zajednici	3,90	0,925
Edukacija i savjetovanje za planiranje obitelji	3,91	0,965
Obiteljski pomagač (iskustveni ekspert)	3,99	0,922
Obiteljsko mentorstvo / socijalno mentorstvo u obitelji	4,00	0,922
Edukativne i preventivne grupne aktivnosti za obitelji	4,06	0,859
Obiteljska medijacija, medijacija u višegeneracijskim obiteljima	4,12	0,875
Sigurna kuća za muškarce žrtve nasilja u obitelji prilagođena boravku s djecom različite dobi	4,21	1,035
Edukativna, preventivna i savjetodavna pomoć i podrška trudnicama, roditeljima i novorođenčadi u zajednici	4,23	0,811
Savjetovanje i podrška u prevladavanju kriza	4,23	0,809

Na temelju validacije popisa na stručnom panelu u popis temeljnih usluga dodane su dvije usluge: *edukativna, preventivna i savjetodavna pomoć tijekom tranzicije u roditeljstvo i podrška trudnicama, roditeljima i novorođenčadi u zajednici* te *savjetovanje i podrška obitelji u prevladavanju kriza*. U konačnici je posljednja usluga nakon teorijske validacije, temeljem procjene potrebnih resursa, izostavljena iz popisa s obzirom na njezinu sadržajnu i konceptualnu sličnost s obiteljskim savjetovanjem u širem smislu. Iako sigurna kuća za muškarce nije prepoznata prioritetnom uslugom (vjerojatno radi rjeđe pojavnosti nasilja nad muškarcima), u finalnom je prijedlogu sigurna kuća predviđena za žrtve nasilja, neovisno o rodnoj pripadnosti.

3.2.5. Procjena prioritetnosti socijalnih usluga za građane u riziku od siromaštva

Prvu veliku grupu stručnjaka, kao i u ostalim skupinama, čine stručnjaci koji su svim uslugama za građane u riziku od siromaštva dali visoku procjenu prioritetnosti (N = 43 ili 21 %).

Najviše stručnjaka dijeli drugi obrazac određivanja prioriteta socijalnih usluga (N = 57 ili 28 %) gdje je naglasak na uslugama za podmirenje osnovnih životnih i zdravstvenih potreba osobama u ekstremnom siromaštvu/beskućništvu. To se odnosi na usluge za osobe u beskućništvu (prihvatilišta, prenoćišta, javna kupatila, ˝kuća na pola puta˝), pomoć u opskrbi hranom (pučke kuhinje, socijalne samoposluge, dostava toplih obroka) te pomoć u zdravstvenoj zaštiti (posudionica ortopedskih i medicinskih pomagala te besplatne zdravstvene usluge za građane u siromaštvu bez zdravstvenog osiguranja).

Stručnjaci u trećem obrascu (njih 32 ili 16 %) visoki prioritet daju širem spektru usluga koje pridonose psihosocijalnom osnaživanju i socijalnom uključivanju, a niži uslugama za suzbijanje siromaštva u užem smislu kada se dogodi stambena ili prehrambena deprivacija. Tako su za ovu skupinu stručnjaka najpotrebnije usluge podrške djeci u obrazovanju, podrška u zapošljavanju i stjecanju kvalifikacija, pravna pomoć, financijsko opismenjavanje te savjetovanje za pojedince i obitelji u siromaštvu. Ove usluge pokrivaju širok raspon različitih potreba koje građani u riziku od siromaštva mogu imati te im omogućuju jačanje kapaciteta za socijalno uključivanje. Prioritetne su i neke usluge koje odgovaraju na prehrambenu i zdravstvenu deprivaciju, i to pučka kuhinja i dostava namirnica i/ili toplih obroka te posudionica ortopedskih i medicinskih pomagala i besplatne zdravstvene usluge za građane u siromaštvu bez zdravstvenog osiguranja.

U četvrtoj skupini stručnjaka (N = 39 ili 19 %) prioritetne su dvije skupine usluga: usluge podrške osobama u beskućništvu te usluge koje potiču uključivanje na tržište rada kako bi se preveniralo daljnje siromaštvo. Usluge podrške osobama u beskućništvu su prenoćište, organizirano stanovanje i prihvatilište te individualni rad s beskućnicima. Osim toga, prioritetnima su označene usluge podrške u uključivanju na tržište rada, socijalno mentorstvo te međusektorski programi rane prevencije siromaštva.

Posljednji obrazac dijeli 31 stručnjak (15 %), a naglasak su stavili na usluge nužnog ili kriznog smještaja (prenoćište, prihvatilište, ˝kuća na pola puta˝ kao prijelazni smještaj u svrhu prevencije beskućništva te organizirano stanovanje za beskućnike) te usluge koje predstavljaju sistemski odgovor na socijalnu isključenost, osobitu u području obrazovanja i zapošljavanja. Stoga je naglasak manje na karitativnim uslugama, a više na sistemskim programima pomoći i podrške u obrazovanju djece, međusektorskim programima rane prevencije siromaštva, multidisciplinarnoj psihosocijalnoj podršci te podršci u zapošljavanju i stjecanju kvalifikacija.

Na razini cijelog uzorka stručnjaci su kao temeljne prepoznali sljedeće socijalne usluge kako su navedene u tablici 6.

Tablica 6. Srednje vrijednosti ocjene prioritetnosti socijalnih usluga za građane u riziku od siromaštva

USLUGA	M (1 najmanje važne, 5 najviše važne)	SD
USLUGE O KOJIMA POSTOJI KONSENZUS DA TREBAJU BITI U TEMELJNOM PAKETU		
Savjetovanje za pojedince i obitelji u siromaštvu	4,31	0,744
Multidisciplinarna psihosocijalna podrška osobama u siromaštvu	4,33	0,761
Dostava namirnica i/ili toplih obroka siromašnim građanima	4,35	0,840
Organizirano stanovanje za osobe u beskućništvu	4,36	0,888
Međusektorski programi rane prevencije siromaštva	4,37	0,757
Besplatna pravna pomoć građanima u siromaštvu	4,41	0,775
˝Kuća na pola puta˝- privremeni smještaj osoba koje izlaze iz institucija ili penalnog sustava	4,42	0,782
Posudionica ortopedskih i medicinskih pomagala	4,44	0,732
Socijalna samoposluga	4,47	0,747
Podrška u zapošljavanju i stjecanju kvalifikacija za građane u siromaštvu	4,51	0,714
Pomoć i podrška u obrazovanju za djecu i mlade iz obitelji u siromaštvu	4,53	0,713
Besplatne zdravstvene usluge za građane u siromaštvu bez zdravstvenog osiguranja	4,54	0,760
Prenoćište za osobe u beskućništvu	4,66	0,660
Prihvatilište za osobe u beskućništvu	4,67	0,642
Pučka kuhinja	4,74	0,586
USLUGE O KOJIMA NE POSTOJI KONSENZUS DA TREBAJU BITI U TEMELJNOM PAKETU		
Infocentar za građane	3,93	0,941
Savjetovanje i pomoć građanima u suzbijanju energetskog siromaštva	4,04	0,883
Mentorstvo i izravan rad na ulici s osobama koje se nađu u beskućništvu	4,10	0,920
Socijalno mentorstvo	4,10	0,914
Financijsko opismenjavanje građana	4,20	0,881
Cjelodnevni/poludnevni boravak za osobe u beskućništvu	4,22	0,928
Centar za podršku osobama u beskućništvu (one stop shop)	4,25	0,869
Resursni centar za samostalnu pripremu hrane u zajednici	4,27	0,913
Javna kupatila	4,29	0,908

Tijekom validacije rezultata na stručnoj panel-raspravi dogovoreno je da će se temeljnom popisu dodati još dvije socijalne usluge: s*ocijalno mentorstvo* koje je očekivanim promjenama Zakona o socijalnoj skrbi (18/22) dobilo dodatan poticaj te *cjelodnevni/poludnevni boravak za osobe u beskućništvu*. Naime, ova je usluga shvaćena kao podrška osobama u riziku od ekstremnog siromaštva, a usklađena je sa širim razumijevanjem problematike beskućništva. Zbog navedenoga je preimenovana u *dnevni centar za podršku osobama s problemima stanovanja*.

Tijekom validacije popisa temeljnih socijalnih usluga razradom sadržaja i procjenom broja korisnika odlučeno je da će se s popisa socijalnih usluga isključiti *besplatne zdravstvene usluge za građane u siromaštvu bez zdravstvenog osiguranja*. Naime, iako je riječ o potrebnim uslugama i velik broj građana nema zdravstveno osiguranje, zdravstveni sustav ne omogućuje pružanje zdravstvenih usluga izvan zdravstvenih ustanova. S tim u vezi problem nije u dostupnosti odnosno (ne)postojanju usluga, nego u reguliranju pitanja zdravstvenog osiguranja. Stoga je primjereno promisliti o unapređenju mehanizama za ostvarivanje prava na zdravstvenu zaštitu, a ne o socijalnoj usluzi. Ti se mehanizmi mogu regulirati na nacionalnoj ili regionalnoj razini gdje će se osigurati potrebna financijska sredstva, a za izvedbu će se koristi postojeća mreža pružatelja zdravstvenih usluga.

3.2.6. Procjena prioritetnosti socijalnih usluga za osobe s teškoćama mentalnog zdravlja

Stručnjaci su se na temelju načina određivanja prioriteta socijalnih usluga za osobe s teškoćama mentalnog zdravlja podijelili u pet skupina.

U prvoj skupini nalaze se 44 stručnjaka (22 %) koji sve usluge procjenjuju jednako važnima i daju im visoku ocjenu prioritetnosti. U ovoj grupi stručnjaka znatno je više psihologa.

U drugoj skupini (N = 33 ili 16 %) okupljeni su stručnjaci koji prioritet daju uslugama za socijalno uključivanje u aktivnosti zajednice i na tržište rada. To su: besplatna pravna pomoć i zastupanje osoba s teškoćama mentalnog zdravlja, organizirane kreativne, rekreativne i socijalizacijske aktivnosti strukturiranog provođenja slobodnog vremena, grupe podrške i vršnjačka podrška za osobe s teškoćama mentalnog zdravlja, programi smanjenja štete za ovisnike (harm reduction), podrška u zapošljavanju osobama s teškoćama mentalnog zdravlja, cjelodnevni/poludnevni boravak za osobe s teškoćama mentalnog zdravlja, programi te resocijalizacije ovisnika i osoba s teškoćama mentalnog zdravlja u zajednici. Ovu grupu usluga posebno preferiraju edukacijski rehabilitatori.

Treću skupinu stručnjaka (N = 35 ili 17 %) povezuje obrazac određivanja prioriteta gdje je naglasak stavljen na terapijski rad, posebice na tretman ovisnosti i pružanja psihosocijalne podrške obitelji. U toj grupi zastupljeniji su stručnjaci iz velikih gradova. Tako su statistički znatno višima procijenjene potrebe za uslugama: krizne intervencije i prva psihološka pomoć, savjetovanje i psihoterapija, multidisciplinarna psihosocijalna podrška obiteljima ovisnika / liječenih ovisnika, terapijske grupe za ovisnike o alkoholu, grupe podrške i vršnjačka podrška za osobe s teškoćama mentalnog zdravlja, terapijske grupe za ovisnike o drogi te savjetovanje za članove obitelji osobe s teškoćama mentalnog zdravlja.

U četvrtoj skupini su 42 stručnjaka (21 %) koji prioritet daju uslugama za osobe s duševnim smetnjama, odnosno većim teškoćama mentalnog zdravlja. Češće ovaj obrazac preferiraju socijalni pedagozi i stručnjaci iz najvećih i najmanjih sredina. Naglasak je na uslugama zbrinjavanja i promatranju teškoća mentalnog zdravlja kao osnove invaliditeta. To su usluge: centar za oporavak osoba s teškoćama mentalnog zdravlja s interdisciplinarnom stručnom podrškom, udomiteljstvo i organizirano

stanovanje za osobe s duševnim smetnjama, privremeni/povremeni smještaj za osobe s teškoćama mentalnog zdravlja, cjelodnevni/poludnevni boravak za osobe s teškoćama mentalnog zdravlja te besplatna pravna pomoć i zastupanje za osobe s teškoćama mentalnog zdravlja.

U posljednjoj skupini je najviše stručnjaka (N = 48 ili 24 %) koji su naglasak stavili na usluge smještaja (organizirano stanovanje i udomiteljstvo osoba s duševnim smetnjama) te terapijske usluge u zajednici (terapijske grupe za ovisnosti, cjelodnevni/poludnevni boravak ili centar za oporavak). Posebno ga preferiraju socijalni radnici i stručnjaci iz manjih gradova 10 000 - 20 000 stanovnika.

Zaključak o tome koje usluge trebaju biti u temeljnom paketu donesen je na osnovi procjena na razini cijelog uzorka, a rezultati su prikazani u tablici 7.

Tablica 7. Srednje vrijednosti ocjene prioritetnosti socijalnih usluga za osobe s teškoćama mentalnog zdravlja

USLUGA	M (1 najmanje važne, 5 najviše važne)	SD
USLUGE O KOJIMA POSTOJI KONSENZUS DA TREBAJU BITI U TEMELJNOM PAKETU		
Psihoedukativni i preventivni programi za zaštitu mentalnog zdravlja	4,26	0,801
Programi smanjenja štete za ovisnike (harm reduction)	4,29	0,771
Organizirane kreativne, rekreativne i socijalizacijske aktivnosti strukturiranog provođenja slobodnog vremena	4,30	0,787
Grupe podrške za članove obitelji osoba s teškoćama mentalnog zdravlja	4,32	0,699
Savjetovanje za članove obitelji osobe s teškoćama mentalnog zdravlja	4,34	0,730
Multidisciplinarna psihosocijalna podrška obiteljima s članom koji ima teškoće mentalnog zdravlja	4,34	0,757
Grupe podrške i vršnjačka podrška za osobe s teškoćama mentalnog zdravlja	4,37	0,722
Organizirano stanovanje za osobe s duševnim smetnjama	4,38	0,839
Multidisciplinarna psihosocijalna podrška obiteljima ovisnika / liječenih ovisnika	4,40	0,761
Centar za oporavak osoba s teškoćama mentalnog zdravlja s multidisciplinarnom stručnom podrškom	4,44	0,725
Privremeni/povremeni smještaj za osobe s teškoćama mentalnog zdravlja	4,45	0,705
Terapijske grupe za ovisnike o kocki	4,47	0,663
Terapijske grupe za ovisnike o drogi	4,48	0,678
Dnevni/poludnevni boravak za osobe s teškoćama mentalnog zdravlja	4,49	0,714
Terapijske grupe za ovisnike o alkoholu	4,49	0,656

Programi resocijalizacije ovisnika i osoba s teškoćama mentalnog zdravlja u zajednici	4,50	0,664
Savjetovanje i psihoterapija	4,52	0,663
Krizne intervencije i prva psihološka pomoć	4,60	0,609
USLUGE O KOJIMA NE POSTOJI KONSENZUS DA TREBAJU BITI U TEMELJNOM PAKETU		
Socijalno mentorstvo	4,12	0,890
Osobna asistencija osobama s duševnim smetnjama	4,16	0,900
Integrirana socijalna usluga na razini pojedinca za osobe s težim mentalnim poremećajima (vođenje slučaja)	4,19	0,868
Besplatna pravna pomoć i zastupanje za osobe s teškoćama mentalnog zdravlja	4,28	0,849
Podrška u zapošljavanju osobama s teškoćama mentalnog zdravlja	4,29	0,846
Udomiteljstvo osoba s duševnim smetnjama	4,30	0,881

Nakon stručne rasprave na panelu stručnjaka dogovoreno je da će se popisu temeljnih usluga dodati *integrirana socijalna usluga na razini pojedinca za osobe s težim mentalnim poremećajima (vođenje slučaja)* koja je prepoznata kao ključna u deinstitucionalizaciji i razvoju usluga podrške u zajednici.

Naknadnom teorijskom validacijom i razradom sadržaja usluga *centar za oporavak osoba s teškoćama mentalnog zdravlja s multidisciplinarnom stručnom podrškom* zapravo je shvaćena kao institucionalni okvir za pružanje različitih usluga koje su objedinjene paketom i nije izdvojena kao specifična usluga. Osim toga, usluga *multidisciplinarna psihosocijalna podrška obiteljima proširena je i formulirana kao multidisciplinarna psihosocijalna podrška osobama s teškoćama mentalnog zdravlja i njihovim obiteljima.*

Usluga *psihoedukativni i preventivni programi za zaštitu mentalnog zdravlja* u daljnjoj je razradi razdvojena na tri razine prevencije (univerzalna, selektivna i indicirana) te tako uvedena u model.

3.2.7. Procjena prioritetnosti socijalnih usluga za osobe s invaliditetom

Kada je riječ o uslugama za osobe s invaliditetom, stručnjaci su heterogeni u određivanju prioriteta pa smo analizom dobili čak sedam grupa stručnjaka.

Kao i u prethodnim skupinama usluga, u prvoj grupi nalaze se stručnjaci koji su svim uslugama dali najviše ocjene prioritetnosti. Njih je 34 ili 17 %, a najviše su zastupljeni stručnjaci u Istočnoj Hrvatskoj i Središnjoj Hrvatskoj te žene.

Toliko stručnjaka (N = 34 ili 17 %) pripada i drugoj skupini. Oni prioritet daju uslugama podrške životu u zajednici, a preferiraju ga muškarci i stručnjaci iz Jadranke Hrvatske. Tako su statistički znatno više procjene dali uslugama: specijalizirani prijevoz i pratnja za osobe s invaliditetom, tečajevi znakovnog jezika za pružatelje usluga, radna terapija, osobna asistencija za OSI, uključujući asistenciju u obitelji za OSI koji su roditelji.

U trećoj skupini nalazi se 29 stručnjaka (14 %) koji preferiraju usluge osobne asistencije i pomoći te njege u kući koju mogu pružiti paraprofesionalci kako bi olakšali svakodnevno funkcioniranje. Ovaj obrazac češće imaju stručnjaci iz Središnje Hrvatske. Tako su više procjene dane sljedećim uslugama: pomoć u kući i praktična podrška u samostalnom stanovanju za osobe s invaliditetom, cjelodnevna skrb i njega u kući osobi s težim/teškim invaliditetom, privremeni njegovatelj u obitelji osobe s invaliditetom radi predaha od skrbi primarnog njegovatelja (člana obitelji), specijalizirani prijevoz i pratnja, prevoditelj znakovnog jezika za osobe s invaliditetom te pomoć i podrška u stjecanju kvalifikacija i zapošljavanju za osobe s invaliditetom.

Stručnjaci u četvrtoj skupini (N = 30 ili 15 %) prednost daju kombinaciji usluga asistencije, zaštiti prava i integraciji na tržište rada. U ovoj su grupi zastupljeniji stručnjaci iz Sjeverne Hrvatske. Statistički znatno višim ocjenama procijenjena je potreba za uslugama: osobna asistencija za OSI uključujući asistenciju u obitelji za OSI koji su roditelji, dnevni/poludnevni boravak za osobe s invaliditetom, radni asistent (u integrativnoj ili zaštitnoj radionici/tvrtki ili kod drugog poslodavca), besplatna primarna i sekundarna pravna pomoć osobama s invaliditetom.

U petoj skupini nalazi se 28 stručnjaka (14 %) koji prednost daju uslugama rehabilitacije i integracije u zajednici. Tako statistički znatno više procjenjuju da prioritet treba dati uslugama: terapijske aktivnosti za osobe s invaliditetom, radna terapija, dojavni sustavi za osobe s invaliditetom u krizama i katastrofama, dnevni/poludnevni boravak za osobe s invaliditetom, pomoć i podrška u stjecanju kvalifikacija i zapošljavanju za osobe s invaliditetom.

U šestoj skupini nalaze se 22 stručnjaka (11 %) koji prioritetnima smatraju usluge podrške obiteljima u kojima živi osoba s invaliditetom. U ovoj skupini nešto su zastupljeniji stručnjaci u Istočnoj Hrvatskoj. Ova grupa stručnjaka viši rang daje uslugama: privremeni njegovatelj u obitelji osobe s invaliditetom radi predaha od skrbi primarnog njegovatelja (člana obitelji), dnevni/poludnevni boravak za osobe s invaliditetom, udomiteljstvo za osobe s invaliditetom, multidisciplinarna psihosocijalna podrška OSI i članovima njihovih obitelji te OSI koji su roditelji, savjetovanje za osobe s invaliditetom i članove njihovih obitelji.

U posljednjoj, sedmoj skupini stručnjaka naglasak je na smještajnim i rehabilitacijskim uslugama te uslugama koje izravno ciljaju na invaliditetom uvjetovana komunikacijska ograničenja, tj. na uvođenje posrednika u prevladavanju ograničenja. Ova grupa stručnjaka (N = 22 ili 11 %) zauzima stav sukladan medicinskom modelu, a ovaj je obrazac nešto više zastupljen među muškim ispitanicima. U ovoj skupini značajnije su više procjene prioritetnosti za sljedeće usluge: organizirano stanovanje za osobe s invaliditetom uz intenzivnu ili povremenu podršku, prevoditelj znakovnog jezika, terapijske aktivnosti za osobe s invaliditetom, radna terapija, usluge rehabilitacije s terapijskim životinjama i videći pratitelj.

Odluka o tome koje usluge trebaju biti u temeljnom paketu također je bazirana na rezultatima na razini cijelog uzorka, a navedene su u tablici 8.

Tablica 8. Srednje vrijednosti ocjene prioritetnosti socijalnih usluga za osobe s invaliditetom

USLUGA	M (1 najmanje važne, 5 najviše važne)	SD
USLUGE O KOJIMA POSTOJI KONSENZUS DA TREBAJU BITI U TEMELJNOM PAKETU		
Radni asistent OSI na otvorenom tržištu rada	4,25	0,765
Osobna asistencija za OSI uključujući asistenciju u obitelji za OSI koji su roditelji	4,26	0,783
Tečajevi znakovnog jezika za pružatelje usluga	4,28	0,788
Udomiteljstvo za osobe s invaliditetom	4,33	0,837
Savjetovanje za osobe s invaliditetom i članove njihovih obitelji	4,33	0,755
Videći pratitelj	4,33	0,742
Privremeni njegovatelj u obitelji osobe s invaliditetom radi predaha od skrbi primarnog njegovatelja (člana obitelji)	4,36	0,799
Multidisciplinarna psihosocijalna podrška OSI i članovima njihovih obitelji te OSI koji su roditelji	4,38	0,739
Prevoditelj znakovnog jezika	4,38	0,758
Pomoć i podrška u stjecanju kvalifikacija i zapošljavanju za osobe s invaliditetom	4,41	0,672
Dojavni sustavi za osobe s invaliditetom u krizama i katastrofama	4,42	0,789
Organizirano stanovanje za osobe s invaliditetom uz intenzivnu ili povremenu podršku	4,45	0,705
Radna terapija	4,51	0,656
Cjelodnevni/poludnevni boravak za osobe s invaliditetom	4,52	0,632
Cjelodnevna skrb i njega u kući osobi s težim/teškim invaliditetom	4,52	0,632
Terapijske aktivnosti za osobe s invaliditetom	4,54	0,670
Pomoći u kući i praktična podrška u samostalnom stanovanju za osobe s invaliditetom	4,54	0,599
Specijalizirani prijevoz i pratnja za osobe s invaliditetom	4,60	0,608
USLUGE O KOJIMA NE POSTOJI KONSENZUS DA TREBAJU BITI U TEMELJNOM PAKETU		
Usluge rehabilitacije s terapijskim životinjama	4,17	0,829
Besplatna primarna i sekundarna pravna pomoć osobama s invaliditetom	4,25	0,809

Ovakav popis socijalnih usluga potvrđen je u stručnoj raspravi na održanom panelu, uz napomenu da je promijenjen naziv usluge *˝Radni asistent OSI na otvorenom tržištu rada (u integrativnoj ili zaštitnoj radionici/tvrtki ili kod drugog poslodavca) ˝* u *˝Radni asistent OSI na otvorenom tržištu rada ˝*.

Naknadnom teorijskom validacijom radi procjene broja korisnika i opisa sadržaja usluga ovaj popis usluga također je zadržan.

3.2.8. Procjena prioritetnosti socijalnih usluga za izbjeglice i pripadnike nacionalnih manjina

Kada je riječ o ovoj skupini socijalnih usluga, dobiveni su potpuno drugačiji rezultati. Naime, ni o jednoj usluzi ne postoji konsenzus stručnjaka da bi trebala biti dio temeljnog paketa socijalnih usluga (tablica 9). Pritom treba upozoriti da su standardne devijacije veće, što dodatno govori u prilog izostanku stručnog konsenzusa. O razlozima ovakvog rezultata možemo nagađati, a jedna je od pretpostavki da je riječ o uslugama za kojima u mnogim zajednicama praktički i nema potrebe (naime, manjinsko stanovništvo nije ravnomjerno raspoređeno u Republici Hrvatskoj). Drugi razlog možemo pronaći u tome što su brojne ponuđene socijalne usluge već osigurane temeljem nekog drugog rizika (npr. siromaštva, invaliditeta, obiteljskih rizika), odnosno da sama pripadnost nacionalnoj manjini nije osnova rizika.

Tablica 9. Srednje vrijednosti ocjene prioritetnosti socijalnih usluga za izbjeglice i pripadnike nacionalnih manjina

USLUGA	M (1 najmanje važne, 5 najviše važne)	SD
Romski pomagač u dječjem vrtiću	3,72	1,139
Romski medijatori	3,79	1,040
Romski pomagač u nastavi	3,79	1,105
Medijacija u zajednici	3,80	1,061
Interkulturni medijatori za izbjeglice i migrante	3,88	1,097
Edukacija i supervizija interkulturnih medijatora	3,91	1,023
Socijalno mentorstvo	3,93	1,046
Educiranje pružatelja usluga za rad s osobama različitog etničkog/kulturnog porijekla (razvoj interkulturalne osjetljivosti i kompetencija)	3,93	0,977
Besplatna pravna pomoć pripadnicima nacionalnih manjina	3,94	1,059
Udomiteljstvo u skladu s etničkim, jezičnim, kulturnim i vjerskim podrijetlom djeteta bez odgovarajuće roditeljske skrbi (u romskim, migrantskim obiteljima i sl.)	3,95	1,042
Prevoditelj romskog jezika	3,95	0,994
Informiranje i savjetovanje za pripadnike nacionalnih manjina i izbjeglice	4,01	0,975
Koordinator integracije / integrirana socijalna usluga na razini korisnika (vođenje slučaja)	4,01	0,977
Transfer znanja među stručnjacima prilikom selidbe obitelji izbjeglica	4,01	0,975

Društveni centar u romskom naselju s organiziranim edukativnim i preventivnim aktivnostima	4,02	0,985
Multidisciplinarna psihosocijalna pomoć i podrška izbjeglicama i migrantima	4,05	0,996
Multidisciplinarna psihosocijalna pomoć i podrška romskim obiteljima	4,08	0,948
Pomoć i podrška u stjecanju kvalifikacija i zapošljavanju azilanata i tražitelja azila	4,11	0,958
Edukativne i kreativne aktivnosti za djecu i mlade pripadnike romske nacionalne manjine	4,13	0,921
Prevođenje i tumačenje za izbjeglice i migrante	4,14	1,032
Savjetovanje za izbjeglice i migrante za oporavak od traume	4,15	1,021
Pomoć i podrška u učenju i obrazovanju za djecu izbjeglice	4,16	0,981
Integracijske aktivnosti za djecu izbjeglice i djecu iz većinskog stanovništva	4,16	0,990
Pomoć i podrška u stjecanju kvalifikacija i zapošljavanju Roma	4,18	0,902
Besplatna pravna pomoć tražiteljima azila i izbjeglicama	4,19	0,980
Besplatne zdravstvene usluge za pripadnike nacionalnih manjina / migrante bez zdravstvenog osiguranja	4,20	1,048
Pomoć i podrška u učenju i obrazovanju za djecu pripadnike romske nacionalne manjine	4,23	0,896
Tečajevi hrvatskog jezika na osnovnoj i naprednoj razini	4,23	0,945

Stručnjaci se prema obrascima određivanja prioriteta dijele u pet skupina. U prvoj skupini nalazi se 41 stručnjak (20 %) i oni smatraju da su sve usluge važne, a zanimljivo je da takav stav češće imaju stručnjaci koji ne rade s izbjeglicama ili pripadnicima nacionalnih manjina.

U drugoj skupini nalazi se 50 stručnjaka (25 %) koji su prioritet dali uslugama za izbjeglice, i to: besplatna pravna pomoć tražiteljima azila i izbjeglicama, savjetovanje za izbjeglice i migrante za oporavak od traume, integracijske aktivnosti za djecu izbjeglice i djecu iz većinskog stanovništva, pomoć i podrška u stjecanju kvalifikacija i zapošljavanju azilanata i tražitelja azila, pomoć i podrška u učenju i obrazovanju za djecu izbjeglice te prevođenje i tumačenje za izbjeglice i migrante. Zanimljivo je da su u ovom obrascu također statistički znatno više zastupljeni stručnjaci koji ne rade s izbjeglicama i pripadnicima manjina.

U trećoj grupi nalaze se stručnjaci (N = 32 ili 16 %) koji su dali prioritet individualiziranim i medijatorskim integracijskim uslugama za Rome i izbjeglice, odnosno uslugama namijenjenima osobnom osnaživanju i komunikacijskom posredovanju radi uključivanja u zajednicu. Tako su prioritetne navedene sljedeće usluge: interkulturalni medijatori za izbjeglice i migrante, prevođenje i tumačenje za izbjeglice i migrante, romski pomagač u nastavi, besplatna pravna pomoć tražiteljima azila i izbjeglicama, prevoditelj romskog jezika, romski pomagač u dječjem vrtiću, transfer znanja među stručnjacima prilikom selidbe obitelji izbjeglica, multidisciplinarna psihosocijalna pomoć i podrška izbjeglicama i migrantima, savjetovanje za izbjeglice i migrante za oporavak od traume te medijacija u zajednici.

U četvrtoj skupini nalazi se 39 stručnjaka (19 %) koji su prioritet dali uslugama za Rome te onima za podršku u obrazovanju. Ovom obrascu u većoj mjeri pripadaju stručnjaci koji rade s izbjeglicama i pripadnicima manjina. Tako su prioritetno navedene sljedeće usluge: tečajevi hrvatskog jezika na osnovnoj i naprednoj razini, multidisciplinarna psihosocijalna pomoć i podrška izbjeglicama i migrantima, pomoć i podrška u učenju i obrazovanju za djecu izbjeglice, integracijske aktivnosti za djecu izbjeglice i djecu iz većinskog stanovništva, društveni centar u romskom naselju s organiziranim edukativnim i preventivnim aktivnostima, romski pomagač u dječjem vrtiću, multidisciplinarna psihosocijalna pomoć i podrška romskim obiteljima te edukativne i kreativne aktivnosti za djecu i mlade pripadnike romske nacionalne manjine.

U petoj skupini nalaze se 34 ispitanika (17 %) koji su prioritet dali uslugama koje predstavljaju podršku i temelj u integraciji u zajednicu, posebice kroz rad, obrazovanje te osobnu zaštitu u obliku zaštite zdravlja i pravne zaštite. Ova skupina stručnjaka statistički znatno veći prioritet daje sljedećim uslugama: besplatne zdravstvene usluge za pripadnike nacionalnih manjina / migrante bez zdravstvenog osiguranja, pomoć i podrška u učenju i obrazovanju za djecu pripadnike romske nacionalne manjine, edukativne i kreativne aktivnosti za djecu i mlade pripadnike romske nacionalne manjine, besplatna pravna pomoć pripadnicima nacionalnih manjina, besplatna pravna pomoć tražiteljima azila i izbjeglicama, tečajevi hrvatskog jezika na osnovnoj i naprednoj razini te pomoć i podrška u stjecanju kvalifikacija i zapošljavanju azilanata i tražitelja azila.

S obzirom na to da na temelju cijelog uzorka nema konsenzusa o temeljnim socijalnim uslugama za izbjeglice i pripadnike nacionalnih manjina, ovu situaciju raspravili smo na panelu stručnjaka koji imaju iskustvo rada s izbjeglicama i pripadnicima romske nacionalne manjine. Na panelu se raspravljalo o tri pitanja: a) treba li ijednu uslugu uvrstiti u temeljni paket, b) treba li odabrati određeni obrazac određivanja prioriteta, c) treba li ponuditi drugačiji kriterij u izboru prioritetnih usluga za ovu skupinu korisnika.

Stručnjaci su se usuglasili da je potrebno uključiti usluge za izbjeglice i pripadnike romske manjine u temeljni paket usluga u lokalnoj zajednici. U odabiru usluga pošlo se od pretpostavke da je izostanak stručnog konsenzusa rezultat stava kako sama etnička pripadnost nije rizik te da bi ovi korisnici na temelju drugih rizika ionako koristili socijalne usluge (zbog siromaštva, invaliditeta, starosti, mentalnog zdravlja, obiteljskih prilika).

Stoga je odlučeno da će se za temeljni paket predložiti usluge koje ne bi ni postojale da nema upravo ove grupe korisnika, odnosno one usmjerene primarno na uklanjanje prepreka socijalnom uključivanju koje proizlaze iz pripadnosti jezično i kulturalno različitim društvenim skupinama. Pritom pretpostavljamo da isti korisnici koriste i druge usluge na osnovi drugih rizika.

Tako su u paket temeljnih socijalnih usluga predložene sljedeće usluge:

- romski pomagač u pripremi za školu, predškoli i nastavi (dijelom odrađuju i posao romskih medijatora). Na stručnom panelu raspravljeno jest kako bi uključivanje romskog pomagača u rani predškolski odgoj i obrazovanje možebitno otežalo socijalizaciju djece (kao što je nekada slučaj i sa pomoćnicima u dječjem vrtiću). Radi toga proširenje usluge romskog pomagača prije predškole nije ovdje uključeno.
- interkulturni medijatori za izbjeglice i migrante
- edukacija i supervizija interkulturnih medijatora
- educiranje pružatelja usluga za rad s osobama različitog etničkog/kulturnog podrijetla (razvoj interkulturalne osjetljivosti i kompetencija)
- besplatna pravna pomoć pripadnicima romske nacionalne manjine i migrantima (uključuje i izbjeglice / tražitelje azila)

- udomiteljstvo u skladu s etničkim, jezičnim, kulturnim i vjerskim podrijetlom djeteta bez odgovarajuće roditeljske skrbi (u romskim, migrantskim obiteljima i sl.)
- prevoditelj romskog jezika
- koordinator integracije / integrirana socijalna usluga na razini korisnika (vođenje slučaja)
- prevođenje i tumačenje za izbjeglice i migrante
- besplatne zdravstvene usluge za pripadnike nacionalnih manjina/migrante bez zdravstvenog osiguranja
- tečajevi hrvatskog jezika na osnovnoj i naprednoj razini.

Temeljem daljnje teorijske validacije na osnovi razrade sadržaja usluga i projekcije broja korisnika, usluga b*esplatne zdravstvene usluge za pripadnike nacionalnih manjina / migrante bez zdravstvenog osiguranja* uklonjena je s popisa iz istog razloga kao što je slučaj sa građanima u siromaštvu. Naime, zdravstvenu zaštitu u Hrvatskoj nije moguće osigurati izvan zdravstvenog sustava te u ovom slučaju treba govoriti o pitanju nepokrivenosti zdravstvenim osiguranjem. Stoga je primjereno promisliti o unapređenju mehanizama za ostvarivanje prava na zdravstvenu zaštitu, a ne o socijalnoj usluzi.

3.2.9. Procjena prioritetnosti socijalnih usluga za starije osobe

U procjeni prioritetnosti usluga za starije osobe stručnjaci su se podijelili u pet skupina prema pet različitih obrazaca.

U prvoj skupini nalazi se čak 49 stručnjaka (24 %) koji svim uslugama daju visoku procjenu prioritetnosti. U toj skupini su nešto zastupljeniji socijalni pedagozi i psiholozi.

U drugoj i najbrojnijoj skupini nalazi se 51 stručnjak (25 %), a oni prioritet daju uslugama smještaja ili podrške u stanovanju u vlastitom domu, odnosno primarno je naglasak na stambenom aspektu i materijalnom zbrinjavanju. U ovoj skupini zastupljeniji su socijalni radnici. Statistički su značajno prioritetnijima procijenjene usluge: stacionarna palijativna skrb, stanovanje u vlastitom domu uz intenzivnu i kontinuiranu podršku, palijativna skrb u kući, smještaj starijih osoba u kriznim situacijama, obiteljski dom za starije osobe te poludnevni/cjelodnevni boravak za starije osobe.

U trećoj skupini stručnjaka (N = 35 ili 17 %) prioritet je dan uslugama koje omogućuju podršku u svakodnevnom funkcioniranju u uobičajenom životu starije osobe. Može se reći da je naglasak na cjelovitijem pristupu osiguravanju kvalitete života i na podržavanju autonomije starije osobe, ali i na podršci članovima obitelji. U ovoj skupini zastupljeniji su socijalni pedagozi. Prioritetnima su označene sljedeće usluge: savjetovanje za članove obitelji nemoćnih i dementnih starijih osoba, pomoć i podrška u obavljanju svakodnevnih aktivnosti u domu starije osobe, centar za starije osobe u zajednici s organiziranim kulturnim, umjetničkim, sportskim i drugim aktivnostima, savjetovanje za starije osobe, alarmni dojavni sustav za starije osobe (npr. SOS narukvice), kontinuirana njega u kući za osobe oboljele od Alzheimerove demencije, savjetovanje za formalne i neformalne njegovatelje/ice te multidisciplinarna psihosocijalna podrška formalnim i neformalnim njegovateljima/icama.

Četvrta grupa stručnjaka (njih 34 ili 17 %) prednost daje uslugama koje su namijenjene starijim osobama kojima je potrebna intenzivna podrška radi bolesti. Prioritetnima su označene sljedeće usluge: kontinuirana njega u kući za osobe oboljele od Alzheimerove demencije, smještaj starijih osoba u kriznim situacijama, stacionarna palijativna skrb, udomiteljstvo za starije osobe, palijativna skrb u kući te obiteljski dom za starije osobe.

Posljednja grupa stručnjaka (N = 33 ili 16 %) prioritet stavlja na usluge praktične pomoći u prevladavanju funkcionalnih ograničenja starijih osoba kako bi mogli uredno zadovoljavati osnovne svakodnevne potrebe. U toj su skupini zastupljeniji edukacijski rehabilitatori i socijalni pedagozi. Ova skupina prioritetnima smatra sljedeće usluge: alarmni dojavni sustav za starije osobe (npr. SOS narukvice), priprema i dostava toplih obroka za starije osobe, organizirani prijevoz i pratnja za starije i nemoćne osobe, njega u kući, kontinuirana njega u kući za osobe oboljele od Alzheimerove demencije, stacionarna palijativna skrb te obiteljski dom za starije osobe.

I za ovu skupinu zaključak o prioritetnim socijalnim uslugama temeljili smo na rezultatima na razini ukupnog uzorka, a usluge koje bi trebale biti u temeljnom paketu socijalnih usluga označene su u tablici 10.

Tablica 10. Srednje vrijednosti ocjene prioritetnosti socijalnih usluga za starije osobe

USLUGA	M (1 najmanje važne, 5 najviše važne)	SD
USLUGE O KOJIMA POSTOJI KONSENZUS DA TREBAJU BITI U TEMELJNOM PAKETU		
Multidisciplinarna psihosocijalna podrška formalnim i neformalnim njegovateljima/icama	4,30	0,742
Savjetovanje za članove obitelji nemoćnih i dementnih starijih osoba	4,30	0,775
Multidisciplinarna psihosocijalna podrška starijim i nemoćnim osobama	4,33	0,774
Privremeni/povremeni smještaj za starije osobe, uključujući smještaj radi predaha njegovatelja (respite units)	4,35	0,779
Centar za starije osobe u zajednici s organiziranim kulturnim, umjetničkim, sportskim i drugim aktivnostima	4,38	0,731
Usluga privremene njege u kući radi predaha od skrbi primarnog njegovatelja (člana obitelji)	4,38	0,751
Poludnevni/cjelodnevni boravak za starije osobe	4,44	0,745
Udomiteljstvo za starije osobe	4,45	0,909
Organizirano stanovanje za starije osobe	4,47	0,836
Organizirani prijevoz i pratnja za starije i nemoćne osobe	4,56	0,676
Kontinuirana njega u kući za osobe oboljele od Alzheimerove demencije	4,58	0,673
Pomoć i podrška u obavljanju svakodnevnih aktivnosti u domu starije osobe	4,58	0,620
Alarmni dojavni sustav za starije osobe (npr. SOS narukvice)	4,59	0,665
Obiteljski dom za starije osobe / dom u zajednici	4,61	0,726
Stanovanje u vlastitom domu uz intenzivnu i kontinuiranu podršku	4,63	0,611
Priprema i dostava toplih obroka za starije osobe	4,66	0,569

Palijativna skrb u kući	4,71	0,527
Njega u kući	4,73	0,506
Smještaj starijih osoba u kriznim situacijama	4,75	0,580
Stacionarna palijativna skrb	4,81	0,454
USLUGE O KOJIMA NE POSTOJI KONSENZUS DA TREBAJU BITI U TEMELJNOM PAKETU		
Savjetovanje za formalne i neformalne njegovatelje/ice	4,19	0,771
Savjetovanje za starije osobe	4,19	0,819
Besplatna pravna pomoć starijim osobama	4,27	0,881

Kvantitativni podaci potvrđeni su u stručnoj panel-raspravi, a popis usluga za starije osobe koje trebaju biti dio temeljnog paketa socijalnih usluga dodatno je teorijski validiran pri opisu sadržaja pojedine usluge te projekcijom broja korisnika. No tijekom izrade ovog modela donesen je novi Zakon o socijalnoj skrbi (NN 18/2022.) u kojemu je predviđeno ukidanje obiteljskih domova. Budući da ne postoji najava alternativnih smještajnih rješenja manjeg formata kakvi su bili obiteljski domovi, u modelu su zadržani oblici smještaja organizirano stanovanje i udomiteljstvo koji mogu biti smještajni oblici primjereni razini lokalne zajednice, a *obiteljski dom* je izostavljen. Iako popis usluga u ovom radu nadilazi popis usluga predviđen Zakonom o socijalnoj skrbi, u ovom trenutku nismo željeli predvidjeti usluge za koje ne postoji institucionalna mogućnost provedbe.

3.3 USKLAĐENI POPIS TEMELJNIH SOCIJALNIH USLUGA ZA SVE KORISNIČKE SKUPINE

Temeljem sveobuhvatnog i znanstveno utemeljenog pristupa primjenom Q metodologije u sklopu koje su kvantitativni podaci dvostruko validirani kvalitativnim stručnim panel-raspravama i teorijski definicijom sadržaja na temelju stručne i normativne literature te projekcijom broja korisnika, možemo zaključiti da je dobiven **stručni konsenzus o tome koje socijalne usluge trebaju biti temeljne.** Stručni konsenzus daje odgovor na pitanje koje to usluge treba učiniti univerzalno dostupnima u Republici Hrvatskoj. Ujedno se njime omogućuje uvid u to koje će usluge u budućnosti biti ili već jesu nadstandard. Ukupno gledajući, vjerujemo da ovakav pristup omogućuje racionalno korištenje društvenih resursa, jasnoću i strukturu planiranja, donošenje strateških odluka temeljenih na dokazima, ali i potiče društvo na ambicioznost da se u budućnosti temeljni paket nadogradi te da ono što se smatra nadstandardom u sljedećim revizijama postane dio standardnog paketa. Zaključno, ovakav pristup jamči korisnicima da će biti praćeni i podržani u suočavanju sa životnim rizicima u cjeloživotnoj perspektivi.

Radi osiguravanja optimalne dostupnosti socijalnih usluga predvidjeli smo njihovu varijaciju i po modalitetu. To znači da treba planirati, kada je god moguće, da određene usluge nisu pružene samo kod pružatelja usluga (institucionalno u namjenskim prostorima u zajednici), nego i izvaninstitucionalno u obliku mobilnih usluga (u domu korisnika) ili u izdvojenim prostorima (dislociranim/dispanzerskim), odnosno posebnim namjenski opremljenim vozilima te na daljinu posredstvom tehnologije (telesocijalne usluge).

Ukupan prikaz socijalnih usluga s predviđenim varijacijama po modalitetu naznačen je u tablici 11.

Tablica 11. Popis temeljnih socijalnih usluga

Grupa usluga	USLUGA	PREDVIĐENI MODALITETI PRUŽANJA USLUGE
USLUGE SMJEŠTAJA IZVAN VLASTITOG DOMA		
Udomiteljstvo	Udomiteljstvo za djecu bez odgovarajuće roditeljske skrbi	U domu pružatelja
	Specijalizirano udomiteljstvo za djecu s teškoćama u razvoju	U domu pružatelja
	Specijalizirano udomiteljstvo za djecu s poremećajima u ponašanju	U domu pružatelja
	Udomiteljstvo za majke s djecom	U domu pružatelja
	Udomiteljstvo za starije osobe	U domu pružatelja
	Udomiteljstvo za osobe s invaliditetom	U domu pružatelja
	Udomiteljstvo u skladu s etničkim, jezičnim, kulturnim i vjerskim podrijetlom djeteta bez odgovarajuće roditeljske skrbi	U domu pružatelja

Organizirano stanovanje, povremeni i privremeni smještaj	Organizirano stanovanje za djecu (do 18 godina) bez roditeljske skrbi	U namjenskom ili u izdvojenom prostoru
	Organizirano stanovanje za djecu (do 18 godina) s teškoćama u razvoju	U namjenskom ili u izdvojenom prostoru
	Organizirano stanovanje za mlade s problemima u ponašanju u alternativnoj skrbi	U namjenskom ili u izdvojenom prostoru
	Organizirano stanovanje za djecu bez pratnje i djecu žrtve trgovanja ljudima	U namjenskom ili u izdvojenom prostoru
	Organizirano stanovanje za mlade s invaliditetom	U namjenskom ili u izdvojenom prostoru
	Organizirano stanovanje za mlade s problemima u ponašanju	U namjenskom ili u izdvojenom prostoru
	Organizirano stanovanje za majke s djecom	U namjenskom ili u izdvojenom prostoru
	˝Kuća na pola puta˝ - za privremeni smještaj osoba koje izlaze iz institucija ili penalnog sustava	U namjenskom ili u izdvojenom prostoru
	Organizirano stanovanje za osobe u beskućništvu	U namjenskom ili u izdvojenom prostoru
	Smještaj starijih osoba u kriznim situacijama	U namjenskom ili u izdvojenom prostoru
	Organizirano stanovanje za starije osobe	U namjenskom ili u izdvojenom prostoru
	Privremeni/povremeni smještaj za starije osobe, uključujući smještaj radi predaha njegovatelja	U namjenskom ili u izdvojenom prostoru
	Organizirano stanovanje za osobe s invaliditetom uz intenzivnu ili povremenu podršku	U namjenskom ili u izdvojenom prostoru
	Privremeni/povremeni smještaj za osobe s teškoćama mentalnog zdravlja	U namjenskom ili u izdvojenom prostoru
	Organizirano stanovanje za osobe s duševnim smetnjama	U namjenskom ili u izdvojenom prostoru
	Krizni smještaj za obitelji/građane pogođene katastrofama	U namjenskom ili u izdvojenom prostoru
	Stambeno zbrinjavanje mladih u kriznim situacijama	U namjenskom ili u izdvojenom prostoru
Smještaj beskućnika	Prihvatilište za osobe u beskućništvu	U namjenskom ili u izdvojenom prostoru
	Prenoćište za osobe u beskućništvu	U namjenskom ili u izdvojenom prostoru
Palijativna skrb	Stacionarna palijativna skrb	U namjenskom ili u izdvojenom prostoru
Sigurna kuća	Sigurna kuća (sigurni smještaj) za žrtve nasilja u obitelji	U namjenskom ili u izdvojenom prostoru

USLUGE ZA PSIHOSOCIJALNO OSNAŽIVANJE I RAZVOJ KORISNIKA		
Rana razvojna podrška	Rana razvojna podrška (0 do 3 godine)	Institucionalno, mobilno (u domu korisnika, u izdvojenom prostoru), na daljinu
	Rana razvojna podrška (4 do 7 godine)	Institucionalno, mobilno (u domu korisnika, u izdvojenom prostoru), na daljinu
Psihosocijalno savjetovanje	Savjetovanje ili psihološka pomoć za djecu i mlade	Institucionalno, mobilno (u domu korisnika, u izdvojenom prostoru), na daljinu
	Obiteljsko/partnersko savjetovanje	Institucionalno, mobilno (u domu korisnika, u izdvojenom prostoru), na daljinu
	Savjetovanje za pojedince i obitelji u siromaštvu	Institucionalno, mobilno (u domu korisnika, u izdvojenom prostoru), na daljinu
	Savjetovanje za članove obitelji nemoćnih i dementnih starijih osoba	Institucionalno, mobilno (u domu korisnika, u izdvojenom prostoru), na daljinu
	Savjetovanje za osobe s invaliditetom i članove njihovih obitelji	Institucionalno, mobilno (u domu korisnika, u izdvojenom prostoru), na daljinu
	Krizne intervencije i prva psihološka pomoć	Institucionalno, mobilno (u domu korisnika, u izdvojenom prostoru), na daljinu
	Savjetovanje i psihoterapija za osobe s teškoćama mentalnog zdravlja	Institucionalno, mobilno (u domu korisnika, u izdvojenom prostoru), na daljinu
	Savjetovanje za članove obitelji osobe s teškoćama mentalnog zdravlja	Institucionalno, mobilno (u domu korisnika, u izdvojenom prostoru), na daljinu

Multi-disciplinarna psihosocijalna podrška	Multidisciplinarna psihosocijalna podrška za mlade s problemima u ponašanju	Institucionalno, mobilno (u domu korisnika, u izdvojenom prostoru), na daljinu
	Multidisciplinarna psihosocijalna podrška maloljetnim trudnicama i majkama	Institucionalno, mobilno (u domu korisnika, u izdvojenom prostoru), na daljinu
	Multidisciplinarna psihosocijalna pomoć i podrška obiteljima u riziku	Institucionalno, mobilno (u domu korisnika, u izdvojenom prostoru), na daljinu
	Multidisciplinarna psihosocijalna pomoć i podrška roditeljima njegovateljima	Institucionalno, mobilno (u domu korisnika, u izdvojenom prostoru), na daljinu
	Multidisciplinarna psihosocijalna podrška osobama u siromaštvu	Institucionalno, mobilno (u domu korisnika, u izdvojenom prostoru), na daljinu
	Multidisciplinarna psihosocijalna podrška starijim i nemoćnim osobama	Institucionalno, mobilno (u domu korisnika, u izdvojenom prostoru), na daljinu
	Multidisciplinarna psihosocijalna podrška formalnim i neformalnim njegovateljima	Institucionalno, mobilno (u domu korisnika, u izdvojenom prostoru), na daljinu
	Multidisciplinarna psihosocijalna podrška osobama s invaliditetom koji su roditelji	Institucionalno, mobilno (u domu korisnika, u izdvojenom prostoru), na daljinu
	Multidisciplinarna psihosocijalna podrška osobama s invaliditetom i članovima njihovih obitelji	Institucionalno, mobilno (u domu korisnika, u izdvojenom prostoru), na daljinu
	Programi socijalnog uključivanja ovisnika i osoba s teškoćama mentalnog zdravlja u zajednicu	Institucionalno, mobilno (u domu korisnika, u izdvojenom prostoru), na daljinu
	Multidisciplinarna psihosocijalna podrška obiteljima ovisnika / liječenih ovisnika	Institucionalno, mobilno (u domu korisnika, u izdvojenom prostoru), na daljinu
	Multidisciplinarna psihosocijalna podrška osobama s teškoćama mentalnog zdravlja i njihovim obiteljima	Institucionalno, mobilno (u domu korisnika, u izdvojenom prostoru), na daljinu

Preventivni programi	Psihoedukativni i preventivni programi za mlade	Institucionalno, mobilno (u izdvojenom prostoru), na daljinu
	Psihoedukativni i preventivni programi za zaštitu mentalnog zdravlja: univerzalna prevencija selektivna indicirana prevencija	Institucionalno, mobilno (u izdvojenom prostoru), na daljinu
	Programi podrške mladima s problemima ovisnosti	Institucionalno, mobilno (u domu korisnika, u izdvojenom prostoru), na daljinu
	Programi smanjenja štete za ovisnike (harm reduction)	Institucionalno, mobilno (u izdvojenom prostoru)
	Edukativna, preventivna i savjetodavna pomoć tijekom tranzicije u roditeljstvo i podrška trudnicama, roditeljima i novorođenčadi u zajednici	Institucionalno, mobilno (u domu korisnika, u izdvojenom prostoru), na daljinu
Terapija OSI	Terapijske aktivnosti za osobe s invaliditetom	Institucionalno, mobilno (u domu korisnika, u izdvojenom prostoru) , na daljinu
	Radna terapija	Institucionalno, mobilno (u domu korisnika, u izdvojenom prostoru), na daljinu
Specifične terapijske usluge	Logopedska terapija	Institucionalno, mobilno (u domu korisnika, u izdvojenom prostoru), na daljinu
	Psihosocijalna podrška za djecu s teškoćama u razvoju (8 do 18 g.)	Institucionalno, mobilno (u domu korisnika, u izdvojenom prostoru), na daljinu
	Individualni socijalno-pedagoški rad s mladima s problemima u ponašanju	Institucionalno, mobilno (u domu korisnika, u izdvojenom prostoru), na daljinu
Mentorstvo	Mentorstvo mladima s problemima u ponašanju	Institucionalno, mobilno (u domu korisnika, u izdvojenom prostoru), na daljinu
	Mentorstvo mladima iz alternativne skrbi	Institucionalno, mobilno (u domu korisnika, u izdvojenom prostoru), na daljinu
	Socijalno mentorstvo	Institucionalno, mobilno (u domu korisnika, u izdvojenom prostoru), na daljinu

Grupe podrške	Grupna i vršnjačka podrška mladima s problemom u ponašanju	Institucionalno, mobilno (u izdvojenom prostoru), na daljinu
	Grupe podrške za roditelje/članove obitelji djece s različitim vrstama rizika	Institucionalno, mobilno (u izdvojenom prostoru), na daljinu
	Grupe podrške i vršnjačka podrška za osobe s teškoćama mentalnog zdravlja	Institucionalno, mobilno (u izdvojenom prostoru), na daljinu
	Grupe podrške za članove obitelji osoba s teškoćama mentalnog zdravlja	Institucionalno, mobilno (u izdvojenom prostoru), na daljinu
	Terapijske grupe/klubovi za ovisnike o alkoholu	Institucionalno, mobilno (u izdvojenom prostoru), na daljinu
	Terapijske grupe/klubovi za ovisnike o drogi	Institucionalno, mobilno (u izdvojenom prostoru), na daljinu
	Terapijske grupe/klubovi za ovisnike o kocki	Institucionalno, mobilno (u izdvojenom prostoru), na daljinu
Vođenje slučaja	Integrirana socijalna usluga na razini pojedinca za osobe s težim mentalnim poremećajima (vođenje slučaja)	Institucionalno, mobilno (u domu korisnika, u izdvojenom prostoru), na daljinu
	Koordinator integracije / integrirana socijalna usluga na razini korisnika (vođenje slučaja)	Institucionalno, mobilno (u domu korisnika, u izdvojenom prostoru), na daljinu
USLUGE U ZAJEDNICI ZA UKLJUČIVANJE U OBRAZOVANJE, ZAPOŠLJAVANJE I ŽIVOT ZAJEDNICE		
Boravak	Cjelodnevni ili poludnevni boravak za djecu s teškoćama u razvoju	Institucionalno, mobilno (u izdvojenom prostoru)
	Cjelodnevni ili poludnevni boravak za djecu iz obitelji u riziku	Institucionalno, mobilno (u izdvojenom prostoru)
	Cjelodnevni ili poludnevni boravak za djecu i mlade s problemima u ponašanju	Institucionalno, mobilno (u izdvojenom prostoru)
	Dnevni centar za podršku osobama s problemima stanovanja	Institucionalno, mobilno (u izdvojenom prostoru)
	Poludnevni/cjelodnevni boravak za starije osobe	Institucionalno, mobilno (u izdvojenom prostoru)
	Cjelodnevni/poludnevni boravak za osobe s invaliditetom	Institucionalno, mobilno (u izdvojenom prostoru)
	Cjelodnevni/poludnevni boravak za osobe s teškoćama mentalnog zdravlja	Institucionalno, mobilno (u izdvojenom prostoru)
	Socijalizacijske i razvojne aktivnosti za djecu	Institucionalno, mobilno (u izdvojenom prostoru)

Besplatna pravna pomoć	Besplatna pravna pomoć građanima u siromaštvu	Institucionalno, mobilno (u domu korisnika, u izdvojenom prostoru), na daljinu
	Besplatna primarna i sekundarna pravna pomoć za žrtve nasilja	Institucionalno, mobilno (u domu korisnika, u izdvojenom prostoru), na daljinu
	Besplatna pravna pomoć pripadnicima romske nacionalne manjine i migrantima	Institucionalno, mobilno (u domu korisnika, u izdvojenom prostoru), na daljinu
Pomoć u obrazovanju i zapošljavanju	Pomoć i podrška u stjecanju kvalifikacija i zapošljavanju za žrtve obiteljskog nasilja	Institucionalno, mobilno (u izdvojenom prostoru), na daljinu
	Pomoć i podrška u obrazovanju za djecu i mlade iz obitelji u siromaštvu	Institucionalno, mobilno (u izdvojenom prostoru), na daljinu
	Podrška u zapošljavanju i stjecanju kvalifikacija za građane u siromaštvu	Institucionalno, mobilno (u izdvojenom prostoru), na daljinu
	Pomoć i podrška u stjecanju kvalifikacija i zapošljavanju za osobe s invaliditetom	Institucionalno, mobilno (u izdvojenom prostoru), na daljinu
Usluge u zajednici za provođenje slobodnog vremena	Centar za starije osobe u zajednici s organiziranim kulturnim, umjetničkim, sportskim i drugim aktivnostima	Institucionalno, mobilno (u izdvojenom prostoru)
	Organizirane kreativne, rekreativne i socijalizacijske aktivnosti strukturiranog provođenja slobodnog vremena (teškoće mentalnog zdravlja)	Institucionalno, mobilno (u izdvojenom prostoru)
	Infocentar za mlade - outreach programi prema mladima	Institucionalno
	Tečajevi hrvatskog jezika na osnovnoj i naprednoj razini	Institucionalno, mobilno (u izdvojenom prostoru), na daljinu
USLUGE ASISTENCIJE ZA FUNKCIONIRANJE U SVAKODNEVNOM ŽIVOTU		
Prevođenje i interkulturalna medijacija	Prevođenje i tumačenje za izbjeglice i migrante	Pomoć uz korisnika
	Interkulturni medijatori za izbjeglice i migrante	Pomoć uz korisnika
Romski asistent	Romski pomagač u pripremi za školu, predškoli i nastavi	Pomoć uz korisnika
	Prevoditelj romskog jezika	Pomoć uz korisnika
Podrška na daljinu	SOS telefon za žrtve nasilja	Na daljinu
	Alarmni dojavni sustav za starije osobe	Na daljinu
	Dojavni sustavi za osobe s invaliditetom u krizama i katastrofama	Na daljinu
Prehrana	Pučka kuhinja	Institucionalno, mobilno (u izdvojenom prostoru)
	Dostava namirnica i/ili toplih obroka siromašnim građanima	Mobilno u domu korisnika
	Priprema i dostava toplih obroka za starije osobe	Mobilno u domu korisnika

Humanitarni servisi u zajednici	Socijalna samoposluga	Institucionalno, mobilno (u izdvojenom prostoru)
	Posudionica ortopedskih i medicinskih pomagala	Institucionalno, mobilno (u izdvojenom prostoru)
Palijativna skrb / zdravstvene usluge	Palijativna skrb u kući	U domu korisnika
	Njega u kući	U domu korisnika
Pomoć i podrška u kući	Pomoć i podrška u obavljanju svakodnevnih aktivnosti u domu za starije osobe	U domu korisnika
	Stanovanje starijih osoba u vlastitom domu uz intenzivnu i kontinuiranu podršku	U domu korisnika
	Kontinuirana njega u kući za osobe oboljele od Alzheimerove demencije	U domu korisnika
	Cjelodnevna skrb i njega u kući osoba s težim/teškim invaliditetom	U domu korisnika
	Usluga privremene njege u kući radi predaha od skrbi primarnog njegovatelja (za starije osobe)	U domu korisnika
	Pomoć u kući i praktična podrška u samostalnom stanovanju za osobe s invaliditetom	U domu korisnika
	Privremeni njegovatelj u obitelji osobe s invaliditetom radi predaha od skrbi primarnog njegovatelja	U domu korisnika
	Privremeni njegovatelj u obitelji za dijete s teškoćama u razvoju radi predaha od skrbi	U domu korisnika
Usluge asistencije	Osobna asistencija za OSI uključujući asistenciju u obitelji za OSI koji su roditelji	Pomoć uz korisnika
	Videći pratitelj	Pomoć uz korisnika
	Radni asistent OSI na otvorenom tržištu rada	Pomoć uz korisnika
	Pomoćnik u nastavi	Pomoć uz korisnika
Korištenje znakovnog jezika	Prevoditelj znakovnog jezika	Pomoć uz korisnika
	Tečajevi znakovnog jezika za pružatelje usluga	Institucionalno, na daljinu
	Stručni komunikacijski posrednik za djecu s teškoćama sa sluhom	Pomoć uz korisnika
Prilagođeni prijevoz i pratnja	Prilagođeni prijevoz u zajednici za učenike s teškoćama u razvoju	Pomoć uz korisnika
	Organizirani prijevoz i pratnja za starije i nemoćne osobe	Pomoć uz korisnika
	Specijalizirani prijevoz i pratnja za osobe s invaliditetom	Pomoć uz korisnika
NEIZRAVNE SOCIJALNE USLUGE		
Međusektorska suradnja i kapacitiranje pružatelja	Međusektorski prijenosa znanja (pomoć pri uključivanju u programe odgoja i redovitog obrazovanja)	Institucionalno, na daljinu
	Educiranje pružatelja usluga za rad s osobama različitog etničkog/kulturnog porijekla	Institucionalno, na daljinu
	Međusektorski programi rane prevencije siromaštva	Institucionalno, na daljinu
	Edukacija i supervizija interkulturnih medijatora	Institucionalno, na daljinu

IV

PROJEKCIJA BROJA KORISNIKA TEMELJNIH SOCIJALNIH USLUGA

4.1 POSTUPAK IZRADE PROJEKCIJE BROJA KORISNIKA U POTREBI ZA SOCIJALNIM USLUGAMA

Nakon što smo definirali paket temeljnih socijalnih usluga koji bi trebao biti univerzalno dostupan na teritoriju cijele Republike Hrvatske, osnovno je pitanje koliko je resursa potrebno za ostvarivanje takve dostupnosti. Kako bismo odgovorili na to pitanje, trebalo je izračunati dva osnovna parametra: a) procijeniti potencijalni broj korisnika i b) temeljem definicije usluge i njezinog sadržaja utvrditi njezin opseg u obliku broja stručnih sati te pripadajuće resurse u obliku infrastrukturne i tehničke opreme. Razmjer potrebnih infrastrukturnih resursa i resursa u obliku opreme proizlazi iz intenziteta usluge koja je operacionalizirana kroz intenzitet stručnog rada. Zato je intenzitet stručnog rada temeljni indikator sadržaja usluge te u konačnici osnova izračuna izdatka za pojedinu uslugu.

Projekcija broja korisnika izrađena je prema sljedećim koracima pa ćemo njezinu izvedbu prikazati u daljnjem tekstu:

1. Utvrđivanje **grupe usluga** koju dijeli ista korisnička populacija, tj. korisnici sa sličnim potrebama.
2. Utvrđivanje odgovarajućih **kriterija** za procjenu potreba u društvu te adekvatan **izvor podataka[4].**
3. Utvrđivanje drugih **ograničavajućih parametara** za selekciju korisnika koji imaju potrebu za istom grupom korisnika. U pojedinim uslugama ograničavajući parametar može biti i očekivana motivacija korisnika da uopće koriste određene socijalne usluge.
4. Izračun očekivane **potrebe za socijalnom uslugom u populaciji** u obliku omjera broja korisnika po odabranom kriteriju i ukupnog broja stanovništva u odgovarajućoj dobnoj skupini (N). Vodeći računa o udjelu korisnika u potrebi u dobnoj skupini (a ne isključivo na razini cijele populacije), dobit će se točnije projekcije za zajednice koje imaju indeks starenja koji znatno odstupa od nacionalnog prosjeka.
5. Što se tiče ukupnog broja stanovništva u Republici Hrvatskoj, s obzirom na to da su korišteni izvori prije aktualnog popisa stanovništva, uzeta je u obzir posljednja projekcija Državnog zavoda u statistiku iz 2020. godine kojom je procijenjeno da u Hrvatskoj živi **4.036.355** stanovnika[5]. Prvi neslužbeni rezultati Popisa stanovništva 2021. godine upućuju na to da u Hrvatskoj živi 3.888.529 stanovnika[6]. Budući da je riječ o minimalnom odstupanju od 3,7%, odlučeno je da će se primijeniti projekcija broja stanovnika iz 2020. godine.
6. **Ponderiranje** potrebe za socijalnom uslugom u populaciji uzimajući u obzir stopu siromaštva u pojedinoj jedinici lokalne samouprave, prevalenciju invaliditeta ili udio romske populacije. Socijalni rizici zasigurno nisu jednako distribuirani kroz populaciju pa ni u lokalnim sredinama. No, s obzirom na dostupne podatke i strukturalnu uvjetovanost koncentracije rizika, naša je pretpostavka da ponderiranje treba svakako uključiti kada govorimo o siromaštvu, invaliditetu i zastupljenosti romske populacije. Što se tiče nejednake distribucije rizika povezanih sa starenjem, oni će biti ukalkulirani s obzirom da su očekivane potrebe iskazane u odnosu na populaciju u određenoj dobnoj skupini (ne u odnosu na ukupno stanovništvo).
7. Primjena kriterija **raspodjele korisnika unutar grupe usluga.**

4 U daljnjem tabličnom tekstu radi lakše čitljivosti reference na izvore podataka bit će naznačene u fusnotama i objedinjene u popisu literature.

5 Državni zavod za statistiku (2021.). Statistika u nizu. Procjene stanovništva.

6 Državni zavod za statistiku (2022.). Popis stanovništva 2021. POPIS STANOVNIŠTVA, KUĆANSTAVA I STANOVA 2021. – PRVI REZULTATI.

8. Usklađivanje **broja korisnika usluga** kada korisnik istovrsnu uslugu može dobiti na osnovi nekoliko izvora ranjivosti.

9. **Projekcija očekivanog broja korisnika pojedine socijalne usluge na razini od 5000** stanovnika kao idealtipske zajednice.

10. **Umnožak očekivanog broja korisnika i predviđenog broja sati stručnog rada.**

11. **Prijedlog razgraničenja razina odgovornosti za implementaciju socijalne usluge.** Razlikovat će se socijalne usluge koje trebaju biti u nadležnosti jedinica regionalne samouprave (županija), usluge koje mogu biti implementirane na razini klastera, tj. funkcionalnog povezivanja jedinica lokalne samouprave (ekvivalentno postojećoj mreži centara za socijalnu skrb) te usluge za koje je u potpunosti odgovorna jedinica lokalne samouprave (gradovi/općine). Naime, nužna je podjela odgovornosti jer Hrvatska ima izrazito rascjepkan teritorij. Prema Popisu stanovništva 2021., u Hrvatskoj su čak 52 JLS s manje od 1000 stanovnika, njih 197 s manje od 2000 stanovnika te 313 s manje od 3000 stanovnika. Od preostalih jedinica lokalne samouprave njih 104 imaju između 3000 i 5000 stanovnika, a svega 137 JLS (25 %) ima više od 5000 stanovnika.

Očekujemo da bi se ovaj model izvedivosti trebao periodično revidirati na temelju promijenjenih parametara. Zbog toga predlažemo primjenu tablice 12. kao predloška za reviziju modela.

Svi predloženi kriteriji koriste se samo kao *proxy* vrijednosti koje olakšavaju projekciju potreba i planiranje socijalnih usluga. U praksi se kriteriji procjene nikako ne smiju u potpunosti poistovjećivati sa stvarnim kriterijima uključivanja korisnika u usluge.

Cijeli model bio je višestruko podvrgnut teorijskoj i empirijskoj validaciji na temelju dostupne literature te rasprave na stručnim panelima. U daljnjem tekstu najprije će biti prikazana projekcija broja korisnika za svaku korisničku skupinu, a u poglavlju V. opis sadržaja socijalnih usluga i intenzitet stručnog rada.

Tablica 12. Predložak za projekciju broja korisnika i opsega temeljnih socijalnih usluga za korisničku skupinu XY

Grupa usluga koju dijeli ista korisnička populacija: _____												
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N stanovnika	% korisnika u potrebi	Ponderiranje potrebe za socijalnom uslugom u populaciji	Prijedlog raspodjele korisnika unutar grupe usluga		Usklađivanje broja korisnika usluga koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika	Umnožak očekivanog broja korisnika i predviđenog broja sati stručnog rada	Razina odgovornosti za organizaciju socijalne usluge
								Usluga 1	%				
								Usluga 2	%				
								Usluga 3	%				

4.2 PROJEKCIJA BROJA KORISNIKA USLUGA ZA DJECU U RIZIKU

Socijalne usluge za djecu grupirane su u nekoliko kategorija prema svrsi i vrsti rizika.

Tako su **za djecu s teškoćama u razvoju** predviđene sljedeće grupe usluga (tablica 13):

I. Usluge smještaja za djecu s teškoćama u razvoju

1. Organizirano stanovanje za djecu (do 18 godina) s teškoćama u razvoju
2. Specijalizirano udomiteljstvo za djecu s teškoćama u razvoju

Temeljni kriterij za procjenu broja korisnika je postojeći broj djece s teškoćama u razvoju u privremenom i dugotrajnom smještaju jer smatramo da sustav već dobro detektira takve potrebe.

II. Usluge razvojne podrške

1. Rana razvojna podrška

Kao kriterij za utvrđivanje potreba korišten je podatak o prevalenciji invaliditeta u dječjoj dobi prema izvješću Hrvatskog zavoda za javno zdravstvo. Ovim kriterijem obuhvaćen je širi krug djece s teškoćama nego što ih je u sustavu socijalne skrbi te nešto manje djece nego što su procjene UNICEF-a koje govore da potreba za ranom intervencijom postoji kod oko 10 % djece (Vargas-Barón i sur., 2020.).

2. Logopedska terapija

Broj korisnika procijenjen je na temelju podatka o prevalenciji invaliditeta na temelju govorno-glasovnih teškoća.

3. Psihosocijalna podrška za djecu s teškoćama u razvoju u dobi od 8 do 18 godina

Za procjenu broja korisnika ove usluge korišten je podatak o broju djece s teškoćama u razvoju koja već ostvaruju prava u sustavu socijalne skrbi, što znači da je riječ o djeci s izraženijim teškoćama, nerijetko materijalno depriviranima.

4. Cjelodnevni ili poludnevni boravak za djecu s teškoćama u razvoju

Boravci za sve korisničke skupine inicijalno su razvijeni kao oblik usluge u transformiranim domovima socijalne skrbi te je ova usluga omogućena tamo gdje su postojali domovi, a ne nužno tamo gdje je ista bila potrebna. Zato je kao kriterij korišten dvostruki broj postojećih korisnika boravaka jer pretpostavljamo da je potreba veća od stvarnog broja korisnika. U budućnosti trebalo bi revidirati potrebu za ovakvim oblikom usluga i jasnije utvrditi profil potencijalnih korisnika jer ona i dalje predstavlja određeni vid institucionalizacije korisnika.

III. Usluge asistencije u nastavi

1. Pomoćnik u nastavi
2. Stručni komunikacijski posrednik za djecu s teškoćama sluha

Za obje usluge korišten je kriterij postojećeg broja pomoćnika u nastavi / stručnih komunikacijskih posrednika jer smatramo da je sustav već aktivirao sve raspoložive resurse da bi ova usluga došla do djece kojima je potrebna. Moguće je da su stvarne potrebe još i veće te da inkluzivno obrazovanje radi izostanka pomoćnika u nastavi nije ostvareno u punom kapacitetu. No, u ovom trenutku takvih projekcija novih potreba nema te se vodimo postojećim brojem korisnika.

IV. Usluga privremenog njegovatelja u obitelji za dijete s teškoćama u razvoju zbog predaha od skrbi

Kao kriterij korišten je broj roditelja njegovatelja. Njegovateljski stres je rizik koji zasigurno imaju i roditelji koji nemaju status njegovatelja, ali zasad smatramo ovakvu procjenu opravdanom jer će isprva obuhvatiti roditelje kojima je ovakva usluga bez sumnje potrebna.

V. Prilagođeni prijevoz u zajednici za učenike s teškoćama u razvoju

Korišten je kriterij prevalencije invaliditeta na temelju tjelesnih oštećenja.

VI. Usluga međusektorskog prijenosa znanja (pomoć pri uključivanju u programe odgoja i redovitog obrazovanja (integracija)

Kao kriterij korišten je procijenjeni broj djece s teškoćama u razvoju koja kreću u osnovno obrazovanje.

Za djecu bez odgovarajuće roditeljske skrbi usluge su grupirane na sljedeći način (tablica 14):

I. Usluge smještaja

1. Udomiteljstvo za djecu bez odgovarajuće roditeljske skrbi
2. Organizirano stanovanje za djecu (do 18 godina) bez roditeljske skrbi

Kriterij za obje usluge je postojeći broj djece u skrbi izvan obitelji jer smatramo da sustav već dobro detektira takve potrebe.

II. Cjelodnevni ili poludnevni boravak za djecu iz obitelji u riziku

Kao i u prethodnom primjeru, boravci su nastali u zajednicama gdje je postojala institucionalna skrb, a ne tamo gdje su nužno postojale potrebe. Zato su naše projekcije potreba veće od trenutne situacije. No, općenito kada je riječ o boravcima postavlja se pitanje opravdanosti usluge boravka kao pseudoinstitucionaliziranog oblika usluga kojega bi bilo dobro revidirati u budućnosti. U trenutnim okolnostima smo za kriterij uzeli djecu u školskoj dobi (7 do 14 godina) čiji roditelji imaju izrečenu mjeru iz obiteljsko-pravne zaštite, i to mjeru stručne pomoći i potpore u ostvarivanju skrbi o djetetu te intenzivne stručne pomoći i nadzora nad ostvarivanjem skrbi o djetetu.

U popisu temeljnih usluga nalazi se i usluga za djecu žrtve trgovanja ljudima, a riječ je o organiziranom stanovanju. U Hrvatskoj je broj žrtava trgovanja ljudima ukupno relativno mali, manje od 20 osoba godišnje (Milković, 2021.), stoga ovu uslugu procjenjujemo kao pripravnost jedinica regionalne samouprave u takvim situacijama.

Osim specifičnih grupa djece, predviđene su **opće usluge za djecu u riziku od siromaštva i rizicima mentalnog zdravlja** (tablica 15):

I. Savjetovanje ili psihološka pomoć za djecu

Procjenu korisnika ove usluge izradili smo na temelju kriterija broja djece s neurozama i drugim duševnim poremećajima u dobi od 0 do 19 godina prema podacima obiteljske medicine. Pritom su u obzir uzete prosječne vrijednosti od 2015. do 2019. godine jer je 2020. godina imala ekstremno povećanje ovog pokazatelja (više nego dvostruko). Kako nema pouzdanog objašnjenja za ovakvo povećanje, u obzir su uzete prijašnje godine pa smo u vezi s ovom procjenom konzervativniji.

II. Socijalizacijske i razvojne aktivnosti za djecu

Broj korisnika procijenili smo na temelju stope teške materijalne deprivacije uz pretpostavku da bi njih 70 % moglo biti zainteresirano za istu uslugu.

Usluge za djecu s problemima u ponašanju obradili smo objedinjeno sa skupinom usluga za mlade u riziku i one će biti prezentirane u idućem poglavlju.

Tablica 13. Projekcija broja korisnika temeljnih socijalnih usluga za djecu s teškoćama u razvoju

Grupa usluga koju dijeli ista korisnička populacija: Usluge smještaja za djecu s teškoćama u razvoju											
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N djece (do 19 godina)	% djece u potrebi od 0 do 19 godina	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika (očekivani broj djece je 960)	Razina odgovornosti za organizaciju socijalne usluge
Broj djece s teškoćama u razvoju u smještaju	857	Godišnji izvještaj MROSP-a[7]	-	-	775 000	0,11 %	-	Organizirano stanovanje	50 %	-	0,5	REGIONALNA
								Specijalizirano udomiteljstvo	50 %	-	0,5	REGIONALNA
Grupa usluga koju dijeli ista korisnička populacija: Usluge razvojne podrške za djecu s teškoćama u razvoju											
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N djece (do 19 godina)	% sve djece u potrebi	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika (očekivani broj djece je 960)	Razina odgovornosti za organizaciju socijalne usluge
Prevalencija invaliditeta u dobi 0 do 19 g.	8,2 %	Izvješće HZJZ-a o OSI[8]	Djeca u dobi od 0 do 3 g.	16,15 % sve djece u dobi od 0 do 19 g.	775 000	1,98 %	-	Rana razvojna podrška od 0 do 3 g.	70 %	-	13	KLASTER JLS

			Djeca u dobi od 4 do 7 g.	21,53 % sve djece u dobi od 0 do 19 g.				Rana razvojna podrška od 4 do 7 g.	30 %	-	6	KLASTER JLS
			Potreba za razvojnu podršku u dobi od 4 do 7 g.	40 %								
Prevalencija govorno-glasovnih oštećenja od 0 do 19 g.	5,6 % svih invaliditeta u populaciji od 8 % djece s teškoćama	Izvješće HZJZ-a o OSI[9]	Potreba za besplatnu uslugu	70 %	775 000	0,45 %	-	Logopedska terapija	100 %	-	3	KLASTER JLS
Broj djece s teškoćama u razvoju u sustavu socijalne skrbi u dobi od 7 do 18 godina.	12 219	Godišnji izvještaj MROSP-a[10]	-	-	775 000	1,58 %	-	Psihosocijalna podrška za djecu s teškoćama u razvoju u dobi od 8 do 18 godina	100 %	Od ukupnog broja oduzeti broj djece u smještaju i u boravku za DSTUR	12	KLASTER JLS
Dvostruki broj djece s teškoćama u boravku	733	Godišnji izvještaj MROSP-a[11]	-	-	775 000	0,19 %	-	Cjelodnevni ili poludnevni boravak za djecu s teškoćama u razvoju	100 %	-	2	KLASTER JLS

7 Ministarstvo rada, mirovinskoga sustava, obitelji i socijalne politike (2021.). GODIŠNJE STATISTIČKO IZVJEŠĆE O PRIMIJENJENIM PRAVIMA SOCIJALNE SKRBI, PRAVNOJ ZAŠTITI DJECE, MLADEŽI, BRAKA, OBITELJI I OSOBA LIŠENIH POSLOVNE SPOSOBNOSTI TE ZAŠTITI TJELESNO ILI MENTALNO OŠTEĆENIH OSOBA U REPUBLICI HRVATSKOJ U 2020. GODINI. https://mrosp.gov.hr/UserDocsImages/dokumenti/Socijalna%20politika/Odluke/Godisnje%20statisticko%20izvjesce%20u%20RH%20za%202020.%20godinu.PDF

8 Hrvatski zavod za javno zdravstvo (2021.). Izvješće o osobama s invaliditetom u Republici Hrvatskoj. https://www.hzjz.hr/wp-content/uploads/2021/10/Bilten-Invalidi-2021_.pdf

9 Hrvatski zavod za javno zdravstvo (2021.). Izvješće o osobama s invaliditetom u Republici Hrvatskoj. https://www.hzjz.hr/wp-content/uploads/2021/10/Bilten-Invalidi-2021_.pdf

10 Ministarstvo rada, mirovinskoga sustava, obitelji i socijalne politike (2021.). GODIŠNJE STATISTIČKO IZVJEŠĆE O PRIMIJENJENIM PRAVIMA SOCIJALNE SKRBI, PRAVNOJ ZAŠTITI DJECE, MLADEŽI, BRAKA, OBITELJI I OSOBA LIŠENIH POSLOVNE SPOSOBNOSTI TE ZAŠTITI TJELESNO ILI MENTALNO OŠTEĆENIH OSOBA U REPUBLICI HRVATSKOJ U 2020. GODINI. https://mrosp.gov.hr/UserDocsImages/dokumenti/Socijalna%20politika/Odluke/Godisnje%20statisticko%20izvjesce%20u%20RH%20za%202020.%20godinu.PDF

11 Ministarstvo rada, mirovinskoga sustava, obitelji i socijalne politike (2021.). GODIŠNJE STATISTIČKO IZVJEŠĆE O PRIMIJENJENIM PRAVIMA SOCIJALNE SKRBI, PRAVNOJ ZAŠTITI DJECE, MLADEŽI, BRAKA, OBITELJI I OSOBA LIŠENIH POSLOVNE SPOSOBNOSTI TE ZAŠTITI TJELESNO ILI MENTALNO OŠTEĆENIH OSOBA U REPUBLICI HRVATSKOJ U 2020. GODINI. https://mrosp.gov.hr/UserDocsImages/dokumenti/Socijalna%20politika/Odluke/Godisnje%20statisticko%20izvjesce%20u%20RH%20za%202020.%20godinu.PDF

Grupa usluga koju dijeli ista korisnička populacija: Usluge asistencije u nastavi za djecu s teškoćama u razvoju												
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N djece (do 19 godina)	% djece u potrebi od 0 do 19 g.	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika (očekivani broj djece je 960)	Razina odgovornosti za organizaciju socijalne usluge
Broj pomoćnika u nastavi	3292	Izvješće POSI-ja[12]	-	-	775 000	0,42 %	-	Pomoćnik u nastavi	100 %	-	4	JEDINICA LOKALNE SAMOUPRAVE
Broj komunikacijskih posrednika	516	Podaci MZO-a[13]	-	-	775 000	0,07 %	-	Stručni komunikacijski posrednik za djecu s teškoćama sluha	100 %	-	0,67	JEDINICA LOKALNE SAMOUPRAVE
Grupa usluga koju dijeli ista korisnička populacija: Usluga privremenog njegovatelja u obitelji za dijete s teškoćama u razvoju zbog predaha od skrbi												
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N djece (do 19 godina)	% djece u potrebi od 0 do 19 g.	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika (očekivani broj djece je 960)	Razina odgovornosti za organizaciju socijalne usluge
Broj roditelja njegovatelja	5177	Godišnji izvještaj MROSP-a[14]	-	-	775 000	0,668 %	-	Privremeni njegovatelj	100 %	-	6	KLASTER JLS

Grupa usluga koju dijeli ista korisnička populacija: Prilagođeni prijevoz u zajednici za učenike s teškoćama u razvoju												
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N djece (do 19 godina)	% djece u potrebi od 0 do 19 g.	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika (očekivani broj djece je 960)	Razina odgovornosti za organizaciju socijalne usluge
Djeca školske dobi s tjelesnim teškoćama	3574	Godišnji izvještaj MROSP-a[15]	-	-	775 000	0,46 %	-	Prilagođeni prijevoz za DSTUR	100 %	-	4	REGIONALNO
Grupa usluga koju dijeli ista korisnička populacija: Usluga međusektorskog prijenosa znanja (pomoć pri uključivanju u programe odgoja i redovitog obrazovanja (integracija))												
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N djece (do 19 godina)	% djece u potrebi od 0 do 19 g.	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika (očekivani broj djece je 960)	Razina odgovornosti za organizaciju socijalne usluge
6 % učenika s teškoćama u obrazovanju		Izvješće POSI-ja[16]	Broj djece u prvom razredu	36598[17], tj. 4,7 % sve djece	775 000	0,282 %	-	Usluga integracije	100 %	-	3	KLASTER JLS

12 Pravobranitelj za osobe s invaliditetom (2021.). Izvješće o radu pravobranitelja za osobe s invaliditetom 2020. https://posi.hr/wp-content/uploads/2021/04/Izvjesce-o-radu-Pravobranitelja-za-osobe-s-invaliditetom-za-2020.-godinu.pdf

13 Ministarstvo znanosti i obrazovanja (2021.). ESF NATJEČAJ: Osiguravanje pomoćnika u nastavi i stručnih komunikacijskih posrednika učenicima s teškoćama u razvoju u osnovnoškolskim i srednjoškolskim odgojno-obrazovnim ustanovama, faza IV. http://www.esf.hr/wordpress/wp-content/uploads/2021/06/Upute-za-prijavitelje-PUN_SKP_faza-IV.pdf

14 Ministarstvo rada, mirovinskoga sustava, obitelji i socijalne politike (2021.). GODIŠNJE STATISTIČKO IZVJEŠĆE O PRIMIJENJENIM PRAVIMA SOCIJALNE SKRBI, PRAVNOJ ZAŠTITI DJECE, MLADEŽI, BRAKA, OBITELJI I OSOBA LIŠENIH POSLOVNE SPOSOBNOSTI TE ZAŠTITI TJELESNO ILI MENTALNO OŠTEĆENIH OSOBA U REPUBLICI HRVATSKOJ U 2020. GODINI. https://mrosp.gov.hr/UserDocsImages/dokumenti/Socijalna%20politika/Odluke/Godisnje%20statisticko%20izvjesce%20u%20RH%20za%202020.%20godinu.PDF

15 Ministarstvo rada, mirovinskoga sustava, obitelji i socijalne politike (2021.). GODIŠNJE STATISTIČKO IZVJEŠĆE O PRIMIJENJENIM PRAVIMA SOCIJALNE SKRBI, PRAVNOJ ZAŠTITI DJECE, MLADEŽI, BRAKA, OBITELJI I OSOBA LIŠENIH POSLOVNE SPOSOBNOSTI TE ZAŠTITI TJELESNO ILI MENTALNO OŠTEĆENIH OSOBA U REPUBLICI HRVATSKOJ U 2020. GODINI. https://mrosp.gov.hr/UserDocsImages/dokumenti/Socijalna%20politika/Odluke/Godisnje%20statisticko%20izvjesce%20u%20RH%20za%202020.%20godinu.PDF

16 Pravobranitelj za osobe s invaliditetom (2021.). Izvješće o radu Pravobranitelja za osobe s invaliditetom 2020. https://posi.hr/wp-content/uploads/2021/04/Izvjesce-o-radu-Pravobranitelja-za-osobe-s-invaliditetom-za-2020.-godinu.pdf

17 Državni zavod za statistiku (2021.). Priopćenje BROJ/ NUMBER: 8.1.2. OSNOVNE ŠKOLE KRAJ ŠK. G. 2019./2020. I POČETAK ŠK. G. 2020./2021. https://www.dzs.hr/Hrv_Eng/publication/2021/08-01-02_01_2021.htm

Tablica 14. Projekcija broja korisnika temeljnih socijalnih usluga za djecu bez odgovarajuće roditeljske skrbi

Grupa usluga koju dijeli ista korisnička populacija: Usluge smještaja za djecu bez odgovarajuće roditeljske skrbi											
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N djece (do 19 godina)	% djece u potrebi od 0 do 19 g.	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika (očekivani broj djece je 960)	Razina odgovornosti za organizaciju socijalne usluge
Broj djece bez roditeljske skrbi u smještaju	2575	Godišnji izvještaj MROSP-a[18]	-	-	775 000	0,33 %	-	Organizirano stanovanje	30 %	-	1	REGIONALNA
								Specijalizirano udomiteljstvo	70 %	-	2	REGIONALNA
Grupa usluga koju dijeli ista korisnička populacija: Cjelodnevni ili poludnevni boravak za djecu iz obitelji u riziku											
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N djece (do 19 godina)	% djece u potrebi od 0 do 19 g.	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika (očekivani broj djece je 960)	Razina odgovornosti za organizaciju socijalne usluge

Broj djece čiji roditelji imaju mje-ru stručne pomoći ili intenzivne stručne pomoći u dobi od 7 do 14 g.	3087	Godišnji izvještaj MROSP-a[19]	Motivacija za korištenje usluge	50 %	775 000	0,199 %	-	Cjelodnevni ili poludnevni boravak za djecu iz obitelji u riziku	100 %	-	2	KLASTER JLS
Grupa usluga koju dijeli ista korisnička populacija: Organizirano stanovanje za djecu žrtve trgovanja ljudima												
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za se-lekciju korisnika		N djece (do 19 godina)	% djece u potrebi od 0 do 19 g.	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste uslu-ge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika	Razina odgovornosti za organiza-ciju socijalne usluge
Pripravnost u iznimnim situacijama	-	-	-		-	-	-	-		-	1	REGIONALNA

18 Ministarstvo rada, mirovinskoga sustava, obitelji i socijalne politike (2021.). GODIŠNJE STATISTIČKO IZVJEŠĆE O PRIMIJENJENIM PRAVIMA SOCIJALNE SKRBI, PRAVNOJ ZAŠTITI DJECE, MLADEŽI, BRAKA, OBITELJI I OSOBA LIŠENIH POSLOVNE SPOSOBNOSTI TE ZAŠTITI TJELESNO ILI MENTALNO OŠTEĆENIH OSOBA U REPUBLICI HRVATSKOJ U 2020. GODINI. https://mrosp.gov.hr/UserDocsImages/dokumenti/Socijalna%20politika/Odluke/Godisnje%20statisticko%20izvjesce%20u%20RH%20za%202020.%20godinu.PDF

19 Ministarstvo rada, mirovinskoga sustava, obitelji i socijalne politike (2021.). GODIŠNJE STATISTIČKO IZVJEŠĆE O PRIMIJENJENIM PRAVIMA SOCIJALNE SKRBI, PRAVNOJ ZAŠTITI DJECE, MLADEŽI, BRAKA, OBITELJI I OSOBA LIŠENIH POSLOVNE SPOSOBNOSTI TE ZAŠTITI TJELESNO ILI MENTALNO OŠTEĆENIH OSOBA U REPUBLICI HRVATSKOJ U 2020. GODINI. https://mrosp.gov.hr/UserDocsImages/dokumenti/Socijalna%20politika/Odluke/Godisnje%20statisticko%20izvjesce%20u%20RH%20za%202020.%20godinu.PDF

Tablica 15. Projekcija broja korisnika općih usluga za djecu u riziku od siromaštva i rizicima mentalnog zdravlja

Grupa usluga koju dijeli ista korisnička populacija: Savjetovanje ili psihološka pomoć za djecu											
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N djece (do 19 godina)	% djece u potrebi od 0 do 19 g.	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika (očekivani broj djece je 960)	Razina odgovornosti za organizaciju socijalne usluge
Broj djece (od 0 do 19 g.) s neurozama i ostalim duševnim poremećajima	12 270	Statistički ljetopis HZJZ-a[20]	Motivacija za korištenje usluge	70 %	775 000	1,1 %	-	Savjetovanje ili psihološka pomoć za djecu	100 %	-	11	KLASTER JLS

Grupa usluga koju dijeli ista korisnička populacija: Socijalizacijske i razvojne aktivnosti za djecu												
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N djece (do 19 godina)	% djece u potrebi od 0 do 19 godina	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika (očekivani broj djece je 960)	Razina odgovornosti za organizaciju socijalne usluge
Stopa teške materijalne deprivacije	6,9 %	Eurostat[21]	Motivacija za korištenje usluge	70 %	775 000	4,83 %	Stopa siromaštva: pomnožiti s omjerom stopa siromaštva JLS/ stopa siromaštva RH	Socijalizacijske i razvojne aktivnosti za djecu	100 %	-	46	Jedinica lokalne samouprave

20 Hrvatski zavod za javno zdravstvo (2019., 2018., 2017., 2016., 2015.). Hrvatski zdravstveno-statistički ljetopis za 2019., 2018., 2017., 2016. i 2015. godinu. https://www.hzjz.hr/cat/periodicne-publikacije/

21 Eurostat (2020.). Severely materially deprived people. https://ec.europa.eu/eurostat/databrowser/view/t2020_53/default/table?lang=en

4.3 PROJEKCIJA BROJA KORISNIKA USLUGA ZA MLADE U RIZIKU

Usluge za mlade podijelili smo u tri velike skupine: usluge za opću populaciju mladih koje su dominantno preventivne, usluge za mlade koji imaju probleme u ponašanju i usluge za mlade u skrbi. Što se tiče dobne definicije, zapravo nema jasnog razgraničenja s kategorijom djece pa definicija mladih varira ovisno o dostupnim pokazateljima za dob od 0 do 19 ili 0 do 24 godine. Pojam mladih stoga nije definiran po dobi nego po problematici koju najčešće vežemo uz mlade, kao što je mentalno zdravlje ili problemi u ponašanju. Prema Zakonu o socijalnoj skrbi, mladi kao korisnička skupina starija od 18 godina pojavljuju se u dvije kategorije: ˝mlađa punoljetna osoba i mlađa punoljetna osoba s problemima u ponašanju˝ (čl. 18., st.1., t.3.) i ˝osoba koja je bila korisnik prava na uslugu smještaja ili organiziranog stanovanja, a kojoj je potrebno osigurati stanovanje dok za to traje potreba, a najduže do 26. godine života˝ (čl. 18., st.1., t.4.). No, kako ulazak u sustav socijalne skrbi počinje uglavnom prije 18. godine života, dobna definicija djece i mladih uvelike se preklapa. U ovoj publikaciji stoga mlade nismo vezali za dobnu definiciju, već uz one rizike koji se najčešće i u literaturi i u praksi vežu uz pojam mladih: problemi u ponašanju (uključujući eksternalizirane i internalizirane) te mladi u skrbi.

I. **Opće preventivne usluge za mlade** (tablica 16)

1. Usluga infocentra za mlade s uključenim outreach programima
2. Psihoedukativni i preventivni programi za mlade
3. Programi podrške mladima s problemima ovisnosti

Za ovaj skup usluga primarni kriterij bio je stabilan pokazatelj višestruko potvrđen u istraživanjima prema kojemu je prevalencija internaliziranih i eksternaliziranih problema 10 do 15 % (Novak i Bašić, 2008.).

II. Socijalne usluge u zajednici za **mlade s problemima u ponašanju** (tablica 17)

1. Grupna i vršnjačka podrška mladima s problemom u ponašanju
2. Cjelodnevni ili poludnevni boravak za djecu i mlade s problemima u ponašanju
3. Mentorstvo mladima s problemima u ponašanju
4. Individualni socijalno-pedagoški rad s mladima s problemima u ponašanju
5. Multidisciplinarna psihosocijalna podrška za mlade s poremećajem u ponašanju

Za ovu grupu usluga temeljni kriterij bio je broj mladih s kojima se trenutačno provode mjere iz sustava socijalne skrbi.

III. Usluge smještaja i skrbi izvan obitelji za mlade u riziku (tablica 18):

1. Specijalizirano udomiteljstvo za djecu s problemima u ponašanju
2. Organizirano stanovanje za mlade u alternativnoj skrbi
3. Organizirano stanovanje za mlade s invaliditetom
4. Stambeno zbrinjavanje mladih u kriznim situacijama (gubitak posla, izlazak iz ustanove, katastrofe…)
5. Organizirano stanovanje za mlade u alternativnoj skrbi (18+ godina)
6. Mentorstvo mladima iz alternativne skrbi

IV. Uz navedene u paketu temeljnih socijalnih usluga predviđena je usluga **Multidisciplinarne psihosocijalne podrške maloljetnim trudnicama i majkama** (tablica 19). Za ovu uslugu kao kriterij korišten je podatak Hrvatskog zavoda za javno zdravstvo o maloljetnim trudnicama i rodiljama.

Tablica 16. Projekcija broja korisnika općih preventivnih usluga za mlade

Grupa usluga koju dijeli ista korisnička populacija: Opće preventivne usluge za mlade											
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N djece (do 19 godina)	% djece u potrebi od 0 do 19 g.	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika (očekivani broj djece je 960)	Razina odgovornosti za organizaciju socijalne usluge
Prevalencija problema u ponašanju	15 %	Znanstvena istraživanja (pregled istraživanja u Novak i Bašić, 2008.).	Motivacija korisnika	50 %	775 000	7,5 %	-	Infocentar za mlade	100 %	-	72	JEDINICA LOKALNE SAMOUPRAVE
								Psihoedukativni i preventivni programi	70 %		50	JEDINICA LOKALNE SAMOUPRAVE
								Programi podrške mladima s problemom ovisnosti	30 %		22	JEDINICA LOKALNE SAMOUPRAVE

Tablica 17. Projekcija broja korisnika usluga za djecu i mlade s problemima u ponašanju

Grupa usluga koju dijeli ista korisnička populacija: Usluge za djecu i mlade s problemima u ponašanju												
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N djece (do 24 godina)	% djece u potrebi od 0 do 24 g.	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika (očekivani broj mladih do 24 g. je 1252)	Razina odgovornosti za organizaciju socijalne usluge
Broj mladih koji imaju izrečenu mjeru u CZSS	9064	Izvještaj MROSP-a[22]	-	-	1 011 000	0,896 %	-	Individualni socijalno-pedagoški rad	30 %	-	3	KLASTER JLS
								Grupna i vršnjačka podrška	40 %		4	JEDINICA LOKALNE SAMOUPRAVE
								Cjelodnevni ili poludnevni boravak	30 %		3	KLASTER JLS
								Mentorstvo	30 %		3	KLASTER JLS
								Multidisciplinarna psihosocijalna podrška	20 %		2	KLASTER JLS

22 Ministarstvo rada, mirovinskoga sustava, obitelji i socijalne politike (2021.). GODIŠNJE STATISTIČKO IZVJEŠĆE O PRIMIJENJENIM PRAVIMA SOCIJALNE SKRBI, PRAVNOJ ZAŠTITI DJECE, MLADEŽI, BRAKA, OBITELJI I OSOBA LIŠENIH POSLOVNE SPOSOBNOSTI TE ZAŠTITI TJELESNO ILI MENTALNO OŠTEĆENIH OSOBA U REPUBLICI HRVATSKOJ U 2020. GODINI.

Tablica 18. Projekcija broja korisnika usluga smještaja i skrbi izvan obitelji za mlade u riziku

Grupa usluga koju dijeli ista korisnička populacija: Usluge smještaja izvan obitelji za mlade s problemima u ponašanju												
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N djece (do 24 godina)	% djece u potrebi od 0 do 24 g.	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika (očekivani broj mladih do 24 g. je 1252)	Razina odgovornosti za organizaciju socijalne usluge
Broj mladih s PUP-om na smještaju	475	Izvještaj MROSP-a[23]	-	-	1 011 000	0,04 7%	-	Specijalizirano udomiteljstvo	50 %	-	0,3	REGIONALNA
								Organizirano stanovanje	50 %	-	0,3	REGIONALNA
Grupa usluga koju dijeli ista korisnička populacija: Usluge smještaja za mlade s invaliditetom												
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N djece (do 24 godina)	% djece u potrebi od 0 do 24 g.	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika (očekivani broj mladih do 24 g. je 1252)	Razina odgovornosti za organizaciju socijalne usluge
Broj djece i mladih OSI u smještaju	283	Izvještaj MROSP-a[24]	-	-	1 011 000	0,028 %	-	Organizirano stanovanje za mlade s invaliditetom	100 %	-	0,35	REGIONALNA

Grupa usluga koju dijeli ista korisnička populacija: Stambeno zbrinjavanje mladih u kriznim situacijama												
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N djece (do 24 godina)	% djece u potrebi od 0 do 24 godina	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika (očekivani broj mladih do 24 g. je 1252)	Razina odgovornosti za organizaciju socijalne usluge
Broj mladih u skitnji	205	Izvještaj MROSP-a[25]	-	-	1 011 000	0,02 %	-	Stambeno zbrinjavanje	100 %	-	0,25	JEDINICA LOKALNE SAMOUPRAVE
Grupa usluga koju dijeli ista korisnička populacija: Organizirano stanovanje i mentorstvo za mlade u alternativnoj skrbi (18+ godina)												
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N djece (do 24 godina)	% djece u potrebi od 0 do 24 g.	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika (očekivani broj mladih do 24 g. je 1252)	Razina odgovornosti za organizaciju socijalne usluge
Broj djece stavljene pod skrbništvo	364	Izvještaj MROSP-a[26]	-	-	1 011 000	0,036 %	-	Organizirano stanovanje	200 %	-	1	REGIONALNA
								Mentorstvo	200 %	-	1	KLASTER JLS

23 Ministarstvo rada, mirovinskoga sustava, obitelji i socijalne politike (2021.). GODIŠNJE STATISTIČKO IZVJEŠĆE O PRIMIJENJENIM PRAVIMA SOCIJALNE SKRBI, PRAVNOJ ZAŠTITI DJECE, MLADEŽI, BRAKA, OBITELJI I OSOBA LIŠENIH POSLOVNE SPOSOBNOSTI TE ZAŠTITI TJELESNO ILI MENTALNO OŠTEĆENIH OSOBA U REPUBLICI HRVATSKOJ U 2020. GODINI.

24 Ministarstvo rada, mirovinskoga sustava, obitelji i socijalne politike (2021.). GODIŠNJE STATISTIČKO IZVJEŠĆE O PRIMIJENJENIM PRAVIMA SOCIJALNE SKRBI, PRAVNOJ ZAŠTITI DJECE, MLADEŽI, BRAKA, OBITELJI I OSOBA LIŠENIH POSLOVNE SPOSOBNOSTI TE ZAŠTITI TJELESNO ILI MENTALNO OŠTEĆENIH OSOBA U REPUBLICI HRVATSKOJ U 2020. GODINI

25 Ministarstvo rada, mirovinskoga sustava, obitelji i socijalne politike (2021.). GODIŠNJE STATISTIČKO IZVJEŠĆE O PRIMIJENJENIM PRAVIMA SOCIJALNE SKRBI, PRAVNOJ ZAŠTITI DJECE, MLADEŽI, BRAKA, OBITELJI I OSOBA LIŠENIH POSLOVNE SPOSOBNOSTI TE ZAŠTITI TJELESNO ILI MENTALNO OŠTEĆENIH OSOBA U REPUBLICI HRVATSKOJ U 2020. GODINI.

26 Ministarstvo rada, mirovinskoga sustava, obitelji i socijalne politike (2021.). GODIŠNJE STATISTIČKO IZVJEŠĆE O PRIMIJENJENIM PRAVIMA SOCIJALNE SKRBI, PRAVNOJ ZAŠTITI DJECE, MLADEŽI, BRAKA, OBITELJI I OSOBA LIŠENIH POSLOVNE SPOSOBNOSTI TE ZAŠTITI TJELESNO ILI MENTALNO OŠTEĆENIH OSOBA U REPUBLICI HRVATSKOJ U 2020. GODINI.

Tablica 19. Projekcija broja korisnika usluga za maloljetne trudnice i majke

Grupa usluga koju dijeli ista korisnička populacija: Usluge podrške maloljetnim trudnicama i majkama											
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N djece (do 19 godina)	% djece u potrebi od 0 do 19 g.	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika (očekivani broj mladih do 19 g. je 960)	Razina odgovornosti za organizaciju socijalne usluge
Broj maloljetnih trudnica	746	Izvješće o porođajima HZJZ-a[27]	Motivacija korisnika	50 %	775 000	0,096 %	-	Multidisciplinarna psihosocijalna podrška	10 %	-	0,5	KLASTER CZSS

27 Hrvatski zavod za javno zdravstvo (2020.). Porođaji u zdravstvenim ustanovama u Hrvatskoj 2020. godine https://www.hzjz.hr/wp-content/uploads/2021/07/PORODI_2020.pdf HZJZ IZVJEŠĆE ZA 2020.

4.4 PROJEKCIJA BROJA KORISNIKA USLUGA ZA OBITELJI U RIZIKU

Socijalne usluge za obitelji u riziku podijeljene su na osnovi razine rizika u tri glavne skupine. Prvu skupinu čine preventivne usluge namijenjene općoj populaciji. Drugu čine usluge za specifičan krug obitelji koje se suočavaju s određenim rizicima, bilo da oni dolaze iz okolnosti u kojima su se zatekli (bolest, invaliditet, siromaštvo) ili se događaju krize u njihovim obiteljskim odnosima. Posljednja grupa socijalnih usluga odnosi se na zaštitu žrtava obiteljskog nasilja kao pokazatelja rizika najvećih razmjera.

I. Preventivne usluge namijenjene općoj populaciji (tablica 20):

1. Edukativna, preventivna i savjetodavna pomoć tijekom tranzicije u roditeljstvo te podrška trudnicama, roditeljima i novorođenčadi u zajednici. Kao kriterij za broj korisnika uzet je broj prvorotkinja u zajednici, što upućuje na tranziciju u roditeljstvo. Očekuje se da bi oko polovice korisnika bilo zainteresirano za ovu uslugu, a usluga dakako uključuje oba roditelja

2. Grupe podrške za roditelje/članove obitelji djece s različitim vrstama rizika. Kao kriterij uzet je broj roditelja s djecom do 4 godine u zajednici. Očekuje se motivacija za ovom uslugom kod oko 30 % korisnika.

II. Usluge namijenjene obiteljima u riziku (tablica 21):

1. Obiteljsko/partnersko savjetovanje za obitelji

2. Multidisciplinarna psihosocijalna pomoć i podrška obiteljima u riziku (uključujući udomiteljske i posvojiteljske)

Kao kriterij korišten je podatak o broju obitelji s izrečenim mjerama obiteljsko-pravne zaštite u sustavu socijalne skrbi. To ne znači da bi se usluga primijenila na obitelji s izrečenim mjerama, ali njihov broj pokazuje nam razmjer prisutnosti kompleksnih obiteljskih rizika u zajednici.

3. Multidisciplinarna psihosocijalna pomoć i podrška roditeljima njegovateljima

Kao kriterij uzet je broj roditelja njegovatelja u zajednici. No to ne znači da će svi roditelji njegovatelji biti motivirani za ovakvu uslugu ili da im je svima potrebna. S druge strane, možemo očekivati da će potrebu za ovom uslugom imati roditelji djece s teškoćama u razvoju koju nemaju službeno status njegovatelja, ali su visoko angažirani u skrb o djetetu s teškoćama.

III. Usluge za obitelji u kojima se događa obiteljsko nasilje (tablica 22):

1. Pomoć i podrška u stjecanju kvalifikacija i zapošljavanju za žrtve obiteljskog nasilja

2. Besplatna primarna i sekundarna pravna pomoć za žrtve nasilja u obitelji

3. SOS telefon za žrtve nasilja (0 - 24)

Za ovu skupinu usluga korišten je kriterij broja počinitelja nasilja u obitelji prema izvješćima Ministarstva unutarnjih poslova. Za procjenu potreba za uslugom SOS-telefona, projekcija je napravljena na 200% trenutnog broja žrtava, a usluga pravne pomoći na 130% radi očekivane tamne brojke.

4. Sigurna kuća za žene žrtve nasilja u obitelji prilagođena boravku s djecom različite dobi

Kao kriterij koristi se postojeći broj žena žrtava nasilja u sigurnim kućama te se preporučuje njegovo udvostručenje zbog općepoznatog podatka da je nedovoljno smještajnih kapaciteta u sigurnim kućama u Republici Hrvatskoj.

IV. Usluge kriznih smještaja (tablica 23):

1. Udomiteljstvo za majke s djecom
2. Organizirano stanovanje za majke s djecom
3. Krizni smještaj za obitelji/građane pogođene katastrofama

Kako je riječ o rijetkim događajima, procijenjene su potrebe za ovakvim uslugama u obliku jačanja pripravnosti zajednice na potrebu organiziranja kriznog smještaja, a uslijed nedostatka drugih barem privremenih stambenih rješenja.

Kako bi se izbjeglo preklapanje s drugim korisničkim skupinama, podaci govore o udjelu građana u potrebi u dobi od 20 do 64 godina. Time će se projekcija potreba na lokalnoj razini približiti realnim udjelima odraslog stanovništva u zajednici (odnosno, procijenjeni broj korisnika bit će manji ako je riječ o područjima s izrazito visokim udjelima starijeg stanovništva).

Tablica 20. Projekcija broja korisnika preventivnih usluga namijenjenih obiteljima u zajednici

Grupa usluga koju dijeli ista korisnička populacija: Preventivne usluge namijenjene općoj populaciji												
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N korisnika (20 do 64 g.)	% osoba u potrebi u populaciji od 20 do 64 g.	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika (očekivani broj osoba u dobi od 20 do 64 g. je 2985)	Razina odgovornosti za organizaciju socijalne usluge
Broj žena prvorotkinja	15 482	Izvješće HZJZ-a[28]	Motivacija korisnika	50 %	2 410 000	0,321 %	-	Pomoć tijekom tranzicije u roditeljstvo	100 %	-	10	JEDINICA LOKALNE SAMOUPRAVE
								Grupe podrške roditeljima s malom djecom	100 %	-	10	JEDINICA LOKALNE SAMOUPRAVE

28 Hrvatski zavod za javno zdravstvo (2021.). Porođaji u zdravstvenim ustanovama u Hrvatskoj 2020. godine. https://www.hzjz.hr/wp-content/uploads/2021/07/PORODI_2020.pdf HZJZ IZVJEŠĆE ZA 2020.

Tablica 21. Projekcija broja korisnika usluga namijenjenih obiteljima u riziku

Grupa usluga koju dijeli ista korisnička populacija: Usluge za obitelji s nižom razinom obiteljskog funkcioniranja												
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N korisnika (20 do 64 g.)	% osoba u potrebi u populaciji od 20 do 64 g.	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika (očekivani broj osoba u dobi od 20 do 64 g. je 2985)	Razina odgovornosti za organizaciju socijalne usluge
Broj prijavljenih slučajeva kršenja djetetovih prava	6349 (maksimalno 12 698 roditelja)	Izvještaj MROSP-a[29]	-	-	2 410 000	0,527 %	-	Obiteljsko i partnersko savjetovanje	200 %	-	32 roditelja (20-ak obitelji)	KLASTER JLS
							-	Multidisciplinarna psihosocijalna pomoć i podrška	100 %	-	16 roditelja (oko 8 obitelji)	KLASTER JLS
Grupa usluga koju dijeli ista korisnička populacija: Multidisciplinarna psihosocijalna pomoć i podrška roditeljima njegovateljima												
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N korisnika (20 do 64 g.)	% osoba u potrebi u populaciji od 20 do 64 g.	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika (očekivani broj osoba u dobi od 20 do 64 g. je 2985)	Razina odgovornosti za organizaciju socijalne usluge
Broj roditelja njegovatelja	5177	Izvještaj MROSP-a[30]	-		2 410 000	0,215 %	-	Multidisciplinarna psihosocijalna pomoć i podrška	100 %	-	6	KLASTER JLS

29 Ministarstvo rada, mirovinskoga sustava, obitelji i socijalne politike (2021.). GODIŠNJE STATISTIČKO IZVJEŠĆE O PRIMIJENJENIM PRAVIMA SOCIJALNE SKRBI, PRAVNOJ ZAŠTITI DJECE, MLADEŽI, BRAKA, OBITELJI I OSOBA LIŠENIH POSLOVNE SPOSOBNOSTI TE ZAŠTITI TJELESNO ILI MENTALNO OŠTEĆENIH OSOBA U REPUBLICI HRVATSKOJ U 2020. GODINI. https://mrosp.gov.hr/UserDocsImages/dokumenti/Socijalna%20politika/Odluke/Godisnje%20statisticko%20izvjesce%20u%20RH%20za%202020.%20godinu.PDF

30 Ministarstvo rada, mirovinskoga sustava, obitelji i socijalne politike (2021.). GODIŠNJE STATISTIČKO IZVJEŠĆE O PRIMIJENJENIM PRAVIMA SOCIJALNE SKRBI, PRAVNOJ ZAŠTITI DJECE, MLADEŽI, BRAKA, OBITELJI I OSOBA LIŠENIH POSLOVNE SPOSOBNOSTI TE ZAŠTITI TJELESNO ILI MENTALNO OŠTEĆENIH OSOBA U REPUBLICI HRVATSKOJ U 2020. GODINI. https://mrosp.gov.hr/UserDocsImages/dokumenti/Socijalna%20politika/Odluke/Godisnje%20statisticko%20izvjesce%20u%20RH%20za%202020.%20godinu.PDF

Tablica 22. Projekcija broja korisnika usluga obiteljima u kojima se događa obiteljsko nasilje

Grupa usluga koju dijeli ista korisnička populacija: Usluge za žrtve nasilja u obitelji												
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N korisnika (20 do 64 g.)	% osoba u potrebi u populaciji od 20 do 64 g.	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika (očekivani broj osoba u dobi od 20 do 64 g. je 2985)	Razina odgovornosti za organizaciju socijalne usluge
Prijavljena kaznena djela na štetu djece i obitelji	7895	Izvještaj MUP-a[31]	-	-	2 410 000	0,328 %	-	SOS telefon	200 %	-	20	REGIONALNO
								Besplatna primarna i sekundarna pravna pomoć	130%	-	13	REGIONALNO
								Pomoć i podrška u stjecanju kvalifikacija i zapošljavanju	50 %	-	5	KLASTER JLS
								Sigurna kuća	10 %	-	1	REGIONALNO

31 MINISTARSTVO UNUTARNJIH POSLOVA, GLAVNO TAJNIŠTVO SEKTOR ZA PRAVNE POSLOVE I STRATEŠKO PLANIRANJE, SLUŽBA ZA STRATEŠKO PLANIRANJE, STATISTIKU I UNAPRJEĐENJE RADA, STATISTIČKI PREGLED TEMELJNIH SIGURNOSNIH POKAZATELJA I REZULTATA RADA U 2020. GODINI. https://mup.gov.hr/UserDocsImages/statistika/2021/Statisticki_pregled_2020_web.pdf

Tablica 23. Projekcija broja korisnika usluga kriznog smještaja

Grupa usluga koju dijeli ista korisnička populacija: Usluge kriznog smještaja za majke s djecom											
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N korisnika (20 do 64 g.)	% osoba u potrebi u populaciji od 20 do 64 g.	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika (očekivani broj osoba u dobi od 20 do 64 g. je 2985)	Razina odgovornosti za organizaciju socijalne usluge
Rijetki događaji (maloljetnička trudnoća, siromaštvo)			-	-	2 410 000	0,017 %	-	Udomiteljstvo	50 %	-	0,25	REGIONALNO
								Organizirano stanovanje	50 %	-	0,25	REGIONALNO
Grupa usluga koju dijeli ista korisnička populacija: Krizni smještaj za obitelji/građane pogođene katastrofama											
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N korisnika (20 do 64 g.)	% osoba u potrebi u populaciji od 20 do 64 g.	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika (očekivani broj osoba u dobi od 20 do 64 g. je 2985)	Razina odgovornosti za organizaciju socijalne usluge
Rijetki događaji, pripravnost JLS-a	-	-	-	-	2 410 000	0,017 %	-	Krizni smještaj	100 %	-	0,5	JEDINICA LOKALNE SAMOUPRAVE

4.5 PROJEKCIJA BROJA KORISNIKA SOCIJALNIH USLUGA ZA OSOBE S TEŠKOĆAMA MENTALNOG ZDRAVLJA

Socijalne usluge za osobe s teškoćama mentalnog zdravlja podijeljene su u četiri velike skupine s obzirom na razmjer teškoća. U prvoj skupini su preventivne usluge za opće stanovništvo. U drugoj skupini su usluge za korisnike koji imaju ozbiljniji razmjer teškoća mentalnog zdravlja zbog čega se susreću s hospitalizacijama. Treću skupinu čine usluge za osobe s problemima ovisnosti. U posljednjoj skupini su usluge za osobe kojima su teškoće mentalnog zdravlja na takvoj razini da imaju status osobe s invaliditetom, odnosno smatraju se osobama s duševnim smetnjama.

PREVENTIVNE USLUGE ZA ZAŠTITU MENTALNOG ZDRAVLJA (tablica 24):

1. Psihoedukativni i preventivni programi za zaštitu mentalnog zdravlja: univerzalna, selektivna i indicirana prevencija
2. Savjetovanje i psihoterapija

Potreba za ovim uslugama procijenjena je na temelju kriterija prosječnog broja pacijenata s neurozama (F40-F48) i drugim duševnim poremećajima prema podacima obiteljske medicine. Pritom nisu uzeti podaci za 2020. jer se u toj godini dogodio ekstreman porast F dijagnoza u svim skupinama (ukupno 806 259) u odnosu na 2019. (367 560), pa i godine prije. Budući da još nismo sigurni kako objasniti ovakvu promjenu, kao kriterij uzet je prosječan broj korisnika od 2015. do 2019. godine. Ograničavajući se na ove dvije skupine mentalnih poremećaja, postignuto je minimalno preklapanje s uslugama na temelju ostalih rizika (demencija, ovisnosti, duševne teškoće kao osnova invaliditeta i drugo).

USLUGE ZA KORISNIKE S VEĆIM TEŠKOĆAMA MENTALNOG ZDRAVLJA (tablica 25):

1. Organizirane kreativne, rekreativne i socijalizacijske aktivnosti strukturiranog provođenja slobodnog vremena
2. Grupe podrške za članove obitelji osoba s teškoćama mentalnog zdravlja
3. Savjetovanje za članove obitelji osobe s teškoćama mentalnog zdravlja
4. Multidisciplinarna psihosocijalna podrška osobama s teškoćama mentalnog zdravlja i njihovim obiteljima
5. Grupe podrške i vršnjačka podrška za osobe s teškoćama mentalnog zdravlja
6. Programi socijalnog uključivanja ovisnika i osoba s teškoćama mentalnog zdravlja u zajednici
7. Krizne intervencije i prva psihološka pomoć

Za sve navedene usluge temeljni je kriterij broj novih hospitalizacija na godišnjoj razini koje upućuju na veću izloženost teškoćama mentalnog zdravlja.

SOCIJALNE USLUGE ZA OSOBE S PROBLEMIMA OVISNOSTI (tablica 26):

1. Terapijske grupe/klubovi za ovisnike o kocki

Broj korisnika izračunat je na temelju prevalencije patološkog/problematičnog kockanja (Stojnić, 2018.). No pretpostavka je da je motivacija za ovu socijalnu uslugu niska.

2. Terapijske grupe/klubovi za ovisnike o drogi

3. Programi smanjenja štete za ovisnike (harm reduction)

Broj korisnika socijalnih usluga izračunat je na temelju prosječnog broja osoba u dobi od 20 do 64 godine s duševnim poremećajima i poremećajima ponašanja prouzročene psihoaktivnim tvarima od 2015. do 2019. godine.

4. Terapijske grupe/klubovi za ovisnike o alkoholu

Broj korisnika izračunat je na temelju prosječnog broja osoba u dobi od 20 do 64 godine s duševnim poremećajima i poremećajima ponašanja prouzročenih uzimanjem alkohola od 2015. do 2019. godine.

SOCIJALNE USLUGE ZA OSOBE S DUŠEVNIM SMETNJAMA (tablica 27):

1. Organizirano stanovanje za osobe s duševnim smetnjama

2. Privremeni/povremeni smještaj za osobe s teškoćama mentalnog zdravlja

3. Dnevni/poludnevni boravak za osobe s teškoćama mentalnog zdravlja

Broj korisnika ovih usluga izračunat je na temelju broja osoba pod skrbništvom zbog mentalnog stanja, odnosno broj korisnika pod skrbništvom kojima je skrbnik socijalni radnik/ca.

4. Integrirana socijalna usluga na razini pojedinca za osobe s težim mentalnim poremećajima (vođenje slučaja). Za ovu uslugu također je u obzir uzeto skrbništvo, tj. broj novih korisnika pod skrbništvom na temelju mentalnog stanja. Ovdje je važno istaknuti kako osnova skrbništva ne moraju nužno biti duševne smetnje, nego to mogu biti i, primjerice, intelektualne teškoće. No skrbništvo se koristi samo za aproksimaciju broja korisnika, a ne kao (jedini) kriterij uključivanja korisnika u ovakav oblik usluga. Druga je mogućnost bila koristiti podatke o broju osoba s invaliditetom u sustavu socijalne skrbi na temelju mentalnog zdravlja. No problem je s takvim pristupom u tome što postoji velika skupina osoba s invaliditetom s višestrukim teškoćama (obično 30-ak % svih osoba s invaliditetom) pa je nemoguće procijeniti koliko je u toj skupini osoba s duševnim smetnjama.

Tablica 24. Projekcija broja korisnika preventivnih usluga za zaštitu mentalnog zdravlja

Grupa usluga koju dijeli ista korisnička populacija: Preventivne usluge za zaštitu mentalnog zdravlja											
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N (19 do 64 g.)	% osoba u potrebi 19 - 64 g.	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika (očekivani broj osoba u dobi od 19 do 64 g. je 2985)	Razina odgovornosti za organizaciju socijalne usluge
Broj osoba (19 do 64 g.) s neurozama i ostalim duševnim poremećajima	214 283	Statistički ljetopis HZJZ-a[32]	-	-	2 410 000	8,892 %	-	Univerzalna prevencija	100 %	-	265	JEDINICA LOKALNE SAMOUPRAVE
								Selektivna prevencija	40 %	-	106	JEDINICA LOKALNE SAMOUPRAVE
								Indicirana prevencija	10 %	-	26	JEDINICA LOKALNE SAMOUPRAVE
								Savjetovanje i psihoterapija	10 %	-	26	KLASTER JLS

32 Hrvatski zavod za javno zdravstvo (2019., 2018., 2017., 2016., 2015.). Hrvatski zdravstveno-statistički ljetopis za 2019., 2018., 2017., 2016. i 2015. godinu. https://www.hzjz.hr/cat/periodicne-publikacije/

Tablica 25. Projekcija broja korisnika usluga za korisnike s većim teškoćama mentalnog zdravlja

Grupa usluga koju dijeli ista korisnička populacija: Usluge za osobe s većim teškoćama mentalnog zdravlja												
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N (19 do 64 g.)	% osoba u potrebi 19 do 64 g.	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika (očekivani broj osoba u dobi od 19 do 64 g. je 2985)	Razina odgovornosti za organizaciju socijalne usluge
Broj osoba (20 do 59 g.) u hospitalizaciji zbog mentalnog zdravlja	25 458	HZJZ[33]	Hospitalizacije bez ovisnosti	80 %	2 410 000	0,845 %	-	Multidisciplinarna psihosocijalna podrška osobama s teškoćama mentalnog zdravlja i njihovim obiteljima	40 %	-	10	KLASTER JLS
								Programi socijalnog uključivanja ovisnika i osoba s teškoćama mentalnog zdravlja u zajednici	60 %	-	15	JEDINICA LOKALNE SAMOUPRAVE
								Organizirane kreativne, rekreativne i socijalizacijske aktivnosti strukturiranog provođenja slobodnog vremena	20 %	-	5	JEDINICA LOKALNE SAMOUPRAVE
								Grupe podrške za članove obitelji osoba s teškoćama mentalnog zdravlja	20 %		5	JEDINICA LOKALNE SAMOUPRAVE

								Grupe podrške i vršnjačka podrška za osobe s teškoćama mentalnog zdravlja	20 %	-	5	JEDINICA LOKALNE SAMOUPRAVE
								Savjetovanje za članove obitelji osobe s teškoćama mentalnog zdravlja	30 %		8	KLASTER JLS
								Krizne intervencije i prva psihološka pomoć	15 %		4	KLASTER JLS

33 Hrvatski zavod za javno zdravstvo (2018.). MENTALNI POREMEĆAJI U REPUBLICI HRVATSKOJ. https://www.hzjz.hr/wp-content/uploads/2019/03/Bilten-mentalne.pdf

Tablica 26. Projekcija broja korisnika socijalnih usluga za osobe s problemima ovisnosti

Grupa usluga koju dijeli ista korisnička populacija:_ Socijalne usluge za osobe ovisne o kocki											
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N (19 do 64 g.)	% osoba u potrebi 19 do 64 g.	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika (očekivani broj osoba u dobi od 19 do 64 g. je 2985)	Razina odgovornosti za organizaciju socijalne usluge
Prevalencija patološkog ili problematičnog kockanja	1 %	Stojnić (2018.)[34]	Motivacija korisnika	20 %	2 410 000	0,2 %	-	Terapijske grupe/ klubovi za ovisnike o kocki	100 %	-	6	JEDINICA LOKALNE SAMOUPRAVE
Grupa usluga koju dijeli ista korisnička populacija:_ Socijalne usluge za osobe ovisne o alkoholu												
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N (19 do 64 g.)	% osoba u potrebi 19 do 64 g.	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika (očekivani broj osoba u dobi od 19 do 64 g. je 2985)	Razina odgovornosti za organizaciju socijalne usluge
Broj osoba na liječenju s dijagnozom alkoholizma (F10)	9209	Izvješće HZJZ-a (prosjek 2015. -2019.)[35]	Motivacija korisnika	70 %	2 410 000	0,267 %	-	Terapijske grupe/ klubovi za ovisnike o alkoholu	100 %	-	8	JEDINICA LOKALNE SAMOUPRAVE

Grupa usluga koju dijeli ista korisnička populacija:_ Socijalne usluge za osobe ovisne o drogama												
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N (19 do 64 g.)	% osoba u potrebi 19 do 64 g.	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika (očekivani broj osoba u dobi od 19 do 64 g. je 2985)	Razina odgovornosti za organizaciju socijalne usluge
Broj osoba na liječenju s dijagnozom F11-F19	8161	Izvješće HZJZ-a (prosjek 2015. -2019.)[36]	-	-	2 410 000	0,339 %	-	Programi smanjenja štete za ovisnike (harm reduction)	100 %	-	10	REGIONALNA
								Terapijske grupe/ klubovi za ovisnike o drogi	70 %	-	7	JEDINICA LOKALNE SAMOUPRAVE
Grupa usluga koju dijeli ista korisnička populacija: Multidisciplinarna psihosocijalna podrška obiteljima ovisnika/ liječenih ovisnika												
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N (19 do 64 g.)	% osoba u potrebi 19 do 64 g.	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika (očekivani broj osoba u dobi od 19 do 64 g. je 2985)	Razina odgovornosti za organizaciju socijalne usluge
1/3 obitelji u kojima se pojavljuje ovisnost	-	-	-	-	-	0,268 %	-	Multidisciplinarna psihosocijalna podrška obiteljima ovisnika/ liječenih ovisnika	100 %	-	8	KLASTER JLS

34 Stojnić, D. (2018.) 'Samoprocjena patoloških kockara o učinku psihosocijalnog tretmana u klubu ovisnika o kockanju', doktorska disertacija, Stomatološki fakultet, Zagreb.

35 Hrvatski zavod za javno zdravstvo (2019., 2018., 2017., 2016., 2015.). Hrvatski zdravstveno-statistički ljetopis za 2019., 2018., 2017., 2016. i 2015. godinu. https://www.hzjz.hr/cat/periodicne-publikacije/

36 Hrvatski zavod za javno zdravstvo (2019., 2018., 2017., 2016., 2015.). Hrvatski zdravstveno-statistički ljetopis za 2019., 2018., 2017., 2016. i 2015. godinu. https://www.hzjz.hr/cat/periodicne-publikacije/

Tablica 27. Projekcija broja korisnika socijalnih usluga za osobe s duševnim smetnjama

Grupa usluga koju dijeli ista korisnička populacija: Socijalne usluge za osobe s duševnim smetnjama											
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N (19+ g.)	% osoba u potrebi 19+ g.	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika (očekivani broj osoba u dobi 19+ g. je 4040)	Razina odgovornosti za organizaciju socijalne usluge
Broj odraslih osoba pod skrbništvom	17 861	Izvještaj MROSP-a[37]	-	-	3 261 355	0,548 %	-	Organizirano stanovanje	20 %	-	4	REGIONALNA
								Privremeni/ povremeni smještaj za osobe s teškoćama mentalnog zdravlja	10 %	-	2	KLASTER JLS
								Dnevni/poludnevni boravak	25 %	-	5	KLASTER JLS
Nova skrbništva odraslih godišnje	2487	Izvještaj MROSP-a[38]	Osobe s nepotpunom podrškom obitelji	70 %	3 261 355	0,053 %	-	Integrirana socijalna usluga na razini pojedinca za osobe s težim mentalnim poremećajima (vođenje slučaja)	100 %	-	2	KLASTER JLS

37 Ministarstvo rada, mirovinskoga sustava, obitelji i socijalne politike (2021.). GODIŠNJE STATISTIČKO IZVJEŠĆE O PRIMIJENJENIM PRAVIMA SOCIJALNE SKRBI, PRAVNOJ ZAŠTITI DJECE, MLADEŽI, BRAKA, OBITELJI I OSOBA LIŠENIH POSLOVNE SPOSOBNOSTI TE ZAŠTITI TJELESNO ILI MENTALNO OŠTEĆENIH OSOBA U REPUBLICI HRVATSKOJ U 2020. GODINI. https://mrosp.gov.hr/UserDocsImages/dokumenti/Socijalna%20politika/Odluke/Godisnje%20statisticko%20izvjesce%20u%20RH%20za%202020.%20godinu.PDF

38 Ministarstvo rada, mirovinskoga sustava, obitelji i socijalne politike (2021.). GODIŠNJE STATISTIČKO IZVJEŠĆE O PRIMIJENJENIM PRAVIMA SOCIJALNE SKRBI, PRAVNOJ ZAŠTITI DJECE, MLADEŽI, BRAKA, OBITELJI I OSOBA LIŠENIH POSLOVNE SPOSOBNOSTI, TE ZAŠTITI TJELESNO ILI MENTALNO OŠTEĆENIH OSOBA U REPUBLICI HRVATSKOJ U 2020. GODINI. https://mrosp.gov.hr/UserDocsImages/dokumenti/Socijalna%20politika/Odluke/Godisnje%20statisticko%20izvjesce%20u%20RH%20za%202020.%20godinu.PDF

4.6 PROJEKCIJA BROJA KORISNIKA SOCIJALNIH USLUGA ZA GRAĐANE U SIROMAŠTVU

Usluge za građane u siromaštvu podijeljene su u nekoliko kategorija s obzirom na razmjer izloženosti siromaštvu. U projekcijama potreba treba uzeti u obzir da sustav socijalne skrbi obuhvaća samo manji dio korisnika u siromaštvu, ali statistički pokazatelji govore o mnogo većem razmjeru problema siromaštva. Stoga smo u projekciji potreba za pojedinim uslugama proširili opseg potencijalnih korisnika kako bismo obuhvatili i građane koji dosad nisu u dovoljnoj mjeri dobivali formalnu podršku. Vjerujemo da samo takav širi pristup može dati rezultate u suzbijanju siromaštva. Usluge su stoga podijeljene u skupine za građane u riziku od siromaštva, za građane u teškoj materijalnoj deprivaciji, potom ciljano za korisnike zajamčene socijalne naknade i naposljetku za osobe u beskućništvu.

I. OPĆE USLUGE ZA GRAĐANE U RIZIKU OD SIROMAŠTVA (tablica 28):

1. Savjetovanje za pojedince i obitelji u siromaštvu
2. Multidisciplinarna psihosocijalna podrška osobama u siromaštvu
3. Podrška u zapošljavanju i stjecanju kvalifikacija za građane u siromaštvu
4. Besplatna pravna pomoć građanima u siromaštvu

Temeljni kriterij za ove usluge je stopa teške materijalne deprivacije prema Eurostatu. Taj je kriterij i dalje stroži od rizika od siromaštva i socijalne isključenosti, ali uključuje širi krug korisnika nego što je trenutačno primatelja zajamčene minimalne naknade u sustavu. Dodatno je ova usluga ograničena na građane u radno aktivnoj dobi, tj od 19 do 64 godine.

II. USLUGE ZA DJECU U RIZIKU OD SIROMAŠTVA (tablica 29):

1. Međusektorski programi rane prevencije siromaštva
2. Pomoć i podrška u obrazovanju za djecu i mlade iz obitelji u siromaštvu

Kao kriterij uzet je broj djece u riziku od siromaštva u školskoj dobi. Pritom je u ranoj prevenciji siromaštva dodatno uzeto u obzir da međugeneracijski prijenos siromaštva iznosi 30-ak %, što je potvrđeno istraživanjima (Ružojčić i sur., 2018.).

III. CILJANE USLUGE ZA GRAĐANE U TEŠKOJ MATERIJALNOJ DEPRIVACIJI (tablica 30):

1. Socijalno mentorstvo

Kriterij za ovu uslugu je broj korisnika zajamčene minimalne naknade u radno aktivnoj dobi.

2. Posudionica ortopedskih i medicinskih pomagala

Temeljni kriterij je također broj korisnika u teškoj materijalnoj deprivaciji, ali dodatno je ograničen na podatak o prevalenciji invaliditeta (na osnovi nementalnog stanja).

3. Dostava namirnica i/ili toplih obroka siromašnim građanima
4. Socijalna samoposluga
5. Pučka kuhinja

Za sve tri usluge koje se bave osiguravanjem hrane korisnicima kao kriterij uzet je broj korisnika koji imaju iskustvo prehrambene deprivacije prema podacima DZS-a.

IV. USLUGE ZA GRAĐANE U RIZIKU OD BESKUĆNIŠTVA (tablica 31):

1. Organizirano stanovanje za osobe u beskućništvu
2. Prenoćište za osobe u beskućništvu
3. Prihvatilište za osobe u beskućništvu
4. ˝Kuća na pola puta˝- privremeni smještaj osoba koje izlaze iz institucija ili penalnog sustava
5. Dnevni centar za podršku osobama s problemima stanovanja

Pri procjeni broja korisnika za sve usluge uzet je kriterij trenutačnog broja beskućnika u sustavu socijalne skrbi.

Važno je istaknuti da će se broj korisnika svih usluga ponderirati sa stopom siromaštva po dohotku, tj. s omjerom lokalne stope i nacionalne stope, a na temelju posljednjih dostupnih podataka Svjetske banke za siromaštvo malih područja (2016.).

Tablica 28. Projekcija broja korisnika usluga za građane u riziku od siromaštva

Grupa usluga koju dijeli ista korisnička populacija: Preventivne usluge namijenjene općoj populaciji												
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N korisnika (20 do 64 g.)	% osoba u potrebi u populaciji od 20 do 64 g.	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika (očekivani broj osoba u dobi od 20 do 64 g. je 2985)	Razina odgovornosti za organizaciju socijalne usluge
Teška materijalna deprivacija	6,9%	Eurostat[39]	Po jedan član kućanstva	60%	2 410 000	6,9 %	Pomnožiti s omjerom: stopa siromaštva JSL/stopa siromaštva RH	Savjetovanje	50 %	-	62	KLASTER JLS
								Multidisciplinarna psihosocijalna podrška	15 %	-	19	KLASTER JLS
								Podrška u zapošljavanju	50 %	-	62	KLASTER JLS
								Besplatna pravna pomoć	30 %	-	37	REGIONALNO

39 Eurostat (2020.). Severely materially deprived people. https://ec.europa.eu/eurostat/databrowser/view/t2020_53/default/table?lang=en

Tablica 29. Projekcija broja korisnika usluga za djecu u riziku od siromaštva

Grupa usluga koju dijeli ista korisnička populacija: Preventivne usluge namijenjene općoj populaciji												
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N korisnika (0 do 19 g.)	% osoba u potrebi u populaciji	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika (očekivani broj osoba u dobi od 0 do 19 g. je 960)	Razina odgovornosti za organizaciju socijalne usluge
Materijalna deprivacija djece	14,8 %	Eurostat[40]	Djeca školske dobi	65 %	775 000	9,62 %	Pomnožiti s omjerom: stopa siromaštva JSL/ stopa siromaštva RH	Međusektorski programi rane prevencije siromaštva	30 %[41]	-	28	KLASTER JLS
								Pomoć i podrška u obrazovanju	70 %	-	65	JEDINICA LOKALNE SAMOUPRAVE

40 Eurostat (2020.). Material Deprivation rate by age group - EU-SILC survey. https://ec.europa.eu/eurostat/databrowser/view/tessi082/default/table?lang=en

41 Ružojčić, M., Opačić, A. & Tokić Milaković, A. (2018.) Who has a chance to overcome poverty? Predictors of educational achievement of youth living in poverty. Vulnerable Children and Youth Studies, 13 (4), 331-338 doi:10.1080/17450128.2018.1497242.

Tablica 30. Projekcija broja korisnika ciljanih usluga za građane u teškoj materijalnoj deprivaciji

Grupa usluga koju dijeli ista korisnička populacija: Socijalno mentorstvo												
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N korisnika (19 do 64 g.)	% osoba u potrebi u populaciji	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika (očekivani broj osoba u dobi od 19 do 64 g. je 2985)	Razina odgovornosti za organizaciju socijalne usluge
Broj nezaposlenih radno sposobnih korisnika ZMN-a	26 246	Izvještaj MROS-a P[42]	-	-	2 410 000	1,089 %	Pomnožiti s omjerom: stopa siromaštva JSL/stopa siromaštva RH	Socijalno mentorstvo	100 %	-	32	KLASTER JLS
Grupa usluga koju dijeli ista korisnička populacija: Posudionica ortopedskih i medicinskih pomagala												
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N korisnika	% osoba u potrebi u populaciji	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika	Razina odgovornosti za organizaciju socijalne usluge
Teška materijalna deprivacija	6,9 %	Eurostat[43]	Prevalencija invaliditeta (bez mentalnih)	10,89 %	4 036 355	0,75 %	Pomnožiti s omjerom: stopa siromaštva JSL/stopa siromaštva RH	Posudionica ortopedskih i medicinskih pomagala	100 %	-	38	JEDINICA LOKALNE SAMOUPRAVE

Grupa usluga koju dijeli ista korisnička populacija: Socijalne usluge za podmirenje prehrambenih potreba												
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N korisnika (0 do 64 g.)	% osoba u potrebi u populaciji	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika (očekivani broj osoba u dobi od 0 do 64 je 3945)	Razina odgovornosti za organizaciju socijalne usluge
Prehrambena deprivacija	7,8 %	Pokazatelji siromaštva DSZ-a[44]	Motivacija korisnika	50 %	3 185 000	3,9 %	Pomnožiti s omjerom: stopa siromaštva JSL/stopa siromaštva RH	Socijalna samoposluga	35 %	50		JEDINICA LOKALNE SAMOUPRAVE
								Pučka kuhinja	35 %	50		JEDINICA LOKALNE SAMOUPRAVE
								Dostava namirnica i/ili toplih obroka	30 %	53		JEDINICA LOKALNE SAMOUPRAVE

42 Ministarstvo rada, mirovinskoga sustava, obitelji i socijalne politike (2021.). GODIŠNJE STATISTIČKO IZVJEŠĆE O PRIMIJENJENIM PRAVIMA SOCIJALNE SKRBI, PRAVNOJ ZAŠTITI DJECE, MLADEŽI, BRAKA, OBITELJI I OSOBA LIŠENIH POSLOVNE SPOSOBNOSTI TE ZAŠTITI TJELESNO ILI MENTALNO OŠTEĆENIH OSOBA U REPUBLICI HRVATSKOJ U 2020. GODINI. https://mrosp.gov.hr/UserDocsImages/dokumenti/Socijalna%20politika/Odluke/Godisnje%20statisticko%20izvjesce%20u%20RH%20za%202020.%20godinu.PDF

43 Eurostat (2020). Severely materially deprived people. https://ec.europa.eu/eurostat/databrowser/view/t2020_53/default/table?lang=en

44 Državni zavod za statistiku (2020.). POKAZATELJI SIROMAŠTVA I SOCIJALNE ISKLJUČENOSTI. https://www.dzs.hr/

Tablica 31. Projekcija broja korisnika ciljanih usluga za osobe u riziku od beskućništva

Grupa usluga koju dijeli ista korisnička populacija: Smještaj za osobe u beskućništvu											
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N korisnika	% osoba u potrebi u populaciji	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika	Razina odgovornosti za organizaciju socijalne usluge
Broj korisnika na smještaju zbog beskućništva ili krize	1075	Izvještaj MROS-a P[45]	-	-	4 036 355	0,027 %	Pomnožiti s omjerom: stopa siromaštva JSL/stopa siromaštva RH	Prenoćište	20 %	-	0,3	REGIONALNA
								Prihvatilište	40 %	-	0,5	REGIONALNA
								Organizirano stanovanje	40 %	-	0,5	REGIONALNA
Grupa usluga koju dijeli ista korisnička populacija: Smještaj za osobe u beskućništvu											
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N korisnika	% osoba u potrebi u populaciji	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika	Razina odgovornosti za organizaciju socijalne usluge
Broj korisnika na smještaju zbog beskućništva ili krize	1075	Izvještaj MROS-a P[46]	-	-	4 036 355	0,027 %	Pomnožiti s omjerom: stopa siromaštva JSL/stopa siromaštva RH	Dnevni centar za podršku	300 %	-	4	KLASTER JLS
								˝Kuća na pola puta˝	80 %	-	1	REGIONALNA

45 Ministarstvo rada, mirovinskoga sustava, obitelji i socijalne politike (2021.). GODIŠNJE STATISTIČKO IZVJEŠĆE O PRIMIJENJENIM PRAVIMA SOCIJALNE SKRBI, PRAVNOJ ZAŠTITI DJECE, MLADEŽI, BRAKA, OBITELJI I OSOBA LIŠENIH POSLOVNE SPOSOBNOSTI TE ZAŠTITI TJELESNO ILI MENTALNO OŠTEĆENIH OSOBA U REPUBLICI HRVATSKOJ U 2020. GODINI. https://mrosp.gov.hr/UserDocsImages/dokumenti/Socijalna%20politika/Odluke/Godisnje%20statisticko%20izvjesce%20u%20RH%20za%202020.%20godinu.PDF

46 Ministarstvo rada, mirovinskoga sustava, obitelji i socijalne politike (2021.). GODIŠNJE STATISTIČKO IZVJEŠĆE O PRIMIJENJENIM PRAVIMA SOCIJALNE SKRBI, PRAVNOJ ZAŠTITI DJECE, MLADEŽI, BRAKA, OBITELJI I OSOBA LIŠENIH POSLOVNE SPOSOBNOSTI TE ZAŠTITI TJELESNO ILI MENTALNO OŠTEĆENIH OSOBA U REPUBLICI HRVATSKOJ U 2020. GODINI. https://mrosp.gov.hr/UserDocsImages/dokumenti/Socijalna%20politika/Odluke/Godisnje%20statisticko%20izvjesce%20u%20RH%20za%202020.%20godinu.PDF

4.7 PROJEKCIJA BROJA KORISNIKA SOCIJALNIH USLUGA ZA OSOBE S INVALIDITETOM

Socijalne usluge za osobe s invaliditetom podijeljene su u dvije velike skupine. U prvoj skupini nalaze se specifične usluge za određene kategorije osoba s invaliditetom, dok se u drugoj skupini nalaze općenite usluge za skupinu osoba s invaliditetom.

Treba istaknuti da je u procjeni broja korisnika korišten podatak o broju osoba s invaliditetom koje u sustavu socijalne skrbi već ostvaruju određena prava, a ne broj osoba s invaliditetom prema podacima Hrvatskog zavoda za javno zdravstvo. Ovakvim izborom znatno je reducirana populacija osoba s invaliditetom u odnosu na njezin stvarni razmjer u Republici Hrvatskoj. Tako je prema sustavu socijalne skrbi ukupno 101 091 odrasla osoba s invaliditetom, dok je prema podacima HZJZ-a riječ o 522 090 odraslih osoba. Iako smo svjesni da potrebe osoba s invaliditetom daleko nadilaze procjene koje smo donijeli za temeljne socijalne usluge, takav pristup opravdan je sljedećim razlozima:

1. uzete su u obzir osobe s invaliditetom koje već zbog težeg invaliditeta prepoznaju neka prava i usluge u sustavu
2. pretpostavka je da je riječ o ekonomski depriviranim korisnicima koji već zbog težeg socijalno-ekonomskog položaja ostvaruju novčane naknade ili usluge.

Dodatno su iz ukupnog broja izuzete osobe s invaliditetom starije od 65 godina koje su obuhvaćene uslugama za starije osobe te korisnici čiji je invaliditet isključivo vezan uz teškoće mentalnog zdravlja. Tako u sustavu socijalne skrbi imamo 53 125 odraslih osoba s invaliditetom u dobi od 18 do 64 godine čiji invaliditet nije isključivo vezan uz teškoće mentalnog zdravlja.

U ovoj usluga nalaze se sljedeće usluge:

I. USLUGE ZA OSOBE S INVALIDITETOM I ČLANOVE NJIHOVE OBITELJI (tablica 32):

1. Specijalizirani prijevoz i pratnja
2. Dojavni sustavi u krizama
3. Cjelodnevni/poludnevni boravak
4. Udomiteljstvo
5. Organizirano stanovanje
6. Cjelodnevna skrb i njega u kući
7. Pomoći u kući i praktična podrška
8. Pomoć i podrška u stjecanju kvalifikacija i zapošljavanju
9. Radna terapija
10. Terapijske aktivnosti
11. Savjetovanje za osobe s invaliditetom i članove njihovih obitelji
12. Privremeni njegovatelj u obitelji osobe s invaliditetom zbog predaha od skrbi primarnog njegovatelja (člana obitelji)
13. Multidisciplinarna psihosocijalna podrška OSI i članovima njihovih obitelji te OSI koji su roditelji

U drugoj skupini socijalnih usluga nalaze se usluge za specifične kategorije osoba s invaliditetom. Riječ je o sljedećim uslugama:

II. SOCIJALNE USLUGE ZA SPECIFIČNE KATEGORIJE OSOBA S INVALIDITETOM (tablica 33):

1. Radni asistent OSI na otvorenom tržištu rada

Ovaj vrsta usluge namijenjena je osobama s intelektualnim teškoćama koje bi se mogle zaposliti na otvorenom tržištu rada. U obzir su uzete osobe s lakim i umjerenim intelektualnim teškoćama u sustavu socijalne skrbi u radno aktivnoj dobi.

2. Osobna asistencija za OSI uključujući asistenciju u obitelji za OSI koji su roditelji

Ovo je usluga za osobe s invaliditetom koje imaju znatnih teškoća u svakodnevnom funkcioniranju. Kao kriterij uzet je postojeći broj osoba s invaliditetom koji koristi uslugu osobne asistencije.

3. Videći pratitelj

Usluga je namijenjena osobama s oštećenjem vida. U obzir je uzet broj odraslih slijepih osoba u sustavu socijalne skrbi. Zasigurno je u kategoriji korisnika s višestrukim oštećenjima i određeni broj osoba s oštećenjem vida, ali kako ne očekujemo da bi svi korisnici imali jednaku potrebu, smatramo da je ovako dana realna procjena potreba.

4. Prevoditelj znakovnog jezika

Usluga je namijenjena osobama s oštećenjem sluha. U obzir je uzet broj odraslih gluhih osoba u sustavu socijalne skrbi. Kao i prethodno, u kategoriji korisnika s višestrukim oštećenjima postoji određeni broj osoba s oštećenjem sluha, ali kako ne očekujemo da bi svi korisnici imali jednaku potrebu, smatramo da je ovako dana realna procjena potreba.

5. Tečajevi znakovnog jezika

Tablica 32. Projekcija broja korisnika socijalnih usluga za osobe s invaliditetom i članove njihovih obitelji

Grupa usluga koju dijeli ista korisnička populacija: Socijalne usluge za osobe s invaliditetom												
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N (19 do 64 g.)	% osoba u potrebi od 19 do 64 g.	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika (očekivani broj osoba u dobi od 19 do 64 g. je 2985)	Razina odgovornosti za organizaciju socijalne usluge
Broj osoba s invaliditetom u sustavu socijalne skrbi (18 do 64 g.)	53 125	Izvještaj MROSP-a[47] za 2020. godinu	-	-	2 410 000	2,2 %	Pomnožiti s omjerom: prevalencije invaliditeta županija/ prevalencija invaliditeta RH	Specijalizirani prijevoz i pratnja	50 %	-	33	JEDINICA LOKALNE SAMOUPRAVE
								Dojavni sustavi u krizama	50 %	-	33	REGIONALNA
								Cjelodnevni/ poludnevni boravak	10 %	-	7	KLASTER JLS
								Udomiteljstvo	2 %	-	1	REGIONALNA
								Organizirano stanovanje	4 %	-	3	REGIONALNA
								Cjelodnevna skrb i njega u kući	3%	-	2	KLASTER JLS
								Pomoći u kući i praktična podrška	10 %	-	7	KLASTER JLS
								Pomoć i podrška u stjecanju kvalifikacija i zapošljavanju	10 %	-	7	KLASTER JLS
								Radna terapija	20 %	-	13	KLASTER JLS
								Terapijske aktivnosti	20 %	-	13	KLASTER JLS

Grupa usluga koju dijeli ista korisnička populacija: Socijalne usluge za obitelji osoba s invaliditetom												
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N (19 do 64 g.)	% osoba u potrebi od 19 do 64 g.	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika (očekivani broj osoba u dobi od 19 do 64 g. je 2985)	Razina odgovornosti za organizaciju socijalne usluge
Broj osoba s invaliditetom u sustavu socijalne skrbi (18 do 64 g.)	53 125	Izvještaj MROSP-a[48] za 2020. godinu	-	-	2 410 000	2,2 %	Pomnožiti s omjerom: prevalencije invaliditeta županija/ prevalencija invaliditeta RH	Savjetovanje	40 %	-	26	KLASTER JLS
								Multidisciplinarna psihosocijalna podrška OSI koji su roditelji	15 %	-	10	KLASTER JLS
								Multidisciplinarna psihosocijalna podrška OSI i članovima njihovih obitelji	20 %		14	KLASTER JLS
								Privremeni njegovatelj u obitelji	15 %	-	10	KLASTER JLS

47 Ministarstvo rada, mirovinskoga sustava, obitelji i socijalne politike (2021.). GODIŠNJE STATISTIČKO IZVJEŠĆE O PRIMIJENJENIM PRAVIMA SOCIJALNE SKRBI, PRAVNOJ ZAŠTITI DJECE, MLADEŽI, BRAKA, OBITELJI I OSOBA LIŠENIH POSLOVNE SPOSOBNOSTI TE ZAŠTITI TJELESNO ILI MENTALNO OŠTEĆENIH OSOBA U REPUBLICI HRVATSKOJ U 2020. GODINI. https://mrosp.gov.hr/UserDocsImages/dokumenti/Socijalna%20politika/Odluke/Godisnje%20statisticko%20izvjesce%20u%20RH%20za%202020.%20godinu.PDF

48 Ministarstvo rada, mirovinskoga sustava, obitelji i socijalne politike (2021.). GODIŠNJE STATISTIČKO IZVJEŠĆE O PRIMIJENJENIM PRAVIMA SOCIJALNE SKRBI, PRAVNOJ ZAŠTITI DJECE, MLADEŽI, BRAKA, OBITELJI I OSOBA LIŠENIH POSLOVNE SPOSOBNOSTI TE ZAŠTITI TJELESNO ILI MENTALNO OŠTEĆENIH OSOBA U REPUBLICI HRVATSKOJ U 2020. GODINI. https://mrosp.gov.hr/UserDocsImages/dokumenti/Socijalna%20politika/Odluke/Godisnje%20statisticko%20izvjesce%20u%20RH%20za%202020.%20godinu.PDF

Tablica 33. Projekcija broja korisnika socijalnih usluga za specifične kategorije osoba s invaliditetom

Grupa usluga koju dijeli ista korisnička populacija: Radni asistent OSI na otvorenom tržištu rada											
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N (19 do 64 g.)	% osoba u potrebi od 19 do 64 g.	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika (očekivani broj osoba u dobi od 19 do 64 g. je 2985)	Razina odgovornosti za organizaciju socijalne usluge
Broj osoba s intelektualnim teškoćama u radno aktivnoj dobi u sustavu socijalne skrbi	7618	Izvještaj MROSP-a [49] za 2020. godinu	-	-	2 410 000	0,32 %	-	Radni asistent OSI	30 %	-	3	KLASTER JLS
Grupa usluga koju dijeli ista korisnička populacija: Osobna asistencija za OSI uključujući asistenciju u obitelji za OSI koji su roditelji											
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N	% osoba u potrebi	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika	Razina odgovornosti za organizaciju socijalne usluge
Broj korisnika usluge osobne asistencije	2000	Mrežne stranice MROSP-a [50]	-	-	4 036 355	0,05 %	-	Osobna asistencija	100 %	-	2,5	KLASTER JLS
Grupa usluga koju dijeli ista korisnička populacija: Videći pratitelj											
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N (19+ godina)	% osoba u potrebi (19+ godina)	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika (u dobi 19+ godina je 4040 stanovnika)	Razina odgovornosti za organizaciju socijalne usluge

Broj odraslih osoba s oštećenjem vida u sustavu socijalne skrbi	2664	Izvještaj MROSP-a [51]	-	-	3 261 355	0,082 %	-	Videći pratitelj	100 %	-	3	KLASTER JLS
Grupa usluga koju dijeli ista korisnička populacija: Prevoditelj znakovnog jezika												
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N (19+ godina)	% osoba u potrebi (19+ godina)	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika (u dobi 19+ godina je 4040 stanovnika)	Razina odgovornosti za organizaciju socijalne usluge
Broj odraslih osoba s oštećenjem sluha u sustavu socijalne skrbi	2489	Izvještaj MROSP-a[52]	-	-	3 261 355	0,076 %	-	Prevoditelj znakovnog jezika	100 %	-	3	KLASTER JLS
Grupa usluga koju dijeli ista korisnička populacija: Tečajevi znakovnog jezika za pružatelje socijalnih usluga												
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N	% osoba u potrebi	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika	Razina odgovornosti za organizaciju socijalne usluge
-		-	-		4 036 355	0,01 %	-	Tečajevi znakovnog jezika za pružatelje socijalnih usluga		-	5	REGIONALNA

49 Ministarstvo rada, mirovinskoga sustava, obitelji i socijalne politike (2021.). GODIŠNJE STATISTIČKO IZVJEŠĆE O PRIMIJENJENIM PRAVIMA SOCIJALNE SKRBI, PRAVNOJ ZAŠTITI DJECE, MLADEŽI, BRAKA, OBITELJI I OSOBA LIŠENIH POSLOVNE SPOSOBNOSTI TE ZAŠTITI TJELESNO ILI MENTALNO OŠTEĆENIH OSOBA U REPUBLICI HRVATSKOJ U 2020. GODINI. https://mrosp.gov.hr/UserDocsImages/dokumenti/Socijalna%20politika/Odluke/Godisnje%20statisticko%20izvjesce%20u%20RH%20za%202020.%20godinu.PDF

50 Ministarstvo rada, mirovinskog sustava, obitelji i socijalne politike (2020.). Obilježen Međunarodni dan osoba s invaliditetom. https://mrosp.gov.hr/vijesti/obiljezen-medjunarodni-dan-osoba-s-invaliditetom/12125

51 Ministarstvo rada, mirovinskog sustava, obitelji i socijalne politike (2020.). Obilježen Međunarodni dan osoba s invaliditetom. https://mrosp.gov.hr/vijesti/obiljezen-medjunarodni-dan-osoba-s-invaliditetom/12125

52 Ministarstvo rada, mirovinskog sustava, obitelji i socijalne politike (2020.). Obilježen Međunarodni dan osoba s invaliditetom. https://mrosp.gov.hr/vijesti/obiljezen-medjunarodni-dan-osoba-s-invaliditetom/12125

4.8 PROJEKCIJA KORISNIKA USLUGA ZA IZBJEGLICE I PRIPADNIKE NACIONALNIH MANJINA

Socijalne usluge za izbjeglice i pripadnike nacionalnih manjina podijeljene su u tri skupine.

I. SOCIJALNE USLUGE ZA ROMSKO STANOVNIŠTVO (tablica 34):

1. Romski pomagač u pripremi za školu, predškoli i nastavi
2. Prevoditelj romskog jezika

Potrebe za ovim uslugama procijenjene su na temelju podataka o broju romskog stanovništva i znanju hrvatskog jezika (Kunac i sur, 2018.).

II. SOCIJALNE USLUGE ZA IZBJEGLICE (tablica 35):

1. Koordinator integracije / integrirana socijalna usluga na razini korisnika (vođenje slučaja)
2. Prevođenje i tumačenje za izbjeglice i migrante
3. Tečajevi hrvatskog jezika na osnovnoj i naprednoj razini
4. Interkulturni medijatori
5. Edukacija i supervizija interkulturnih medijatora

Potrebe za ovim uslugama procijenjene su na temelju podatka o broju osoba s odobrenom međunarodnom zaštitom u Hrvatskoj uz njegovo potencijalno povećanje u budućnosti.

III. ZAJEDNIČKE SOCIJALNE USLUGE ZA PRIPADNIKE NACIONALNIH MANJINA I IZBJEGLICE (tablica 36):

1. Interkulturni medijatori za izbjeglice i migrante
2. Edukacija i supervizija interkulturnih medijatora
3. Educiranje pružatelja usluga za rad s osobama različitog etničkog/kulturnog porijekla (razvoj interkulturalne osjetljivosti i kompetencija)
4. Besplatna pravna pomoć pripadnicima romske nacionalne manjine i migrantima (uključuje i izbjeglice / tražitelje azila)
5. Udomiteljstvo u skladu s etničkim, jezičnim, kulturnim i vjerskim podrijetlom djeteta bez odgovarajuće roditeljske skrbi (u romskim, migrantskim obiteljima i sl.)

Ni za jednu od ovih usluga nema čvrstih kriterija po kojima se mogu procijeniti potrebe. Osim toga, može se pretpostaviti da bi potreba za uslugama za izbjeglice mogla biti veća u godinama koje slijede. Zato je sadašnja procjena temeljena na sadašnjim podacima i pretpostavci povećanja, ali ih je nužno revidirati kada ove pojave dobiju imale stabilnije pokazatelje.

Očekuje se i da će procjena potreba znatno varirati između lokalnih zajednica jer postoje tendencije u prostornom grupiranju pa i u segregaciji ovog stanovništva. Zasad je moguće ponderirati samo usluge koje se odnose na romsku populaciju, dok je kod izbjeglica teško predvidjeti kako će se potrebe mijenjati, primjerice hoće li usluge rasti u pograničnim, najrazvijenijim dijelovima Hrvatske ili u zajednicama koje su predviđene za program preseljenja i stambenog zbrinjavanja.

Tablica 34. Projekcija broja korisnika socijalnih usluga za romsko stanovništvo

Grupa usluga koju dijeli ista korisnička populacija: Socijalne usluge za romsko stanovništvo											
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N	% osoba u potrebi	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika	Razina odgovornosti za organizaciju socijalne usluge
Broj romskog stanovništva u Hrvatskoj	24 524	Bazni podaci Kunac i sur., 2018.[53]	Neznanje hrvatskog jezika	10%	4 036 355	0,061%	Pomnožiti s omjerom: udio romske populacije u JLS/ udio romske populacije u RH	Romski pomagač u pripremi za školu, predškoli i nastavi	53%	-	1,59	KLASTER JLS
								Prevoditelj romskog jezika	47%	-	1,41	KLASTER JLS

Tablica 35. Projekcija broja korisnika socijalnih usluga za izbjeglice

Grupa usluga koju dijeli ista korisnička populacija: Socijalne usluge za izbjeglice											
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N	% osoba u potrebi	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika	Razina odgovornosti za organizaciju socijalne usluge
Broj tražitelja azila u Hrvatskoj	1018	Podaci MUP-a[54]	-	-	4 036 355	0,025 %	-	Koordinator integracije	100 %	-	1,26	KLASTER JLS
								Prevođenje i tumačenje	100 %	-	1,26	REGIONALNA
								Tečajevi hrvatskog jezika	100 %		1,26	REGIONALNA
								Interkulturni medijatori	50 %		0,63	REGIONALNA
								Edukacija i supervizija interkulturnih medijatora	50 %		0,63	REGIONALNA

Tablica 36. Projekcija broja korisnika socijalnih usluga za pripadnike nacionalnih manjina i izbjeglice

Grupa usluga koju dijeli ista korisnička populacija: Socijalne usluge za pripadnike nacionalnih manjina i izbjeglice											
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N	% osoba u potrebi	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika	Razina odgovornosti za organizaciju socijalne usluge
Broj romskog stanovništva i izbjeglica u Hrvatskoj	25542	Bazni podaci Kunac i sur., 2018.[55] Podaci MUP-a[56]	-	-	4 036 355	0,633%	Pomnožiti s omjerom: udio romske populacije u JLS/ udio romske populacije u RH	Educiranje pružatelja usluga	10 %	-	3	REGIONALNA
								Besplatna pravna pomoć	30 %	-	10	REGIONALNA
								Udomiteljstvo u skladu s etničkim, jezičnim, kulturnim i vjerskim podrijetlom djeteta	0,5%	-	0,2	REGIONALNA

4.9 PROJEKCIJA BROJA KORISNIKA SOCIJALNIH USLUGA ZA STARIJE OSOBE

Socijalne usluge za starije osobe podijeljene su prema vrsti rizika kojoj su izložene starije osobe i članovi njihova okruženja.

I. SOCIJALNE USLUGE ZA STARIJE OSOBE SNIŽENIH FUNKCIONALNIH SPOSOBNOSTI (tablica 37):

1. Priprema i dostava toplih obroka za starije osobe
2. Organizirani prijevoz i pratnja za starije i nemoćne osobe
3. Pomoć i podrška u obavljanju svakodnevnih aktivnosti u domu starije osobe
4. Alarmni dojavni sustav za starije osobe (npr. SOS narukvice)
5. Njega u kući

Najveću grupu čine usluge koje odgovaraju na rizik starosti u užem smislu (kolokvijalno vezan uz pojam nemoći), tj. češće obolijevanje i smanjenu funkcionalnosti u svakodnevnom životu. Za procjenu broja korisnika u ovoj skupini usluga kao temeljni kriterij uzet je procijenjeni postotak starijih osoba koje imaju teškoće u obavljanju svakodnevnih aktivnosti i potrebna im je pomoć druge osobe. Prema popisu stanovništva iz 2011. godine[7], u Hrvatskoj je živjelo 149 749 osoba starijih od 65 godina koje imaju potrebu za pomoći druge osobe, tj. 19,739 % svih starijih osoba. Nadalje, procijenjeni broj dodatno smo umanjili kako bi odgovarao stopi rizika od siromaštva za populaciju starijih osoba te kako bismo zagovarali dostupnost ove usluge za višestruko ugrožene starije osobe. Budući da je stopa rizika od siromaštva za starije od 65 godina u 2021. godini iznosila čak 31 %, procjena je da različite oblike prve grupe usluga treba 5,922 % starijih osoba u zajednici.

6. Smještaj starijih osoba u kriznim situacijama
7. Udomiteljstvo za starije osobe
8. Organizirano stanovanje za starije osobe
9. Stanovanje u vlastitom domu uz intenzivnu i kontinuiranu podršku

Za procjenu potreba usluga smještaja prethodni kriterij korišten za starije osobe sniženih funkcionalnih sposobnosti dodatno je reduciran za broj samaca u zajednici jer smatramo da je njima esencijalno potrebna usluga smještaja. U populaciji starijoj od 65 godina 183 833 osobe žive u samačkim kućanstvima, tj. njih 24,232% je u samačkim kućanstvima. Zaključno, možemo reći da 4,487% starijih osoba u zajednici ima potrebu za uslugama podrške u svakodnevnom životu u zajednici, a njih 1,452% ima potrebu za uslugama smještaja.

Očekujemo da su stvarne potrebe u zajednici za ovim uslugama daleko veće, no ovdje smo zauzeli redukcionistički pristup kako bi se univerzalna dostupnost usluga zagovarala za minimalan broj korisnika kojima je esencijalno potreban. Sustav socijalne skrbi trenutno tek rezidualno odgovara na potrebe u manjoj mjeri nego što su naše projekcije. Kod obje skupine usluga u budućnosti će trebati manje restriktivne projekcije koje će se približiti stvarnim potrebama u zajednici, no to će tražiti i puno veća javna izdvajanja. No da bi se to ostvarilo, potreban je snažan društveni konsenzus da je a) potrebno neformalnu skrb koja se sada pruža u okviru obitelji zamijeniti plaćenom formalnom ili formaliziranom skrbi te b) da se javnim sredstvima treba financirati daleko veći opseg usluga nego što je sada i što su naše projekcije.

57 S obzirom na to da nisu objavljeni konačni rezultati Popisa stanovništva za 2021. godinu, korišten je Popis iz 2011. kako bi se dobio podatak o udjelu starijih osoba ovisnih o tuđoj pomoći.

Druga skupina usluga odgovara na rizike mentalnog zdravlja u starijoj dobi, i to za opću populaciju starijih te specifično za starije osobe oboljele od Alzheimerove demencije.

II. SOCIJALNE USLUGE ZA STARIJE OSOBE S RIZICIMA MENTALNOG ZDRAVLJA (tablica 38):

1. Centar za starije osobe u zajednici s organiziranim kulturnim, umjetničkim, sportskim i drugim aktivnostima
2. Multidisciplinarna psihosocijalna podrška starijim i nemoćnim osobama
3. Poludnevni/cjelodnevni boravak za starije osobe

Broj korisnika procijenjen je na temelju podatka o osobama starije životne dobi koje imaju neuroze i druge duševne poremećaje (u obzir je uzet prosječan broj od 2015. do 2019. godine zbog prethodno objašnjenog velikog odstupanja u 2020. godini). Naime, kako je primarni cilj ovih usluga uključivanje u život zajednice i psihosocijalno osnaživanje, usmjerili smo ih na starije osobe kojima treba psihosocijalna podrška za prevladavanje rizika u starosti i lakše suočavanje sa životnim promjenama. Dakako, to ne znači da samo starije osobe s dijagnozom neke psihičke teškoće mogu koristiti ove usluge, nego nam ovaj kriterij samo pomaže u boljoj ilustraciji potreba u zajednici.

4. Kontinuirana njega u kući za osobe oboljele od Alzheimerove demencije.

Kao kriterij, uzet je broj osoba sa demencijama prema podacima HZJZ-a, ali očekuje se da bi potreba za ovom uslugom postojala kod oko 30% starijih osoba.

Treća skupina usluga namijenjena je članovima obitelji starijih osoba kao odgovor na rizik od njegovateljskog stresa.

III. SOCIJALNE USLUGE ZA NJEGOVATELJE I ČLANOVE OBITELJI STARIJIH OSOBA (tablica 39):

1. Multidisciplinarna psihosocijalna podrška
2. Savjetovanje za članove obitelji
3. Privremeni/povremeni smještaj (predah od skrbi)
4. Usluga privremene njege u kući (predah od skrbi)

Prema različitim znanstvenim izvorima, depresiju kao posljedicu njegovateljskog stresa ima oko 20% njegovatelja, a ovakvu procjenu smatramo konzervativnom, ali relevantnom. Uzmemo li u obzir prethodno objašnjeni kriterij broja starijih osoba ovisnih o tuđoj pomoći i njezi, možemo procijeniti da 0,897% starijih osoba imaju njegovatelja kojem je potrebna podrška (Family Caregiver Alliance, 2022.).

Posljednje dvije usluge odnose se na palijativnu skrb.

IV. SOCIJALNE USLUGE PALIJATIVNE SKRBI (tablica 40):

1. Palijativna skrb u kući
2. Stacionarna palijativna skrb

Za procjenu broja korisnika korištena je procjena potreba za palijativnom skrbi u Nacionalnom planu razvoja palijativne skrbi u 2017. godini. Prema tim podacima u Hrvatskoj oko 46 365 osoba ima potrebu za palijativnom skrbi s preporukom da ih 20 % dobiva specijalističku / stacionarnu, a 80 % palijativnu skrb u kući.

Tablica 37. Projekcija broja korisnika socijalnih usluga za starije osobe sniženih funkcionalnih sposobnosti

Grupa usluga koju dijeli ista korisnička populacija: Socijalne usluge u zajednici za starije osobe sniženih funkcionalnih sposobnosti											
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N (65+ godina)	% osoba u potrebi 65+ g.	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika (očekivani broj osoba u dobi 65+ g. je 1069)	Razina odgovornosti za organizaciju socijalne usluge
Udio starijih osoba ovisnih o tuđoj pomoći i njezi	19,739%	Popis stanovništva 2011.[58]	Rizik od siromaštva u starijoj populaciji	31 %[59]	862 700	4,487 %	-	Priprema i dostava toplih obroka za starije osobe	50%	Usluge smještaja koristi 1,452 % starije populacije. Zato su usluge u zajednici planirane za 4,487 % starijih	24	JEDINICA LOKALNE SAMOUPRAVE
								Organizirani prijevoz i pratnja za starije i nemoćne osobe	50%		24	JEDINICA LOKALNE SAMOUPRAVE
								Pomoć i podrška u obavljanju svakodnevnih aktivnosti u domu starije osobe	50%		24	JEDINICA LOKALNE SAMOUPRAVE JEDINICA LOKALNE SAMOUPRAVE
								Alarmni dojavni sustav za starije osobe (npr. SOS narukvice)	70%		34	REGIONALNA
								Njega u kući	50%		24	KLASTER JLS

Grupa usluga koju dijeli ista korisnička populacija: Smještaj za starije osobe sniženih funkcionalnih sposobnosti												
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N (65+ godina)	% osoba u potrebi 65+ g.	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika (očekivani broj osoba u dobi 65+ g. je 1069)	Razina odgovornosti za organizaciju socijalne usluge
Udio starijih osoba ovisnih o tuđoj pomoći i njezi	19,739%	Popis stanovništva 2011.[60]	Rizik od siromaštva u starijoj populaciji	31 %[61]	862 700	1,452%	-	Smještaj starijih osoba u kriznim situacijama	20%	-	3	JEDINICA LOKALNE SAMOUPRAVE
								Udomiteljstvo za starije osobe	35%		6	KLASTER JLS
			Samci u dobi 65+ godina	24,232 %[62]				Organizirano stanovanje za starije osobe	35%		6	KLASTER JLS
								Stanovanje u vlastitom domu uz intenzivnu i kontinuiranu podršku	20%		3	JEDINICA LOKALNE SAMOUPRAVE

58 Državni zavod za statistiku (2011.). Popis stanovništva. 9. Stanovništvo s teškoćama u obavljanju svakodnevnih aktivnosti prema potrebi za pomoći druge osobe i korištenju pomoći druge osobe, starosti i spolu, POPIS 2011. https://www.dzs.hr/

59 Državni zavod za statistiku (2021.) Statistika u nizu. Pokazatelji siromaštva i socijalne isključenosti. STOPA RIZIKA OD SIROMAŠTVA PREMA DOBI I SPOLU. https://www.dzs.hr/

60 Državni zavod za statistiku (2011.). Popis stanovništva. 9. Stanovništvo s teškoćama u obavljanju svakodnevnih aktivnosti prema potrebi za pomoći druge osobe i korištenju pomoći druge osobe, starosti i spolu, POPIS 2011. https://www.dzs.hr/

61 Državni zavod za statistiku (2021.) Statistika u nizu. Pokazatelji siromaštva i socijalne isključenosti. STOPA RIZIKA OD SIROMAŠTVA PREMA DOBI I SPOLU. https://www.dzs.hr/

62 Državni zavod za statistiku (2011.). Popis stanovništva. 8. STANOVNIŠTVO U SAMAČKIM KUĆANSTVIMA PREMA STAROSTI, SPOLU I ZAKONSKOME BRAČNOM STANJU, POPIS 2011. https://www.dzs.hr/

Tablica 38. Projekcija broja korisnika socijalnih usluga za starije osobe s rizicima mentalnog zdravlja

Grupa usluga koju dijeli ista korisnička populacija: Socijalne usluge u zajednici za starije osobe s rizicima mentalnog zdravlja														
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N (65+ godina)	% osoba u potrebi 65+ g.	Ponder		Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika (očekivani broj osoba u dobi 65+ g. je 1069)	Razina odgovornosti za organizaciju socijalne usluge	
Broj starijih osoba s neurozama i drugim duševnim poremećajima (M 2015. -2019.)	124423	Izvještaj HZJZ-a[63]	Motivacija za korištenje usluge	30 %	862 700	4,327 %		-	Centar za starije osobe	50 %	-	23	JEDINICA LOKALNE SAMOUPRAVE	
									Poludnevni/ cjelodnevni boravak	30 %		14	JEDINICA LOKALNE SAMOUPRAVE	
									Multidisciplinarna podrška	20 %		9	KLASTER JLS	

Grupa usluga koju dijeli ista korisnička populacija: Socijalne usluge u zajednici za starije osobe s demencijom														
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N (65+ godina)	% osoba u potrebi 65+ g.	Ponder		Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika (očekivani broj osoba u dobi 65+ g. je 1069)	Razina odgovornosti za organizaciju socijalne usluge	
Broj starijih osoba s demencijom (M 2015. -2019.)	10655	Izvještaj HZJZ-a[64]	Motivacija za korištenje usluge	30 %	862 700	0,37 %	-		Kontinuirana njega u kući	100%	-	4	KLASTER JLS	

63 Hrvatski zavod za javno zdravstvo (2019., 2018., 2017., 2016., 2015.). Hrvatski zdravstveno-statistički ljetopis za 2019., 2018., 2017., 2016. i 2015. godinu. https://www.hzjz.hr/cat/periodicne-publikacije/

64 Hrvatski zavod za javno zdravstvo (2019., 2018., 2017., 2016., 2015.). Hrvatski zdravstveno-statistički ljetopis za 2019., 2018., 2017., 2016. i 2015. godinu. https://www.hzjz.hr/cat/periodicne-publikacije/

Tablica 39. Projekcija broja korisnika socijalnih usluga za njegovatelje starijih osoba

Grupa usluga koju dijeli ista korisnička populacija: Socijalne usluge u zajednici za obitelji i njegovatelje starijih osoba												
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N (65+ godina)	% osoba u potrebi 65+ g.	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga		Korisnici koji istodobno koriste usluge na osnovi različitih rizika	Projekcija broja korisnika na razini od 5000 stanovnika (očekivani broj osoba u dobi 65+ g. je 1069)	Razina odgovornosti za organizaciju socijalne usluge
Udio starijih osoba ovisnih o tuđoj pomoći i njezi	19,739%	Popis stanovništva 2011.[65]	Rizik od siromaštva u starijoj populaciji Njegovatelji s višim stresom	31 %[66] 20 %[67]	862 700	0,897%	-	Multidisciplinarna psihosocijalna podrška	30%	-	3	KLASTER JLS
								Savjetovanje za članove obitelji	70%		7	KLASTER JLS
								Privremeni /povremeni smještaj (predah od skrbi)	30%		3	JEDINICA LOKALNE SAMOUPRAVE
								Usluga privremene njege u kući (predah od skrbi)	70%		7	KLASTER JLS

65 Državni zavod za statistiku (2011.). Popis stanovništva. 9. Stanovništvo s teškoćama u obavljanju svakodnevnih aktivnosti prema potrebi za pomoći druge osobe i korištenju pomoći druge osobe, starosti i spolu, POPIS 2011. https://www.dzs.hr/

66 Državni zavod za statistiku (2021.) Statistika u nizu. Pokazatelji siromaštva i socijalne isključenosti. STOPA RIZIKA OD SIROMAŠTVA PREMA DOBI I SPOLU. https://www.dzs.hr/

67 Family Caregiver Alliance (2022.). Caregiver Depression: A Silent Health Crisis. https://www.caregiver.org/resource/caregiver-depression-silent-health-crisis/

Tablica 40. Projekcija broja korisnika usluga palijativne skrbi

Grupa usluga koju dijeli ista korisnička populacija: Usluge palijativne skrbi												
Kriterij za utvrđivanje potreba		Izvor podatka	Ograničavajući parametri za selekciju korisnika		N	% osoba u potrebi 65+ g.	Ponder	Prijedlog raspodjele korisnika unutar grupe usluga	Korisnici koji istodobno koriste usluge na osnovi različitih rizika		Projekcija broja korisnika na razini od 5000 stanovnika	Razina odgovornosti za organizaciju socijalne usluge
Potrebe za palijativnom skrbi	46 365	Nacionalni plan razvoja palijativne skrbi[68]	-	-	4 036 355	1,149%	-	Palijativna skrb u kući	80%	-	46	KLASTER JLS
								Stacionarna palijativna skrb	20%		12	REGIONALNA

68 Ministarstvo zdravstva (2017.). Nacionalni program razvoja palijativne skrbi u Republici Hrvatskoj 2017. - 2020. https://zdravlje.gov.hr/UserDocsImages/2018%20Programi%20i%20projekti/NP%20RAZVOJA%20PALIJATIVNE%20SKRBI%20RH%202017-2020-%20usvojen%2018.10.2017..pdf

V

OPIS USLUGA I PROCJENA RESURSA

5.1 POSTUPAK IZRADE OPISA USLUGA I PROCJENE LJUDSKIH RESURSA

Radi izrade modela organizacije i implementacije temeljnih socijalnih usluga u zajednici, koje trebaju biti univerzalno dostupne, procijenjeni su potrebni ljudski resursi. Procjena se temelji na potencijalnom broju korisnika svake usluge i njezinu sadržaju. Sadržaj svake usluge opisan je temeljem normativnog okvira (ako postoji) ili relevantne stručne literature, odnosno prakse stručnjaka za socijalne usluge okupljenih u stručnim panelima.

Na temelju sadržaja napravljena je a) projekcija vrste stručnih resursa, odnosno njihovih kvalifikacija i/ili kompetencija, b) procjena intenziteta stručnog rada koji je izražen u broju sati pružanja usluge po korisniku ili grupi korisnika tjedno, c) trajanje usluge ako je primjenjivo. Sve ove projekcije i procjene dodatno su validirane u panelima stručnjaka.

Stručni resursi grupirani su u skupine u naknadnim analizama:

- profesionalni pomagači - visokoobrazovni stručnjaci s formalnim kvalifikacijama u pomagačkim zanimanjima: socijalni radnik/ca, psiholog/inja, edukacijski rehabilitator/ica, socijalni pedagog/inja, logoped/inja i psihosocijalni savjetovatelj/ica - stručnjak koji se uz osnovnu formalnu kvalifikaciju usavršio/la za savjetovanje i/ili psihoterapiju
- stručnjaci u odgojno-obrazovnom sustavu: odgojitelj/ica predškolskog odgoja, učitelj/ica ili nastavnik/ica, kineziolog/inja i pedagog/inja
- stručnjaci u zdravstvenom sustavu ili zdravstvenog profila: liječnik/ica obiteljske medicine, medicinska sestra/tehničar, njegovatelj, radni terapeut/kinja i fizioterapeut/kinja
- neprofesionalni pomagači - pomagači različitih stručnih profila bez formalnih kvalifikacija u pomagačkim zanimanjima koji sudjeluju u pružanju socijalnih usluga za koje kvalifikacije nisu nužne; suradnici u ustanovama i organizacijama pružateljima socijalnih usluga, kulturno-umjetničkim, sportsko-rekreativnim ili hobističkim ustanovama, organizacijama ili klubovima u zajednici
- paraprofesionalni pomagači - pomoćni pomagači koji su kompetencije stekli osposobljavanjem ili usavršavanjem: gerontodomaćin/ca, pomoćnik/ica u nastavi, stručni komunikacijski posrednik/ca, prevoditelj/ca znakovnog jezika, osobni asistent/kinja, videći pratitelj/ica, romski pomagač/prevoditelj i interkulturalni medijator/prevoditelj; u ovu skupinu svrstani su još udomitelj/ica, kuhar/ica i vozač/ica
- volonteri u ustanovama i organizacijama pružateljima socijalnih usluga, kulturno-umjetničkim, sportsko-rekreativnim ili hobističkim ustanovama, organizacijama ili klubovima u zajednici

U nastavku je opisan sadržaj i način procjene potrebnih stručnih resursa za svaku socijalnu uslugu o kojoj je postignut stručni konsenzus da treba biti univerzalno dostupna. Kada socijalnu uslugu mogu pružati stručnjaci različitih profila u istoj skupini ili iz različitih skupina, ukupno radno opterećenje ravnomjerno je raspoređeno u modelu između svih stručnjaka. U uslugama koje se pružaju multidisciplinarno, gdje je procijenjeno da je udio podrške stručnjaka nekih disciplina (ili sektora) veći nego ostalih, ovi su omjeri uključeni u procjenu ukupnog radnog opterećenja i opisani. Tablični prikaz procjene i izračuna potrebnih ljudskih resursa na godišnjoj razini prikazan je u Dopunskoj datoteci 2.

Za svaku od usluga naznačeno je jesu li za nju odgovorni regionalna razina, klaster jedinica lokalne samouprave ili jedinice lokalne samouprave. Ova odluka temeljena je na prethodnoj procjeni broja korisnika te na raspoloživosti potrebnih resursa koje ima svaka od tih razina. Detaljnije će ovo pitanje biti obrađeno u Poglavlju VII.

5.2 USLUGE SMJEŠTAJA IZVAN VLASTITOG DOMA

5.2.1. Udomiteljstvo

Udomiteljstvo, kao usluga s primarnom svrhom smještaja, u osnovnom paketu pojavljuje se u tradicionalnom ili standardnom i specijaliziranom obliku. S obzirom na broj potencijalnih korisnika, svi oblici udomiteljstva pripadaju regionalnoj razini odgovornosti, osim udomiteljstva za starije osobe, za koje odgovornost za planiranje i organizaciju u ovom modelu ima klaster jedinica lokalne samouprave.

Tradicionalno/standardno udomiteljstvo prepoznato je kao prioritetna socijalna usluga za:

- djecu bez odgovarajuće roditeljske skrbi
- maloljetne majke s djecom
- starije osobe
- osobe s invaliditetom
- djecu bez odgovarajuće roditeljske skrbi, pripadnike nacionalnih manjina (udomiteljstvo u skladu s etničkim, jezičnim, kulturnim i vjerskim podrijetlom djeteta).

Specijalizirano udomiteljstvo prepoznato je kao prioritetna socijalna usluga za:

- djecu s teškoćama u razvoju
- djecu s problemima u ponašanju.

Sadržaj usluge, uvjeti za obavljanje udomiteljstva i broj korisnika propisani su Zakonom o udomiteljstvu (NN 115/18, 18/22). U udomiteljskoj obitelji može biti smješteno najviše troje djece istodobno u tradicionalnom i standardnom udomiteljstvu, osim u slučajevima propisanim zakonom. Stoga je u procjeni potrebnih resursa uzeta pretpostavka o troje djece u udomiteljskoj obitelji.

U istom obliku udomiteljstva za odrasle osobe u udomiteljskoj obitelji mogu biti smještene četiri odrasle osobe istodobno (starije osobe ili osobe s invaliditetom), što je uzeto kao pretpostavka u izradi modela.

Kod udomitelja koji obavlja specijalizirano udomiteljstvo može biti smješteno jedno dijete s teškoćama u razvoju ili dijete s problemima u ponašanju, osim u slučajevima propisanim zakonom.

Stoga bi, prema očekivanom broju potencijalnih korisnika, bila potrebna:

- 1 udomiteljska obitelj za djecu bez odgovarajuće roditeljske skrbi na 7500 stanovnika
- 1 udomiteljska obitelj za djecu s teškoćama u razvoju na 10 000 stanovnika
- 1 udomiteljska obitelj za djecu s problemima u ponašanju na 15 000 stanovnika
- 3 udomiteljske obitelji za starije osobe na 10 000 stanovnika
- 1 udomiteljska obitelj za osobe s invaliditetom na 20 000 stanovnika
- 1 udomiteljska obitelj pripadnika nacionalnih manjina na 75 000 stanovnika
- 1 udomiteljska obitelj s kapacitetima za smještaj majke s djecom na 10 000 stanovnika.

5.2.2. Organizirano stanovanje

Organizirano stanovanje, odnosno usluga stanovanja uz podršku, kao socijalna usluga smještaja izvan vlastitog doma u neodređenom trajanju, prepoznata je kao prioritetna za sljedeće korisničke skupine:

- djecu bez odgovarajuće roditeljske skrbi
- mlade u alternativnoj skrbi
- djecu s teškoćama u razvoju
- djecu i mlade s problemima u ponašanju
- djecu bez pratnje i djecu žrtve trgovanja ljudima
- mlade s invaliditetom
- majke s djecom
- osobe u beskućništvu
- starije osobe
- odrasle osobe s invaliditetom
- osobe s duševnim smetnjama.

Korisničke skupine, sadržaj i uvjeti za socijalnu uslugu organiziranog stanovanja, uključujući vrstu stručne podrške, propisani su Pravilnikom o minimalnim uvjetima za pružanje socijalnih usluga (NN 40/2014.).

Svi oblici organiziranog stanovanja, odnosno stanovanja uz podršku pripadaju regionalnoj razini odgovornosti za organizaciju socijalnih usluga na temelju procijenjenog broja potencijalnih korisnika te stručnih i operativnih kapaciteta, s izuzetkom organiziranog stanovanja za starije osobe, za koje odgovornost za planiranje i organizaciju u ovom modelu pripada klasteru jedinica lokalne samouprave.

Prema očekivanom broju potencijalnih korisnika, potrebno je na regionalnoj razini osigurati stanovanje uz podršku za:

- 2 djece bez odgovarajuće roditeljske skrbi na 10 000 stanovnika
- 2 djece s teškoćama u razvoju na 20 000 stanovnika
- 3 djece i mladih s problemima u ponašanju na 50 000 stanovnika
- 2 djece bez pratnje i djece žrtava trgovanja ljudima na 10 000 stanovnika
- 2 mladih s invaliditetom na 30 000 stanovnika
- 2 majke s djecom na 40 000 stanovnika
- 2 osobe u beskućništvu na 10 000 stanovnika
- 6 osoba s invaliditetom na 10 000 stanovnika
- 8 osoba s duševnim smetnjama na 10 000 stanovnika.

Na razini klastera jedinica lokalne samouprave s 5000 stanovnika potrebno je osigurati organizirano stanovanje za šest starijih osoba. Procijenjeni stručni i paraprofesionalni resursi za ovu uslugu su socijalni radnik/ca i medicinska sestra/tehničar ili njegovatelj ili radni terapeut/kinja ili fizioterapeut/kinja i gerontodomaćin/ca. U pružanju usluge mogu sudjelovati i neprofesionalni pomagači - suradnici te volonteri u ustanovama i organizacijama pružateljima socijalnih usluga.

Procijenjeno je da se za ovu korisničku skupinu može primijeniti svakodnevna kratkotrajna podrška (kako bi se povećao obuhvat i na funkcionalno djelomično ovisne korisnike) u trajanju od 17,5 sati tjedno (2 do 3 sata dnevno) po stambenoj jedinici. Izračun potrebnih resursa temelji se na pretpostavci o četiri korisnika po stambenoj jedinici. Ukupno radno opterećenje ravnomjerno je raspoređeno među profesionalnim, paraprofesionalnim i neprofesionalnim pomagačima.

5.2.3. Privremeni/povremeni smještaj u zajednici

U skupini usluga smještaja izvan vlastitog doma za nekolicinu korisničkih skupina postoji konsenzus o tome da su privremeni i povremeni smještaj među prioritetnim socijalnim uslugama, odnosno da bi takvi oblici smještaja trebali biti univerzalno dostupni. U panelima stručnjaka usuglašeno je da je riječ o oblicima smještaja na određeno, ograničeno vrijeme, bilo da je riječ o prijelaznim rješenjima prema drugim, održivim statusima korisnika ili o oblicima podrške u stanovanju koji su prevencija ili alternativa dugotrajnom smještaju. Ovi oblici smještaja pojavljuju se kao prioritetna socijalna usluga za:

- osobe koje izlaze iz institucija ili penalnog sustava, kao skupina građana u riziku od siromaštva
- starije osobe, kao usluga namijenjena starijim osobama privremeno ovisnima o tuđoj pomoći i njezi ili kao usluga predaha njihovim primarnim njegovateljima
- osobe s teškoćama mentalnog zdravlja.

Privremeni smještaj osoba koje izlaze iz institucija ili penalnog sustava ili „Kuća na pola puta“, u kojem korisnici uz kratkotrajni smještaj dobivaju stručnu pomoć u strukturiranju i organizaciji vremena, učenju životnih vještina, traženju posla i socijalnom uključivanju, potrebno je osigurati za dva korisnika/ce na 10 000 stanovnika. Ova usluga ubraja se u regionalnu razinu odgovornosti.

Na razini klastera jedinica lokalne samouprave, prema ovom modelu, potrebno je planirati i organizirati **privremeni i povremeni smještaj za osobe s teškoćama mentalnog zdravlja**. Pravilnik o minimalnim uvjetima za pružanje socijalnih usluga (NN 40/2014.) propisuje uvjete organiziranog stanovanja za osobe s mentalnim oštećenjem koji su primijenjeni u procjeni potrebnih resursa za ovu socijalnu uslugu jer je ona inovativna. Za podršku u stanovanju i socijalnu rehabilitaciju projicirani stručni resursi su: socijalni radnik/ca ili psiholog/inja ili rehabilitator/ica. U panelu stručnjaka procijenjeno je da u pružanju ove usluge mogu sudjelovati i neprofesionalni pomagači – suradnici te volonteri u ustanovama i organizacijama pružateljima socijalnih usluga.

Intenzitet podrške procijenjen je prema sadašnjoj raspodjeli za osobe s duševnim smetnjama u smještaju (Ministarstvo rada, mirovinskoga sustava, obitelji i socijalne politike, 2021.): 7,8 % prima sveobuhvatnu podršku (168 sati tjedno), 43 % svakodnevnu intenzivnu (112 sati tjedno), 32 % svakodnevnu kratkotrajnu (17,5 sati tjedno) te 17 % povremenu (6 sati tjedno), što daje srednju vrijednost od 68,22 sati podrške tjedno po korisniku. Izračun ukupno potrebnih resursa temelji se na pretpostavci da će korisnici stambenu jedinicu namijenjenu povremenom/privremenom smještaju koristiti najdulje 4,5

tjedna, odnosno 30 dana godišnje po analogiji s normativom za smještaj djece s teškoćama u razvoju zbog predaha primarnog njegovatelja (Zakon o socijalnoj skrbi, NN 18/2022.).

Ukupno radno opterećenje ravnomjerno je raspoređeno u modelu između projiciranih profesionalnih i neprofesionalnih pomagača.

Privremeni/povremeni smještaj za starije osobe, uključujući smještaj zbog predaha njegovatelja predviđa se u modelu na razini odgovornosti jedinica lokalne samouprave. Stručni i paraprofesionalni resursi za ovu uslugu projicirani su na temelju usluge organiziranog stanovanja za starije osobe (Pravilnik o minimalnim uvjetima za pružanje socijalnih usluga, NN 40/2014.) te uključuju: socijalnog radnika, stručnjake u zdravstvenoj skrbi - medicinska sestra/tehničar ili njegovatelja ili radnog terapeuta ili fizioterapeuta te paraprofesionalnog pomagača - gerontodomaćina/cu. U pružanju usluge mogu sudjelovati i neprofesionalni pomagači - suradnici i volonteri u organizaciji/ustanovi pružatelju socijalnih usluga.

S obzirom na ovisnost korisnika o tuđoj pomoći i njezi, intenzitet je procijenjen u opsegu svakodnevne intenzivne podrške – 112 sati tjedno, s većim udjelom sati za zdravstvenu njegu i pomoć u obavljanju svakodnevnih aktivnosti. Trajanje smještaja procijenjeno je na maksimalno 30 dana ili 4,5 tjedna dana godišnje po korisniku po analogiji s privremenim smještajem zbog odmora njegovatelja (Zakon o socijalnoj skrbi, NN 18/2022.). Uzimajući u obzir broj potencijalnih korisnika, predviđa se jedna stambena jedinica u zajednici koja se koristi po potrebi.

5.2.4. Smještaj u kriznim situacijama

Ovaj oblik smještaja izvan vlastitog doma prepoznat je kao prioritetna socijalna usluga za:

- starije osobe, samce ovisne o tuđoj pomoći i njezi, u kriznim situacijama do pronalaska održivog rješenja
- obitelji ili građane pogođene katastrofama do pronalaska održivog rješenja
- mlade u kriznim situacijama (poput izlaska iz ustanove/institucije, izlaska iz alternativne skrbi, gubitak posla osobito ranjive skupine mladih u situacijama katastrofa).

Trajanje ovakve krizne intervencije procijenjeno je na pet tjedana, što korespondira s prosječnim trajanjem krize (4 do 6 tjedana) (Arambašić, 2000.). S obzirom na procijenjeno trajanje, pretpostavljenu hitnost u osiguravanju usluge i vrstu stručne podrške, ovi su oblici smještaja u predloženom modelu na razini odgovornosti jedinica lokalne samouprave.

Procjena potrebnih ljudskih i stručnih resursa te intenziteta i trajanja usluge predstavljena je u tablici 41.

Tablica 41. Procjena ljudskih i stručnih resursa te intenziteta i trajanja kriznog smještaja

KORISNIČKA SKUPINA	STRUČNI I LJUDSKI RESURSI	INTENZITET I TRAJANJE
Smještaj starijih osoba u kriznim situacijama	Besplatno stanovanje uz zdravstvenu njegu i pomoć u obavljanju svakodnevnih aktivnosti. Procijenjeni stručni i paraprofesionalni resursi koji mogu sudjelovati u pružanju usluge su socijalni radnik/ca te medicinska sestra/tehničar ili njegovatelj/ica, radni terapeut/kinja ili fizioterapeut/kinja, gerontodomaćin/ca; u pružanju usluge mogu sudjelovati i neprofesionalni pomagač -suradnik te volonter u ustanovama i organizacijama pružateljima socijalnih usluga.	Svakodnevna intenzivna podrška u trajanju od 112 sati tjedno s većim udjelom radnog opterećenja za pomoć u obavljanju svakodnevnih aktivnosti (gerontodomaćin/ca) te zdravstvenu njegu (medicinski tehničar/sestra i njegovatelj/ica) tijekom 5 tjedana u prosjeku.
Krizni smještaj za obitelji / građane pogođene katastrofama	Besplatno stanovanje za obitelji i druge građane pogođene katastrofama uz kriznu intervenciju i psihosocijalnu podršku. Procijenjeni stručni i paraprofesionalni resursi koji mogu sudjelovati u pružanju usluge su socijalni radnik/ca ili psiholog/inja ili psihosocijalni savjetovatelj/ica te neprofesionalni pomagač(i) i volonter(i) u ustanovama i udrugama pružateljima socijalnih usluga.	Povremena podrška od 5 sati tjedno u prosjeku u trajanju od prosječno 5 tjedana. Ukupno radno opterećenje ravnomjerno je raspodijeljeno na sve projicirane resurse.
Stambeno zbrinjavanje mladih u kriznim situacijama	Besplatno stanovanje uz stručnu pomoć u strukturiranju i organizaciji vremena, učenju životnih vještina, traženju posla i socijalnom uključivanju. Procijenjeni stručni i paraprofesionalni resursi koji mogu sudjelovati u pružanju usluge su socijalni radnik/ca ili psiholog/inja ili rehabilitator/ica ili socijalni pedagog/inja ili psihosocijalni savjetovatelj/ica te neprofesionalni pomagač(i) i volonter(i) u ustanovama i udrugama pružateljima socijalnih usluga.	Povremena stručna podrška do 5 sati tjedno u trajanju od prosječno 5 tjedana. Ukupno radno opterećenje ravnomjerno je raspodijeljeno na sve projicirane resurse.

5.2.5. Prenoćište i prihvatilište za beskućnike

Usluge smještaja u **prihvatilištu i prenoćištu za osobe u beskućništvu** definirane su Pravilnikom o minimalnim uvjetima za pružanje socijalnih usluga (NN 40/2014.). S obzirom na procijenjeni broj potencijalnih korisnika te potrebne infrastrukturne, financijske i stručne kapacitete, ova usluga u predloženom modelu ubraja se u regionalnu razinu odgovornosti. Na osnovi procjene broja potencijalnih korisnika potrebno je osigurati smještajne i druge stručne kapacitete za ovaj oblik smještaja za osobe u beskućništvu za četiri korisnika na 25.000 stanovnika.

5.2.6. Sigurna kuća za žrtve obiteljskog nasilja

Sigurna kuća za žrtve obiteljskog nasilja u Pravilniku o minimalnim uvjetima za pružanje socijalnih usluga (NN 40/2014.) definira se kao sklonište za žrtve nasilja u obitelji, a uključuje smještaj, savjetovanje i pomaganje. S obzirom na procijenjeni broj potencijalnih korisnika/ca te ostale infrastrukturne i financijske resurse, ova je usluga predviđena za regionalnu razinu odgovornosti u organizaciji socijalnih usluga. Pravilnik propisuje uvjete potrebnih stručnih resursa za objekt kapaciteta 16 korisnika/ca, što u predloženom modelu znači da je potrebno na svakih 80 000 stanovnika osigurati smještajne kapacitete i kapacitete za pružanje stručne podrške za taj broj korisnika/ca.

5.3 USLUGE ZA PSIHOSOCIJALNO OSNAŽIVANJE KORISNIKA

5.3.1. Psihosocijalno savjetovanje

U ovoj skupini su socijalne usluge čija je svrha osobama koje se suočavaju s teškoćama i preprekama u osobnom i interpersonalnom funkcioniranju olakšati prevladavanje aktualnih teškoća i jačati kapacitete za uspješnije suočavanje s budućim izazovima. Sredstvo kojim se ostvaruju ove promjene jest uspostava odnosa i razgovor sa stručnjakom. Kompetencije stručnjaka te vrsta, intenzitet i trajanje psihosocijalnog savjetovanja povezane su s vrstom i intenzitetom teškoća, kao i s vrstom i intenzitetom promjena koje korisnici imaju potrebu napraviti.

Vrste savjetovanja i korisničke skupine o kojima postoji visok stupanj suglasnosti da su prioritetni te procjene potrebnih resursa korištene u izradi modela predstavljeni su u tablici 42.

Tablica 42. Procjena stručnih i ljudskih resursa te intenziteta i trajanja usluge psihosocijalnog savjetovanja

KORISNIČKA SKUPINA	STRUČNI I LJUDSKI RESURSI	INTENZITET I TRAJANJE
Psihosocijalno savjetovanje za djecu i mlade	Psiholog/inja ili psihosocijalni savjetovatelj/ica	15 sati u prosjeku po korisniku (1 sat tjedno, prosječno 15 puta)
Obiteljsko/partnersko savjetovanje	Psihosocijalni savjetovatelj/ica	22,5 sata u prosjeku po obitelji/paru (1,5 sat tjedno, prosječno 15 puta)
Savjetovanje za pojedince i obitelji u siromaštvu	Projekcija se temelji na procjeni da je ovo manje intenzivna usluga sa svrhom vođenja u rješavanju svakodnevnih životnih problema; stručni resursi koji mogu provoditi ovu uslugu su socijalni radnik/ca ili psiholog/inja ili psihosocijalni savjetovatelj/ica	7,5 sati u prosjeku po korisniku/obitelji (1,5 sat, prosječno 5 puta)
Savjetovanje za članove obitelji nemoćnih i dementnih starijih osoba	Socijalni radnik/ca ili psiholog/inja ili psihosocijalni savjetovatelj/ica	15 sati u prosjeku po korisniku ili obitelji (1,5 sat, prosječno 10 puta)
Savjetovanje za osobe s invaliditetom i članove njihovih obitelji	Socijalni radnik/ca ili psiholog/inja ili rehabilitator/ica ili psihosocijalni savjetovatelj/ica	15 sati u prosjeku po korisniku ili obitelji (1,5 sat, prosječno 10 puta)

Krizne intervencije za osobe s teškoćama mentalnog zdravlja	Kratkotrajna intervencija koju mogu provoditi psiholog/inja ili psihosocijalni savjetovatelj/ica	6 sati u prosjeku po korisniku/obitelji (1,5 sat, 4 puta)
Savjetovanje/ psihoterapija za osobe s teškoćama mentalnog zdravlja	Psihosocijalni savjetovatelj/ica	24 sata u prosjeku po korisniku godišnje
Savjetovanje za članove obitelji osobe s teškoćama mentalnog zdravlja	Psiholog/inja ili psihosocijalni savjetovatelj/ica	12 sati u prosjeku po korisniku/obitelji godišnje

5.3.2. Multidisciplinarna psihosocijalna podrška

Termin psihosocijalna podrška koristi se u različitim kontekstima i profesijama, a uključuje različite postupke i aktivnosti, ali postoji neujednačenost u pogledu sadržaja ove usluge. Prema Zakonu o socijalnoj skrbi (NN 18/2022.), ova usluga „obuhvaća stručne postupke i druge oblike pomoći kojima se potiču razvoj i unaprjeđenje kognitivnih, funkcionalnih, komunikacijskih, socijalnih ili odgojnih vještina korisnika". Pojedincu se pruža radi prevladavanja teškoća i osnaživanja u vezi s trajnim ili prolaznim teškoćama, preprekama i nepovoljnim okolnostima (teškoće u razvoju, invaliditet, bolest, krizne situacije, nasilje u obitelji i sl.). Obiteljima se pruža radi prevladavanja obiteljskih teškoća, usvajanja/jačanja roditeljskih vještina i osnaživanja obitelji za svakodnevno funkcioniranje.

Psihosocijalna podrška često se spominje u kontekstu kriznih i katastrofalnih događaja, a podrazumijeva proces fizičkog i psihičkog osnaživanja pojedinca, njegove obitelji i socijalnog okruženja kako bi u sebi ili svojoj okolini pronašao ili stekao snage i načine za uspješno suočavanje sa stresom te se brže uključio u svakodnevni život (Ajduković i sur., 2016.). Psihološka podrška je u ovom kontekstu tzv. kišobran koji uključuje razne intervencije, od onih koji provode posebno educirani stručnjaci do onih koje provode obučeni volonteri.

Američko udruženje psihologa (American Psychological Association, APA, 2022.) također psihosocijalnu podršku definira kao nadređeni pojam koji opisuje niz različitih usluga povezanih s mentalnim zdravljem i dobrobiti, a pružaju ih profesionalni pomagači ili obučeni paraprofesionalci i neprofesionalni pomagači.

Imajući u vidu ova različita određenja i praksu u Hrvatskoj, koja se reflektira i na adresar pružatelja usluga psihosocijalne podrške različitim korisničkim skupinama na internetskim stranicama nadležnog ministarstva[69], u ovom modelu psihosocijalnu podršku razumijemo kao skup raznovrsnih aktivnosti koje:

- imaju svrhu prevladavanja teškoća i osnaživanja u vezi s trajnim ili prolaznim teškoćama, preprekama i nepovoljnim okolnostima
- su usmjerene na pojedinca/obitelj i njihovo okruženje
- uključuju suradnju stručnjaka iz različitih disciplina i kompetencija, kao i obučenih paraprofesionalnih i neprofesionalnih pomagača.

Imajući u vidu ovakvo određenje, usluga u modelu ima naziv multidisciplinarna psihosocijalna podrška, a procjene potrebnih resursa, intenziteta i trajanja za različite korisničke skupine predstavljene su u tablici 43.

Tablica 43. Procjena stručnih i ljudskih resursa te intenziteta i trajanja usluge psihosocijalne podrške za različite korisničke skupine

KORISNIČKA SKUPINA	STRUČNI I LJUDSKI RESURSI	INTENZITET I TRAJANJE
Djeca s teškoćama u razvoju (od 8 do 18 godina)	Profesionalni pomagači: rehabilitator/ica i logoped/inja (obavezni) te socijalni radnik/ca ili psiholog/inja ili socijalni pedagog/inja Stručnjaci u obrazovanju: učitelj/ica ili nastavnik/ica ili pedagog/inja ili kineziolog/inja Stručnjaci u zdravstvu: radni terapeut/kinja ili fizioterapeut/kinja, liječnik/ica obiteljske medicine / pedijatar, med. sestra/tehničar	Projekcija resursa napravljena je na temelju procjene da će veći intenzitet biti na strani stručnjaka specijaliziranih za djecu s teškoćama (rehabilitator/ica, logoped/inja, radni terapeut/kinja) te stručnjaka u obrazovanju jer su djeca školske dobi; pretpostavljeni intenzitet podrške u prosjeku je 3 sata tjedno, 20 tjedana po korisniku u jednoj godini
Mladi s problemima u ponašanju	Profesionalni pomagači: socijalni pedagog/inja (obavezno) i socijalni radnik/ca ili psiholog/inja ili rehabilitator/ica ili psihosocijalni savjetovatelj/ica Stručnjaci u obrazovanju: učitelj/ica ili nastavnik/ica ili pedagog/inja ili kineziolog/inja Neprofesionalni pomagači i volonteri iz pružatelja socijalnih usluga, kulturno-umjetničkih, sportsko-rekreativnih, hobističkih ili obrazovnih ustanova/organizacija	Projekcija resursa temelji se na procjeni da će omjer profesionalne i ostale podrške biti 2 : 3, a ukupno do 5 sati tjedno u trajanju od 20 tjedana po korisniku u jednoj godini

69 Riječ je o adresaru pružatelja usluga dostupnom na mrežnim stranicama Ministarstva rada, mirovinskog sustava, obitelji i socijalne politike https://mrosp.gov.hr/adresari/11829

Maloljetne trudnice i majke	Profesionalni pomagači (socijalni radnik/ca ili psiholog/inja ili rehabilitator/ica ili socijalni pedagog/inja ili psihosocijalni savjetovatelj/ica) i stručnjaci za zdravstvene usluge (medicinska sestra/tehničar ili njegovatelj/ica) te neprofesionalni pomagači i volonteri ustanova/udruga pružatelja socijalnih usluga	Projekcija resursa temelji se na procjeni da će omjer podrške profesionalnih pomagača i ostalih biti 2 : 3, a ukupno do 5 sati tjedno u trajanju od 20 tjedana u prosjeku po korisnici
Obitelji u riziku	Profesionalni pomagači (socijalni radnik/ca ili psiholog/inja ili rehabilitator/ica ili socijalni pedagog/inja ili psihosocijalni savjetovatelj/ica) i neprofesionalni pomagači - suradnici u pružateljima socijalnih usluga te volonteri različitih organizacija i klubova u zajednici	Projekcija resursa temelji se na procjeni da će omjer podrške profesionalnih pomagača i ostalih biti 2 : 3, a ukupno do 5 sati tjedno u trajanju od 20 tjedana po korisniku/obitelji godišnje
Roditelji njegovatelji	Profesionalni pomagači (socijalni radnik/ca ili psiholog/inja ili rehabilitator/ica ili socijalni pedagog/inja) i stručnjaci u zdravstvu - med. sestra/tehničar, njegovatelj/ica, radni terapeut/kinja ili fizioterapeut/kinja te neprofesionalni pomagači - suradnici i volonteri ustanova ili udruga pružatelja socijalnih usluga u zajednici	Projekcija resursa temelji se na procjeni da će omjer podrške profesionalnih pomagača i ostalih biti 2 : 3, a ukupno do 5 sati tjedno u trajanju od 20 tjedana po korisniku u jednoj godini
Osobe u siromaštvu	Profesionalni pomagači (socijalni radnik/ca ili psiholog/inja ili rehabilitator/ica ili socijalni pedagog/inja) i neprofesionalni pomagači - suradnici pružatelja socijalnih usluga u zajednici te volonteri različitih organizacija i klubova u zajednici	Projekcija resursa temelji se na procjeni da će omjer podrške profesionalnih pomagača i ostalih biti 2 : 3, a ukupno do 5 sati tjedno u trajanju od 20 tjedana po korisniku u jednoj godini
Starije i nemoćne osobe	Profesionalni pomagači - socijalni radnik/ca ili psiholog/inja ili rehabilitator/ica ili socijalni pedagog/inja Stručnjaci u zdravstvu: liječnik/ica obiteljske medicine, med. sestra/tehničar, njegovatelj/ica, radni terapeut/kinja ili fizioterapeut/kinja Paraprofesionalni pomagači: gerontodomaćin/ca Neprofesionalni pomagači - suradnici te volonteri različitih organizacija i klubova u zajednici	Projekcija resursa temelji se na procjeni da će omjer podrške profesionalnih pomagača i ostalih sudionika biti 2 : 3, a ukupno do 5 sati tjedno u trajanju od prosječno 20 tjedana po korisniku u jednoj godini
Njegovatelji starijih i nemoćnih osoba		

Osobe s invaliditetom i članovi njihovih obitelji	Profesionalni pomagači - socijalni radnik/ca ili psiholog/inja ili rehabilitator/ica ili socijalni pedagog/inja Stručnjaci u zdravstvu - njegovatelj/ica ili radni terapeut/kinja ili fizioterapeut/kinja Neprofesionalni pomagači – suradnici pružatelja socijalnih usluga te volonteri različitih organizacija i klubova u zajednici	Projekcija resursa temelji se na procjeni da će omjer podrške profesionalnih pomagača i ostalih sudionika biti 2 : 3, a ukupno do 5 sati tjedno u trajanju od prosječno 20 tjedana po korisniku u jednoj godini
Osobe s invaliditetom koje su roditelji	Profesionalni pomagači-socijalni radnik/ca ili psiholog/inja ili rehabilitator/ica ili socijalni pedagog/inja Stručnjaci u zdravstvu - liječnik/ica obiteljske medicine, med. sestra/tehničar ili njegovatelj/ica ili radni terapeut/kinja ili fizioterapeut/kinja Paraprofesionalni pomagači - gerontodomaćin/ca Suradnici i volonteri u pružateljima socijalnih usluga	U ovoj usluzi veći je naglasak na praktičnoj pomoći i podršci u svakodnevnim aktivnostima roditeljima koji su osobe s invaliditetom te je veći intenzitet na strani para i neprofesionalnih pomagača/volontera (3 sata) od ukupno do 5 sati tjedno u trajanju od 20 tjedana po korisniku u jednoj godini
Osobe s teškoćama mentalnog zdravlja i članovi njihovih obitelji	Profesionalni pomagači - socijalni radnik/ca ili psiholog/inja ili rehabilitator/ica ili socijalni pedagog/inja ili psihosocijalni savjetovatelj/ica Stručnjaci u zdravstvu - liječnik/ica, med. sestra/tehničar Neprofesionalni pomagači - suradnici u pružateljima socijalnih usluga te pravnik/ca i volonteri različitih organizacija i klubova u zajednici	Projekcija resursa temelji se na procjeni da će omjer podrške profesionalnih pomagača i ostalih sudionika biti 2 : 3, a ukupno do 5 sati tjedno, u trajanju od 20 tjedana po korisniku u jednoj godini
Obitelji ovisnika / liječenih ovisnika	Profesionalni pomagači - socijalni radnik/ca ili psiholog/inja ili rehabilitator/ica ili socijalni pedagog/inja ili psihosocijalni savjetovatelj/ica Neprofesionalni pomagači - suradnici u pružateljima socijalnih usluga te volonteri različitih organizacija i klubova u zajednici	Projekcija resursa temelji se na procjeni da će omjer podrške profesionalnih pomagača i ostalih sudionika biti 2 : 3, a ukupno do 5 sati tjedno u trajanju od 20 tjedana po korisniku u jednoj godini

5.3.3. Mentorstvo

U kontekstu ovog modela postoje dvije vrste mentorstva kao socijalna usluga o kojoj postoji visoka razina suglasnosti o prioritetima za korisnike: mladi s problemima u ponašanju, mladi iz alternativne skrbi te osobe u siromaštvu. Jedan oblik je vršnjačko, „*peer*" mentorstvo, a drugi je socijalno mentorstvo koje provodi stručnjak. Oba oblika mentorstva svrstana su u modelu u razinu odgovornosti za organizaciju socijalnih usluga klasteru jedinica lokalne samouprave.

U vršnjačkom mentorstvu uspostavlja se pomažući odnos između korisnika i neprofesionalca koji je najčešće volonter, a iako je sličan po dobi i karakteristikama, iskusniji je od korisnika. Podrška koja se pruža u ovom odnosu jest davanje primjera i vođenje na temelju vlastitog iskustva. Uloga profesionalnih pomagača - stručnjaka je pronalazak i edukacija mentora, uparivanje s mentoriranima, praćenje i podrška u razvoju mentorskog odnosa te evaluacija učinaka. Na temelju ovakvog sadržaja napravljena je procjena potrebnih stručnih resursa, a predstavljena je u tablici 44.

Tablica 44. Procjena stručnih i ljudskih resursa te intenziteta i trajanja usluge mentorstva

KORISNIČKA SKUPINA	STRUČNI I LJUDSKI RESURSI	INTENZITET I TRAJANJE
Mladi s problemima u ponašanju	Profesionalni pomagač: socijalni radnik/ca ili psiholog/inja ili soc. pedagog/inja ili psihosocijalni savjetovatelj/ica Paraprofesionalni pomagač: educirani mentor/ica (volonter)	Projekcija se temelji na procjeni da je ukupni intenzitet rada s korisnikom 3 sata tjedno, od čega 2 sata izravna mentorska podrška i 1 sat stručna podrška procesu mentoriranja; trajanje usluge procijenjeno je na 20 tjedana (okvirno 6 mjeseci). U intenzitet stručnog rada profesionalnog pomagača uračunato je vrijeme jednokratne edukacije mentora.
Mladi iz alternativne skrbi	Profesionalni pomagač: socijalni radnik/ca, psiholog/inja Paraprofesionalni pomagač: educirani mentor/ica (volonter)	

Socijalno mentorstvo je stručna pomoć usmjerena na jačanje snaga i sposobnosti za uspješnije rješavanje nepovoljnih životnih prilika korisnika i bolju integraciju u zajednicu u kojoj živi (Zakon o socijalnoj skrbi, NN 18/2022.), a podrazumijeva podršku i vođenje na osnovi stručnih znanja i kompetencija. Na temelju ovakvog sadržaja u modelu je pretpostavljeno da će uslugu socijalnog mentorstva pružati profesionalni pomagači - socijalni radnik/ca ili psiholog/inja ili rehabilitator/ica ili socijalni pedagog/inja, i to u prosjeku jedan sat tjedno po korisniku u trajanju od 10 tjedana.

5.3.4. Grupe podrške i klubovi liječenih ovisnika

U ovoj su skupini usluge grupne i/ili vršnjačka podrška i usluge klubova/grupa podrške za liječene ovisnike.

Grupe podrške ili vršnjačke podrške u ovom su modelu grupe koje vode ili stručnjaci ili obučeni volonteri / iskustveni stručnjaci radi međusobne podrške, transfera kompetencija i razvoja mreže socijalne podrške. Postoji visoka razina suglasnosti da je grupna, odnosno vršnjačka podrška prioritetna usluga za mlade s problemima u ponašanju, roditelje i članove obitelji djece s različitim oblicima rizika, osobe s teškoćama mentalnog zdravlja te članove njihovih obitelji.

S obzirom na svrhu i sadržaj, ove su u sluge u modelu pripisane razini odgovornosti jedinica lokalne samouprave.

Procjena potrebnih stručnih resursa predstavljena je u tablici 45.

Tablica 45. Procjena stručnih i ljudskih resursa te intenziteta i trajanja usluge grupne podrške

KORISNIČKA SKUPINA	STRUČNI I LJUDSKI RESURSI	INTENZITET I TRAJANJE
Grupe podrške mladima s problemima u ponašanju	Profesionalni pomagači - psiholog/inja ili socijalni radnik/ca ili socijalni pedagog/inja ili rehabilitator/ica i neprofesionalni pomagači iz organizacija i klubova u zajednici kao podrška neformalnim vršnjačkim grupama podrške.	Projekcija se temelji na procjeni da će se usluga pružati 2 sata tjedno po grupi (u što je uključeno vrijeme pripreme), 20 tjedana godišnje za jednu grupu korisnika. Izračun potrebnih resursa u modelu temelji se na pretpostavci da se ukupno radno opterećenje ravnomjerno raspoređuje među svim profesionalnim i neprofesionalnim pomagačima.
Grupe podrške za roditelje / članove obitelji djece s različitim vrstama rizika	Profesionalni pomagači - psiholog/inja ili socijalni radnik/ca Neprofesionalni pomagači - suradnik organizacije/ustanove pružatelja socijalnih usluga te volonteri organizacija, ustanova i/ili klubova u zajednici koji su podrška vršnjačkim grupama podrške.	
Grupe podrške / vršnjačka podrška za osobe s teškoćama mentalnog zdravlja	Profesionalni pomagači - socijalni radnik/ca ili psiholog/inja ili psihosocijalni savjetovatelj/ica Neprofesionalni pomagači - suradnik i volonter organizacije/ustanove pružatelja socijalnih usluga koji su podrška vršnjačkim grupama podrške.	
Grupe podrške / vršnjačka podrška za članove obitelji osoba s teškoćama mentalnog zdravlja		

Klubovi za liječene ovisnike kao oblik rehabilitacije u zajednici nakon liječenja u bolnici i/ili terapijskoj zajednici su stručno vođene terapijske grupe osnovane radi uspostave i održanja apstinencije, promjene obrazaca ponašanja i načina života korisnika/ca te članova njegove/zine obitelji, a funkcioniraju na načelima samopomoći i uzajamne pomoći (Opačić i sur., 2019.).

U nas su najrasprostranjeniji klubovi liječenih alkoholičara, ali po istom načelu i sa sličnim resursima djeluju i klubovi/grupe podrške za ovisnike o drogama i kocki.

Procjena potrebnih stručnih resursa predstavljena je u tablici 46.

Tablica 46. Procjena stručnih i ljudskih resursa te intenziteta i trajanja usluge grupa podrške za liječene ovisnike

KORISNIČKA SKUPINA	STRUČNI I LJUDSKI RESURSI	INTENZITET I TRAJANJE
Grupa podrške / klub za liječene alkoholičare	Profesionalni pomagači: socijalni radnik/ca ili psiholog/inja ili psihosocijalni savjetovatelj/ica ili socijalni pedagog/inja ili rehabilitator/ica Stručnjaci u zdravstvu: liječnik/ica ili medicinska sestra/tehničar	Projekcija se temelji na procjeni da će se usluga pružati grupi korisnika 2 puta 2 sata tjedno (uračunato vrijeme za pripremu) tijekom 40 tjedana godišnje (s pauzom za zimski i ljetni odmor)
Grupa podrške / klub za ovisnike o drogi		
Grupa podrške / klub za ovisnike o kocki		

5.3.5. Vođenje slučaja

Vođenje slučaja ili integrirana socijalna usluga na razini pojedinca kao prioritetna prepoznata je za osobe s težim poremećajima mentalnog zdravlja i za izbjeglice (koordinator integracije). Obje usluge u ovom modelu ubrajaju se u razinu odgovornosti klastera jedinica lokalne samouprave.

U ovom modelu se pod vođenjem slučaja podrazumijeva funkcionalna integracija postupaka za jednog korisnika kako bi se osigurao kontinuitet usluga u različitim sustavima (zdravstveni, socijalni, obrazovni, zapošljavanje i sl.). Integraciju vodi voditelj slučaja koji je zadužen za inicijalnu i periodičnu procjenu potreba, individualni plan promjena, organizaciju i koordinaciju pružanja drugih usluga te usmjeravanje korisnika u jedinstveni set usluga i aktivnosti u zajednici primjerenih željenim ishodima te procijenjenim kapacitetima i resursima. Ova usluga, uz uslugu mentorstva stručnjaka, daje čvrsti temelj za integrirane socijalne usluge kao odgovor na slabu razinu međusektorske suradnje (Munday, Conseil de l'Europe, 2007.).

Projekcija potrebnih resursa za usluge **vođenja slučaja za osobe s težim poremećajima mentalnog zdravlja** i **koordinatora integracije za izbjeglice** temelji se na pretpostavci da uslugu mogu pružati socijalni radnik/ca ili psiholog/inja.

Potrebno vrijeme za obje usluge procijenjeno je na 4 sata tjedno po korisniku u prva 24 tjedna (6 mjeseci) te trećinu tog vremena sljedeća 24 tjedna.

5.3.6. Specifične terapijske usluge

Specifične terapijske usluge namijenjene su djeci s teškoćama u razvoju, osobama s invaliditetom i mladima s problemima u ponašanju pa se ovaj model, s obzirom na sadržaj i uvjete pružanja, svrstava u razinu odgovornosti klastera jedinica lokalne samouprave.

Rana razvojna podrška podrazumijeva stručnu poticajnu pomoć djetetu i stručnu savjetodavnu pomoć roditeljima i drugim članovima obitelji ili udomitelju kad je kod djeteta u ranoj dobi utvrđeno odstupanje u razvoju, razvojni rizik ili razvojne teškoće (Zakon o socijalnoj skrbi, NN, 18/22). Prema Pravilniku o minimalnim uvjetima za pružanje socijalnih usluga (NN 40/2014.), uključuje aktivnosti poticanja kognitivnog, vizualnog, auditivnog, socijalno-emocionalnog razvoja, stimulacije vida i sluha, poticanja vještina fine motorike, poticanja komunikacije i interakcije, poticanja jezično-govornih vještina te osnaživanja roditelja za provođenje specifičnih stimulacija s djetetom. Projekcija potrebnih resursa temelji se na procjeni da uslugu pružaju rehabilitator/ica, logoped/inja i radni terapeut/kinja kao obavezni resurs, socijalni radnik/ca ili psiholog/inja ili socijalni pedagog/inja kao profesionalni pomagač te liječnik/ica ili medicinska sestra/tehničar ili fizioterapeut/kinja kao stručnjak u zdravstvu. Izračun potrebnih resursa temelji se na procjeni da u ukupnom radnom opterećenju rehabilitator/ica, logoped/inja i radni terapeut/kinja sudjeluju u omjeru 2 : 1 u odnosu na ostale stručnjake.

Ova se usluga prema Zakonu o socijalnoj skrbi (NN 18/22) pruža djetetu do navršene treće godine, a najdulje do navršene sedme godine. Zbog procjene potencijalnih korisnika i izračuna potrebnih resursa usluga je razdvojena na dobnu skupinu od 0 do 3 godine i na skupinu od 4 do 7 godina.

Za dobnu skupinu od 0 do 3 godine, upravo zbog dobi i obuhvata (djeca s odstupanjem u razvoju i razvojnim rizicima koja ne moraju razviti teškoće), procijenjeni intenzitet pružanja usluge u prosjeku je 3 sata tjedno, od čaga su 2 sata izravan rad s djetetom i obitelji, u trajanju od prosječno 20 tjedana u jednoj godini.

Za dobnu skupinu od 4 do 7 godina, gdje se može očekivati da će se broj potencijalnih korisnika znatno smanjiti, projekcija potrebnih resursa temelji se na procjeni da će se usluga pružati 4 sata tjedno, od čega su 3 sata izravan rad s djetetom i obitelji, u trajanju od 20 tjedana u jednoj godini.

Logopedska terapija, prema Pravilniku o minimalnim uvjetima za pružanje socijalnih usluga (NN 40/2014.), uključuje prevenciju, dijagnostiku i tretman poremećaja predverbalne, verbalne i neverbalne komunikacije, jezika (usmenog i pisanog), govora i glasa uslijed različitih uzroka; terapiju poremećaja gutanja, poremećaja verbalne i/ili neverbalne komunikacije u osoba s invaliditetom; rehabilitaciju jezično-govornih vještina; odabir i primjenu alternativnih oblika komunikacije. Projekcija potrebnih resursa temelji se na pretpostavci da se kao osnovna (besplatna) usluga u zajednici pruža djeci s težim poremećajima govorno-glasovne komunikacije. Uslugu pruža logoped/inja, a procjena radnog opterećenja temelji se na procjeni da se navedenoj korisničkoj skupini pruža u prosjeku 1,5 sat tjedno u trajanju od prosječno 20 tjedana godišnje.

Individualni socijalno-pedagoški rad s mladima s problemima u ponašanju uključuje socijalno-pedagošku procjenu, planiranje intervencije, individualno socijalno-pedagoško savjetovanje te, ovisno o potrebi, rad s roditeljima (Zakon o socijalno-pedagoškoj djelatnosti, NN 98/19, 18/22). Usluga može uključivati i suradnju te koordinaciju s odgojno-obrazovnim sustavom i drugim dionicima u lokalnoj zajednici te poslijetretmansku podršku djeci i mladima nakon izlaska iz ustanova ili penalnog sustava. U ovom se modelu projekcija resursa temelji na pretpostavci da će uslugu pružati socijalni pedagog/inja (kao obavezni pomagač), a u pružanju može sudjelovati socijalni radnik/ca ili psiholog/inja ili pedagog/inja (u odgojno-obrazovnom sustavu ili sustavu socijalne skrbi). Intenzitet usluge procjenjuje se na prosječno 1,5 sat tjedno po korisniku, što uključuje i aktivnosti multidisciplinarne suradnje. Trajanje usluge procjenjuje se na 20 tjedana u prosjeku po korisniku.

Radna terapija, prema Pravilniku o minimalnim uvjetima za pružanje socijalnih usluga, uključuje stručne postupke radi razvijanja sposobnosti za uključivanje korisnika u aktivnosti svakodnevnog života – samozbrinjavanje, produktivnost i slobodno vrijeme / razonoda / odmor; osposobljavanje radi održavanja stečenih funkcija i znanja; poticanje i osposobljavanje korisnika za nove načine provođenja određenih radnji pomoću posebnih pomagala ili bez njih. U modelu se projekcija potrebnih resursa temelji na procjeni da uslugu pruža radni terapeut/kinja ili osposobljeni fizioterapeut/kinja, i to u prosjeku 1 sat tjedno po korisniku 20 tjedana godišnje.

Terapijske aktivnosti za osobe s invaliditetom uključuju različite radno-okupacijske aktivnosti koje su u Pravilniku o minimalnim uvjetima za pružanje socijalnih usluga opisane kao radne aktivnosti. U ovom modelu polazi se od pretpostavke da uslugu osim radnog terapeuta ili fizioterapeuta pružaju obučeni paraprofesionalni i neprofesionalni pomagači te volonteri pa je veći udio radnog opterećenja projiciran za ove oblike podrške. Procjena se temelji i na pretpostavci da se usluga pruža do 5 sati tjedno po korisniku, u prosjeku, kontinuirano tijekom godine – 40 tjedana (s pauzama za zimski i ljetni odmor).

5.3.7. Prevencija u zajednici

Za određene preventivne usluge postignuta je visoka razina suglasnosti da su prioritetne i ubrajaju se u paket temeljnih socijalnih usluga u zajednici, a na osnovi broja potencijalnih korisnika i sadržaja usluge su pripisane razini odgovornosti jedinica lokalne samouprave.

Psihološko-edukativni i preventivni programi za mlade mogu uključivati raznovrsne aktivnosti koje provode različiti pružatelji usluga u odgojno-obrazovnom, zdravstvenom, socijalnom i civilnom sektoru. Projekcija potrebnih resursa temelji se na pretpostavci da se aktivnosti provode za grupe od 12 korisnika/ca i da su kombinacija aktivnosti/usluga koje pružaju profesionalni pomagači i stručnjaci u obrazovanju (direktni preventivni rad) te aktivnosti koje organiziraju i pružaju organizacije socijalne, kulturno-umjetničke, sportsko-rekreativne, tehničko-hobističke ili obrazovne djelatnosti u zajednici (indirektni preventivni rad). Procijenjeno je da će korisnik sudjelovati najviše 3 sata tjedno (2 puta po 1,5 sat) u aktivnostima direktnog i indirektnog preventivnog rada te da će po grupi korisnika ova vrsta aktivnosti trajati 12 tjedana u jednoj godini. U modelu su u ukupnom vremenskom opterećenju za ovu uslugu uračunati vrijeme pripreme profesionalnih i ne-profesionalnih pomagača te volonterski rad.

Psihološko-edukativni programi za zaštitu mentalnog zdravlja uključuju aktivnosti univerzalne prevencije - za opću populaciju građana, selektivne prevencije - za subpopulaciju u riziku od razvoja teškoća mentalnog zdravlja i indicirane prevencije - za osobe s već utvrđenim teškoćama mentalnog zdravlja (O'Connell i sur., 2009. str. 59 - 69).

Projekcija potrebnih resursa temelji se na pretpostavci da aktivnosti univerzalne prevencije uključuju raznovrsna predavanja, radionice, informativne materijale, kampanje za promociju zdravih stilova života koje pripremaju i provode profesionalni pomagači – socijalni radnik/ca ili psiholog/inja ili rehabilitator/ica ili specijalni pedagog/inja ili psihosocijalni savjetovatelj/ica, stručnjaci u zdravstvenom sektoru – liječnik/ica/ca ili medicinski tehničar/sestra te neprofesionalni pomagači - suradnici u pružateljima socijalnih usluga. U model je ukalkulirano da će, neovisno o broju potencijalnih korisnika, za pripremu i provedbu navedenih aktivnosti izvoditelji utrošiti 4 sata tjedno tijekom 4 mjeseca u jednoj godini. Također, pretpostavka je da se aktivnosti selektivne i indicirane prevencije provode za grupe od 15 korisnika, da se organiziraju jednom tjedno u trajanju od 1,5 sat po grupi tijekom 12 tjedana, a izvoditelji aktivnosti su profesionalni pomagači - socijalni radnik/ca ili psiholog/inja ili psihosocijalni savjetovatelj/ica ili rehabilitator/ica ili socijalni pedagog/inja. Imajući u vidu obuhvat,

odnosno kojim je korisnicima usluga namijenjena, selektivna i indicirana prevencija razlikuju se u sadržaju i metodama iako ih provode stručnjaci istoga profila u jednakom intenzitetu. U procjenu ukupno potrebnog vremena dodano je i vrijeme za pripremu aktivnosti.

Edukativna, preventivna i savjetodavna pomoć tijekom tranzicije u roditeljstvo i podrška trudnicama, roditeljima i novorođenčadi u zajednici uključuje tri vrste aktivnosti:

1. edukacija trudnica / budućih roditelja
2. savjetovanje roditelja novorođenčadi i savjetovanje o dojenju
3. škola za roditelje (djece predškolske dobi).

Edukacija trudnica / budućih roditelja provodi se za grupu korisnika u procijenjenom trajanju od 12 sati. Projekcija potrebnih resursa temelji se na pretpostavci da su izvoditelji ove edukacije stručnjaci u zdravstvu - liječnici i medicinske sestre/tehničari te da će se aktivnost provoditi s dvije grupe godišnje. U radno opterećenje uključeno je i vrijeme potrebno za pripremu i organizaciju edukacije.

Savjetovanje roditelja novorođenčadi i savjetovanje o dojenju provodi se individualno, stručnjaci su liječnici i medicinske sestre/tehničari, a projicirani intenzitet je u prosjeku 1,5 sat tjedno po korisniku/ci u trajanju od 12 tjedana (prva tri mjeseca).

Škola za roditelje provodi se za grupu od 8 do 12 roditelja prema postojećoj praksi (Pećnik i Starc, 2010.) tijekom najviše 11 radionica u trajanju od 2 sata. U modelu su predviđeni mogući izvoditelji profesionalni pomagači – socijalni radnik/ca ili psiholog/inja ili rehabilitator/ica ili socijalni pedagog/inja ili psihosocijalni savjetovatelj/ica te stručnjaci u obrazovanju - odgojitelj/ica predškolskog odgoja ili pedagog/inja. Projekcija vremenskog opterećenja temelji se na pretpostavci da se program provodi s dvije grupe roditelja godišnje te je uračunato vrijeme za pripremu i organizaciju škole za roditelje.

Programi podrške mladima s problemima ovisnosti, prema Smjernicama za psihosocijalni tretman ovisnosti o drogama u zdravstvenom, socijalnom i zatvorskom sustavu (Ured za suzbijanje zlouporabe droga, Vlada Republike Hrvatske, 2014.), obuhvaća psihološke intervencije te socijalne intervencije uključujući neformalne oblike podrške u provođenju slobodnog vremena. Stoga su planirani resursi u ovom modelu profesionalni pomagači - socijalni radnik/ca ili psiholog/inja ili rehabilitator/ica ili specijalni pedagog/inja ili psihosocijalni savjetovatelj/ica i neprofesionalni pomagači te volonteri u ustanovama, organizacijama i klubovima u zajednici. Projekcija potrebnih resursa temelji se na procjeni da će omjer podrške profesionalnih pomagača i ostalih sudionika biti 3 : 2 ukupno do 5 sati tjedno. Prosječno trajanje je 12 tjedana po korisniku u jednoj godini.

Osim navedenih usluga, postignuta je suglasnost o prioritetima u **programu smanjenja štete za ovisnike (*harm reduction*).** Prema Smjernicama za programe smanjenja šteta povezanih sa zloupotrebama droga (Ured za suzbijanje zlouporabe droga, Vlada Republike Hrvatske, 2016.), uključuje savjetovanje i psihosocijalnu podršku (motiviranje za tretman), nabavu, podjelu i prikupljanje materijala za injektiranje, postupanje s infektivnim otpadom, podjelu kondoma te educiranje i informiranje bilo u dnevnom boravku (*drop-in* centar) ili na ulici (*outreach*). U zdravstvenom sustavu - Zavodima za javno zdravstvo uključuje i dobrovoljno, anonimno i besplatno savjetovanje te testiranje na zarazne bolesti, intervencije smanjenja šteta povezanih s krvlju prenosivim bolestima (savjetovanje, motivacija za liječenje), primjenu supstitucijske farmakoterapije kod opijatskih ovisnika te cijepljenje. S obzirom na broj potencijalnih korisnika, sadržaj i uvjete pružanja, ova je usluga u modelu svrstana u regionalnu razinu odgovornosti.

5.4 USLUGE PODRŠKE U ZAJEDNICI ZA UKLJUČIVANJE U OBRAZOVANJE, ZAPOŠLJAVANJE I ŽIVOT ZAJEDNICE

U paket usluga o kojima postoji visoka razina konsenzusa da su prioritetne ubraja se niz usluga za različite skupine korisnika, a svrha im je stvaranje poticajnog okruženja te uključivanja u zajednicu, obrazovanje i zapošljavanje. Neke od njih su socijalne usluge u užem smislu (definirane i opisane u normativnom okviru), dok su druge socijalne usluge u širem smislu kako su određene u ovom modelu.

5.4.1. Boravak

Za socijalnu uslugu boravka postoji visoka razina suglasnosti da je prioritetna te da treba biti dostupna u zajednici za sljedeće skupine korisnika:

- djecu s teškoćama u razvoju
- djecu iz obitelji u riziku
- djecu i mlade s problemima u ponašanju
- osobe s problemima stanovanja (u beskućništvu)
- starije osobe
- osobe s invaliditetom
- osobe s teškoćama mentalnog zdravlja.

Korisničke skupine, sadržaj i uvjeti za socijalnu uslugu boravka opisani su u Pravilniku o minimalnim uvjetima za pružanje socijalnih usluga (NN 40/2014.) te su na osnovi toga procijenjeni i u panelima stručnjaka usuglašeni stručni resursi potrebni za osiguravanje ove usluge u zajednici. Budući da se u ovom modelu usluge pružaju u zajednici, a ne u institucionalnom kontekstu, polazi se od pretpostavke poludnevnog boravka, i to u trajanju od 4 sata dnevno, tj. 20 sati tjedno, za svaku korisničku skupinu.

Svi oblici boravka / dnevnog centra u predloženom modelu predviđeni su za klaster jedinica lokalne samouprave, izuzetak je poludnevni boravak za starije osobe, imajući u vidu broj potencijalnih korisnika te vrstu stručne podrške i odgovarajućih ljudskih resursa za provedbu ove usluge. Poludnevni boravak za starije predviđen je za razinu lokalne samouprave.

Vrste stručnih profila profesionalnih, paraprofesionalnih i neprofesionalnih pomagača koji mogu sudjelovati u pružanju ove socijalne usluge u zajednici i način raspodjele potrebnog stručnog rada predstavljen je u tablici 47.

Tablica 47. Procjena stručnih i ljudskih resursa te intenziteta i trajanja usluge boravka

KORISNIČKA SKUPINA	STRUČNI I LJUDSKI RESURSI	INTENZITET I TRAJANJE
Djeca s teškoćama u razvoju	Socijalni radnik/ca ili psiholog/inja ili rehabilitator/ica ili odgojitelj/ica predškolskog odgoja ili učitelj/ica ili nastavnik/ica ili pedagog/inja te njegovatelj/ica, radni terapeut/kinja, pomoćnik/ica u nastavi, stručni komunikacijski posrednik/ca	Procijenjeno je da se svaka usluga pruža 20 sati tjedno grupi do 10 korisnika. Usluga se pruža kontinuirano tijekom godine, s pauzom za zimski i ljetni odmor, odnosno u modelu se za izračun uzima 40 tjedana godišnje. Ukupno radno opterećenje u izračunu potrebnih resursa ravnomjerno je raspoređeno na sve projicirane stručne, para-profesionalne i neprofesionalne resurse.
Djeca iz obitelji u riziku	Socijalni radnik/ca ili psiholog/inja ili rehabilitator/ica ili socijalni pedagog/inja ili odgojitelj/ica predškolskog odgoja ili učitelj/ica ili nastavnik/ica ili pedagog/inja. Osim aktivnosti definiranih Pravilnikom za uslugu boravka za djecu bez odgovarajuće roditeljske skrbi, u modelu se predviđa i volonterska podrška u obavljanju svakodnevnih aktivnosti te organiziranju sportsko-rekreativnih i odgojno-obrazovnih sadržaja.	
Djeca i mladi (do 18 godina) s problemima u ponašanju		
Dnevni centar za osobe s problemima stanovanja	Osim aktivnosti predviđenih Pravilnikom za uslugu boravak za beskućnike, u ovu je uslugu u modelu uključeno i informiranje, savjetovanje te pomoć vezana uz ostvarivanje prava, informiranje i pomoć u traženju posla/zapošljavanju, kao i podrška u jačanju radnih kompetencija. Kao izvoditelji ovih aktivnosti predviđeni su socijalni radnik/ca te suradnik - neprofesionalni pomagač i volonter pružatelja socijalnih usluga (ustanove ili udruge).	Procijenjeno je da se svaka usluga pruža grupi od 7 (osobe s invaliditetom) do najviše 15 korisnika 20 sati tjedno. Usluga se pruža kontinuirano tijekom godine s pauzom za zimski i ljetni odmor, odnosno u modelu se za izračun uzima 40 tjedana godišnje. U izračunu se ukupno radno opterećenje ravnomjerno raspoređuje na sve predložene profesionalne, paraprofesionalne i neprofesionalne resurse.
Starije osobe	Socijalni radnik/ca, njegovatelj/ica, radni terapeut/kinja ili fizioterapeut/kinja, gerontodomaćin/ca te volonteri koji sudjeluju u organizaciji i podršci u aktivnom provođenju slobodnog vremena.	
Osobe s invaliditetom	Socijalni radnik/ca ili psiholog/inja ili rehabilitator/ica ili socijalni pedagog/inja; med. sestra/tehničar ili njegovatelj/ica ili radni terapeut/kinja ili fizioterapeut/kinja; volonteri koji sudjeluju u organizaciji i podršci u aktivnom provođenju slobodnog vremena.	
Osobe s teškoćama mentalnog zdravlja		

5.4.2. Socijalizacijske i razvojne aktivnosti za djecu

Ova socijalna usluga u zajednici namijenjena je djeci u materijalnoj deprivaciji radi izjednačavanja mogućnosti i poticanja razvoja te socijalnog i odgojno-obrazovnog uključivanja ove skupine djece u riziku. Usluga uključuje poticajne kreativne i odgojno-obrazovne grupne aktivnosti i radionice te sportsko-rekreativne grupne aktivnosti. U model je uključena procjena da se usluga pruža u trajanju od maksimalno 3 sata tjedno (2 puta po 1,5 sat) za grupu od šest do osam djece sličnog uzrasta. Stručni resursi koji mogu sudjelovati u pružanju socijalizacijskih i razvojnih aktivnosti za djecu u riziku su: psiholog/inja ili rehabilitator/ica ili logoped/inja ili odgojitelj/ica predškolskog odgoja ili učitelj/ica ili nastavnik/ica ili pedagog/inja te volonteri u pružateljima socijalnih usluga (ustanovama i udrugama), kulturno-umjetničkim organizacijama, sportsko-rekreativnim organizacijama i obrazovnim ustanovama.

U model je uključena procjena da se ova usluga pruža okvirno 5 mjeseci ili 20 tjedana u godini za 6,5 grupa djece s obzirom na očekivani broj djece u materijalnoj deprivaciji u zajednici od 5000 stanovnika (46). Ova usluga prema svojoj svrsi i sadržaju, potrebnim stručnim i infrastrukturnim resursima te potencijalnom broju korisnika pripada razini odgovornosti jedinica lokalne samouprave.

5.4.3. Usluge u zajednici za provođenje slobodnog vremena

Usluge organiziranog i strukturiranog provođenja slobodnog vremena u multifunkcionalnim prostorima u zajednici prepoznate su kao prioritetne za starije osobe, osobe s teškoćama mentalnog zdravlja i mlade. Kao i prethodna socijalna usluga, pripadaju razini odgovornosti jedinica lokalne samouprave

Centar za starije osobe u zajednici s organiziranim kulturnim, umjetničkim, sportskim i drugim aktivnostima u ovom modelu je usluga u zajednici, u čijem pružanju mogu sudjelovati neprofesionalni pomagači, odnosno suradnici u pružateljima socijalnih usluga, kulturno-umjetničkim organizacijama, sportsko-rekreativnim klubovima i hobističkim klubovima te volonteri ovih organizacija i klubova. Uključujući aktivnosti pripreme i koordinacije, ukupno vremensko opterećenje ovih stručnih resursa procijenjeno je na 40 sati tjedno, od čega je najmanje 20 sati izravan rad s korisnicima. Usluga se pruža neovisno o broju potencijalnih korisnika koji je koriste u skladu sa svojim interesima i potrebama. Trajanje je u jednoj godini procijenjeno na 40 tjedana, što uključuje pauzu za zimski i ljetni odmor.

Organizirane kreativne, rekreativne i socijalizacijske aktivnosti strukturiranog provođenja slobodnog vremena za osobe s teškoćama mentalnog zdravlja osim poticanja socijalnog uključivanja treba biti i u funkciji poticanja oporavka osoba s težim poremećajima mentalnog zdravlja te u njihovom pružanju sudjeluju, pored neprofesionalnih pomagača i volontera, i psiholog/inja ili psihosocijalni savjetovatelj/ica (stručnjak s kompetencijama za provođenje savjetovanja ili psihoterapije). Uključujući aktivnosti pripreme i koordinacije, ukupno vremensko opterećenje svih navedenih stručnih resursa procijenjeno je na 10 sati tjedno, od čega je najmanje 7,5 sati izravnog rada s korisnicima (3 puta tjedno po 2,5 sata). Usluga se s navedenim stručnim resursima može pružati neovisno o broju korisnika, kontinuirano tijekom godine, odnosno 40 tjedana (s pauzom za zimski i ljetni odmor).

Infocentar za mlade u zajednici je socijalna usluga koja je među prioritetne za ovu skupinu korisnika uvrštena na temelju rasprave u panelu stručnjaka, ali je u sadržajnom smislu dopunjena u odnosu na informativne centre za mlade koji se trenutačno projektno financiraju. Zaključeno je da bi ova

usluga, osim informiranja i davanja savjeta u područjima od interesa za mlade (kako je predviđeno propozicijama natječaja za Infocentre za mlade koji provodi Središnji državni ured za demografiju i mlade[70]), uključivala aktivnosti dosezanja skupina mladih u riziku ili skupina s posebnim interesima. Sadržaj ove usluge u zajednici trebao bi biti polivalentni program koji objedinjuje informiranje, preventivne aktivnosti i potiče participaciju mladih u zajednici, uključujući i programe koje vode korisnici. U model je uračunata pretpostavka da su aktivnosti informativnog centra dostupne korisnicima najmanje 20 sati tjedno, 40 tjedana godišnje, neovisno o potencijalnom broju korisnika. U ovom radnom opterećenju u pripremi, organizaciji, koordinaciji i izvođenju aktivnosti, osim samih korisnika, mogu sudjelovati profesionalni pomagači (socijalni radnik/ca ili psiholog/inja ili rehabilitator/ica ili socijalni pedagog/inja), stručnjaci u području odgoja i obrazovanja (učitelj/ica ili nastavnik/ica ili kineziolog/inja ili pedagog/inja), neprofesionalni pomagači – suradnici u pružateljima socijalnih usluga, kulturno-umjetničkim organizacijama, sportsko-rekreativnim i hobističkim klubovima te volonteri ovih organizacija, ustanova i klubova u zajednici.

5.4.4. Usluge pomoći i podrške u obrazovanju i zapošljavanju

Postoji visoki stupanj suglasnosti da su pomoć i podrška u obrazovanju i zapošljavanju prioritetne usluge za djecu i mlade iz obitelji u siromaštvu, odrasle građane u siromaštvu, osobe s invaliditetom i žrtve obiteljskog nasilja.

Pomoć i podrška u stjecanju kvalifikacija i zapošljavanju za žrtve obiteljskog nasilja, građane u siromaštvu i osobe s invaliditetom organiziraju se na razini klastera jedinica lokalne samouprave.

Pomoć i podrška u stjecanju kvalifikacija i zapošljavanju za žrtve obiteljskog nasilja. Sadržaj ove usluge uključuje savjetovanje za osnaživanje i prevladavanje teškoća, podršku u usvajanju ili obnavljanju radnih navika, razvoj socijalnih i komunikacijskih vještina, praktičnu pomoć i podršku u ostvarivanju prava i korištenju mjera aktivne politike zapošljavanja te praktičnu pomoć i podršku u traženju posla. S obzirom na sadržaj, procijenjeno je da u pružanje usluge trebaju biti uključeni profesionalni pomagači – socijalni radnik/ca ili psiholog/inja ili stručnjak s kompetencijama za psihosocijalno savjetovanje/psihoterapiju, a osim njih i neprofesionalni pomagači koji su suradnici i volonteri u ustanovama ili udrugama pružateljima socijalnih usluga. Procijenjeni intenzitet usluge je 3 sata tjedno po korisniku/ci, u što se ubrajaju izravan rad s korisnikom/com i suradnja s drugim relevantnim dionicima. Ukupno radno opterećenje ravnomjerno je raspodijeljeno u izračunu na sve predviđene profesionalne i neprofesionalne pomagače. U model je uračunata pretpostavka da ova usluga u prosjeku traje 12 tjedana po korisniku/ci u jednoj kalendarskoj godini.

Pomoć i podrška u stjecanju kvalifikacija i zapošljavanju za građane u siromaštvu. Aktivnosti u okviru ove usluge mogu uključivati individualno savjetovanje za osnaživanje i prevladavanje teškoća, podršku u usvajanju ili obnavljanju radnih navika, razvoju socijalnih i komunikacijskih vještina, praktičnu pomoć i podršku u ostvarivanju prava i korištenju mjera aktivne politike zapošljavanja, uključujući programe obrazovanja i osposobljavanja te praktičnu pomoć i podršku u traženju posla i zapošljavanju. U pružanju ove usluge mogu sudjelovati svi profesionalni pomagači te neprofesionalni pomagači – suradnici i volonteri ustanova i udruga pružatelja socijalnih usluga. Projekcija potrebnih resursa temelji se na procjeni da se ova usluga pruža u prosjeku 1,5 sat tjedno jednom korisniku te da traje u prosjeku 10 tjedana za jednog korisnika/cu. U panelu stručnjaka procijenjeno je da se sadržaj usluge,

70 https://demografijaimladi.gov.hr/istaknute-teme/mladi-4064/informiraj-se-4078 lokalni-info-centri-za-mlade-4080/4080

s obzirom na karakteristike korisnika, većim dijelom može temeljiti na praktičnoj pomoći i podršci te da je u ukupnom radnom opterećenju u modelu veći udio neprofesionalnog pomagačkog rada.

Pomoć i podrška u stjecanju kvalifikacija i zapošljavanju za osobe s invaliditetom. Osim aktivnosti koje su navedene u prethodnoj usluzi, pomoć i podrška u stjecanju kvalifikacija i zapošljavanju za osobe s invaliditetom uključuje i profesionalno/karijerno savjetovanje (s naglaskom na osnaživanje postojećih sposobnosti) te posredovanje i praktičnu podršku u pristupu drugim uslugama vezano za zapošljavanje i rad (osobna asistencija, videći pratitelj, specijalizirani prijevoz, asistivna tehnologija i sl.). S obzirom na sadržaj, u pružanju socijalne usluge sudjelovat će profesionalni pomagač (socijalni radnik/ca ili rehabilitator/ica ili socijalni pedagog/inja ili psiholog/inja), suradnik u pružateljima socijalnih usluga – neprofesionalni pomagač, volonteri te prema potrebi osobni asistent/kinja, videći pratitelj/ica ili prevoditelj/ca znakovnog jezika. Projekcija potrebnih resursa temelji se na procjeni da je intenzitet usluge u prosjeku 1,5 sat po korisniku tjedno te da će jedan korisnik/ca uslugu dobivati prosječno 16 tjedana. U ukupnom radnom opterećenju u modelu veći je udio paraprofesionalnog i neprofesionalnog rada pomagača sukladno procjeni panela stručnjaka o sadržaju ove usluge.

Pomoć i podrška u obrazovanju za djecu i mlade iz obitelji u siromaštvu te socijalno uključivanje ovisnika i osoba s teškoćama mentalnog zdravlja usluge su koje u ovom modelu pripisujemo odgovornosti jedinica lokalne samouprave za planiranje i organizaciju.

Pomoć i podrška u obrazovanju za djecu i mlade iz obitelji u siromaštvu. Aktivnosti u okviru ove usluge uključuju pomoć i podršku u usvajanju i unapređivanju tehnika učenja, stvaranju i održavanju radnih navika te pouku - pomaganje u razumijevanju školskog gradiva, domaćim zadaćama. Aktivnosti mogu uključivati i osiguravanje resursa za učenje, uključujući digitalne resurse, olakšavanje pristupa informacijama i odgojno-obrazovnim sadržajima u zajednici kako bi se za djecu u siromaštvu izjednačile mogućnosti i prilike u obrazovnom sustavu. S obzirom na sadržaj, u pružanju ove usluge trebaju sudjelovati stručnjaci iz obrazovnog sustava – učitelj/ica ili nastavnik/ica i/ili pedagog/inja te neprofesionalni pomagači i volonteri iz ustanova, organizacija i klubova u području socijalnih usluga, kulturno-umjetničkog, sportsko-rekreativnog, tehničko-hobističkog i obrazovnog djelovanja. Projekcija potrebnih resursa uključuje pretpostavku da se ova usluga pruža u grupi od prosječno šestero djece, slične dobi i obrazovnih potreba, te u intenzitetu od 2 do 3 puta tjedno u trajanju od 1,5 sat. Ukupno je radno opterećenje u izračunu potrebnih resursa ravnomjerno raspoređeno između svih profesionalnih, neprofesionalnih i volonterskih pomagača.

Programi socijalnog uključivanja ovisnika i osoba s teškoćama mentalnog zdravlja u zajednici. Sadržaj usluge temelji se na projektima resocijalizacije koje financira Ured za suzbijanje droga i odnosi se na ovisnike, a primarno je usmjeren na poticanje i pomaganje obrazovanja i zapošljavanja korisnika (Ured za suzbijanje zlouporabe droga, Vlada Republike Hrvatske, 2022.). U ovom je modelu usluga proširena tako da uključuje pomoć i podršku u statusnim i praktičnim pitanjima (stanovanje, ostvarivanje prava), pomoć i praktičnu podršku u uključivanju u sportske, kulturne, edukativne i slične aktivnosti u zajednici uz stručnu pomoć u prevenciji relapsa. Također, usluga je proširena na osobe s teškoćama mentalnog zdravlja, osobito nakon hospitalizacije, radi uključivanja u život zajednice. Ovako opisanu uslugu mogu pružati profesionalni pomagači - socijalni radnik/ca ili psiholog/inja ili rehabilitator/ica ili socijalni pedagog/inja ili psihosocijalni savjetovatelj/ica, stručnjaci u zdravstvu - liječnik/ica ili medicinska sestra/tehničar te neprofesionalni pomagači i volonteri u ustanovama, organizacijama i klubovima socijalnog, kulturno-umjetničkog, sportsko-rekreativnog i/ili hobističkog djelovanja u zajednici. Projekcija potrebnih resursa temelji se na procjeni da je intenzitet ove usluge do 5 sati tjedno po korisniku. Izračun potrebnih resursa u modelu temelji se na pretpostavci o jednakim udjelima profesionalne i neprofesionalne podrške. Trajanje usluge procijenjeno je na 20 tjedana u godini.

U ovu skupinu socijalnih usluga svrstavamo i **besplatnu pravnu pomoć** za koju je postignuta visoka razina suglasnosti da je prioritetna za građane u siromaštvu, žrtve obiteljskog nasilja te pripadnike romske nacionalne manjine i izbjeglice. Kako je besplatna pravna pomoć regulirana zakonom (Zakon o besplatnoj pravnoj pomoći, NN 143/13, 98/19) te nadležno ministarstvo vodi evidenciju pružatelja besplatne pravne pomoći (upravnih tijela u županijama te ovlaštenih pravnih klinika i udruga), ova je usluga svrstana u regionalnu razinu odgovornosti za planiranje i organizaciju socijalnih usluga. Prema procjeni potencijalnih korisnika, na 25 000 stanovnika bi 300 korisnika moglo zatražiti besplatnu pravnu pomoć.

5.5 USLUGE ASISTENCIJE ZA FUNKCIONIRANJE U SVAKODNEVNOM ŽIVOTU I POMOĆ U DOMU KORISNIKA

5.5.1. Pomoć i podrška u kući

U okviru ove skupine razlikuju se usluge koje se pružaju djelomično funkcionalno ovisnim korisnicima, gdje je fokus primarno na praktičnoj podršci korisniku u samostalnom življenju i obavljanju svakodnevnih aktivnosti, te usluge funkcionalno potpuno ovisnim korisnicima u kojima je fokus na zdravstvenoj njezi.

Socijalna usluga pomoći i podrške u obavljanju svakodnevnih aktivnosti i samostalnom stanovanju obuhvaća aktivnosti opisane u Pravilniku o minimalnim uvjetima za pružanje socijalnih usluga (NN 40/2014.) za uslugu pomoć u kući: obavljanje kućnih poslova u domu korisnika, održavanje osobne higijene u domu korisnika te uređenje okućnice i tehnički poslovi u domu korisnika. Istraživanje pokazuje visoku razinu suglasnosti da je ova usluga prioritetna za dvije skupine korisnika, a način procjene potrebnih resursa prikazan je u tablici 48.

Tablica 48. Procjena stručnih i ljudskih resursa te intenziteta i trajanja usluge pomoći u kući

KORISNIČKA SKUPINA	STRUČNI I LJUDSKI RESURSI	INTENZITET I TRAJANJE
Starije osobe	Gerontodomaćin/ca i suradnik/ca ustanove/organizacije pružatelja socijalnih usluga u zajednici za poslove organizacije i koordinacije U pružanju ove usluge mogu sudjelovati i volonteri ustanova/ organizacija u zajednici za poslove nabave i dostave namirnica, lijekova i drugih potrepština, obavljanje kućanskih poslova i organiziranje/ strukturiranje slobodnog vremena	Projekcija resursa za ovu korisničku skupinu temelji se na procjeni da će korisnik/ ca uslugu dobivati u prosjeku 3 sata tjedno kontinuirano tijekom godine (52 tjedna). U projekciju je uključeno i puno radno vrijeme jednog/e suradnika/ce za organizaciju i koordinaciju.
Osobe s invaliditetom		Projekcija resursa temelji se na procjeni da će korisnik/ ca dobivati uslugu 10 sati tjedno, od čega 5 sati uslugu paraprofesionalnog pomagača i 5 sati volontersku podršku. Usluga se pruža kontinuirano tijekom godine, odnosno 52 tjedna.

Ostale vrste pomoći i podrške u kući koje su se u istraživanju pokazale kao prioritetne uključuju znatan udio zdravstvene njege. Korisničke skupine za koje je ova usluga prioritetna i način procjene potrebnih resursa prikazan je u tablici 49.

Tablica 49. Procjena stručnih i ljudskih resursa te intenziteta i trajanja usluga pomoći i njege u kući

KORISNIČKA SKUPINA	STRUČNI I LJUDSKI RESURSI	INTENZITET I TRAJANJE
Stanovanje starije osobe u vlastitom domu uz intenzivnu i kontinuiranu podršku	Njegovatelj/ica Gerontodomaćin/ca	Projekcija potrebnih resursa temelji se na procjeni da se ove usluge pružaju svakodnevno u trajanju od 8 sati dnevno (56 tjedno) kontinuirano tijekom godine (52 tjedna) Uračunat je odnos radnog opterećenja zdravstvene njege i pomoći u kući od 1 : 2
Kontinuirana njega u kući za osobe oboljele od Alzheimerove demencije		
Cjelodnevna skrb i njega u kući osobi s težim/teškim invaliditetom		Projekcija se temelji na procjeni da se ova usluga pruža svakodnevno u prosjeku 12 sati (od 8 do 16 sati, ovisno o potrebama primarnog njegovatelja u obitelji), kontinuirano tijekom godine, s pauzom za odmor, odnosno 48 tjedana Radno opterećenje ravnomjerno je raspoređeno između zdravstvene njege i pomoći u kući
Privremena njega starije osobe u kući zbog predaha od skrbi primarnog njegovatelja		Projekcija se temelji na procjeni da se ova usluga pruža korisniku u intenzitetu od sveobuhvatne do svakodnevne intenzivne podrške ili u prosjeku 140 sati tjedno, a trajanje je 4,5 tjedna godišnje. Uračunati odnos radnog opterećenja zdravstvene njege i pomoći u kući je 1 : 2
Privremeni njegovatelj u obitelji osobe s invaliditetom zbog predaha od skrbi primarnog njegovatelja		Projekcija se temelji na procjeni da se ova usluga pruža korisniku u intenzitetu od sveobuhvatne do svakodnevne intenzivne podrške ili u prosjeku 140 sati tjedno, a trajanje je 4,5 tjedna godišnje. Uračunati odnos radnog opterećenja zdravstvene njege i pomoći u kući je 1 : 1
Privremeni njegovatelj u obitelji za dijete s teškoćama u razvoju zbog predaha od skrbi		Projekcija se temelji na procjeni da se ova usluga pruža korisniku u intenzitetu sveobuhvatne podrške - 168 sati tjedno, da je pruža njegovatelj/ica te da je trajanje 4,5 tjedna godišnje.

Njega u kući	Liječnik/ica obiteljske medicine medicinska sestra/ tehničar njegovatelj/ica	Projekcija se temelji na procjeni da se usluga pruža korisniku u prosječnom trajanju od 11 sati tjedno, gdje je udio rada njegovatelja/ice u odnosu na medicinsku sestru/tehničara 2 : 1, uključeno je i praćenje liječnik/icaa. Trajanje se procjenjuje na 6 tjedana (30 dana). Procjene se temelje na relevantnom Pravilniku[71].
Palijativna skrb u kući	Predstavlja zdravstvenu njegu u kući s palijativnim pristupom u čijem pružanju sudjeluju: liječnik/ica, medicinska sestra/tehničar i njegovatelj/ica te ovisno o potrebi socijalni radnik/ca, psiholog/ inja i drugi suradnici te volonteri (iz ustanova i udruga pružatelja socijalnih usluga)	Prema relevantnom Pravilniku[72] procjena potrebnih resursa temelji se na pružanju njege u kući s palijativnim pristupom (4. stupanj) u prosjeku 14 sati tjedno tijekom 24 tjedna. U izračunu je udio zdravstvene njege (medicinski tehničar/sestra i njegovatelj/ica) uključen s pola ukupnog radnog opterećenja, a druga polovina je ravnomjerno raspoređena na ostale pomagače.

5.5.2. Usluge asistencije i posredovanja u prevladavanju komunikacijskih teškoća

Sljedeći oblici asistencije osobama s invaliditetom u modelu svrstani su u razinu odgovornosti klastera jedinica lokalne samouprave.

Osobna asistencija za osobe s invaliditetom, prema uvjetima natječaja na temelju kojih se ova usluga financira (Ministarstvo rada, mirovinskog sustava, obitelji i socijalne politike, 2021.), podrazumijeva osobnu brigu, pomoć u obavljanju kućanskih poslova, obavljanje kupnje, pomoć u fizičkim potrebama, obavljanje administrativnih poslova, pomoć u uspostavljanju i olakšavanju komunikacije, pratnju i pomoć u različitim socijalnim aktivnostima i drugo. Uslugu pruža osobni asistent/kinja osobe s invaliditetom, a prema sadašnjoj praksi riječ je o 20 sati tjedno. Procjena potrebnih resursa temelji se na pretpostavci da se usluga pruža kontinuirano - 52 tjedna u godini.

Radni asistent osobi s invaliditetom pruža podršku na njezinu radnome mjestu pri uhodavanju u konkretan posao, uključivanju u postojeći radni tim poslodavca i stvaranju mreže socijalnih odnosa. Stupanj podrške vremenom se smanjuje kako se uključena osoba prilagođava na posao i postojeći

71 Pravilnik o uvjetima i načinu ostvarivanja prava iz obveznog zdravstvenog osiguranja na zdravstvenu njegu u kući osigurane osobe NN 88/2010.

72 ibid.

tim. Uslugu pruža radni asistent/kinja osobe s invaliditetom. Procjena potrebnih resursa temelji se na pretpostavci da se usluga korisniku pruža 30 sati tjedno u trajanju od 3 mjeseca.

Videći pratitelj osigurava pratnju, pomoć i podršku u različitim svakodnevnim i socijalnim aktivnostima, ovisno o potrebi slijepe osobe. Procjena potrebnih resursa temelji se na pretpostavci da se usluga korisniku pruža u prosjeku 5 sati tjedno, kontinuirano tijekom cijele godine, odnosno 52 tjedna.

Prevoditelj/ca znakovnog jezika osigurava pomoć i podršku u različitim svakodnevnim i socijalnim aktivnostima gluhim i gluho-slijepim osobama. Preduvjet je poznavanje hrvatskog znakovnog jezika. Procjena potrebnih resursa temelji se na pretpostavci da se usluga po korisniku pruža u prosjeku 2,5 sata tjedno kontinuirano tijekom godine, odnosno 52 tjedna.

Dvije usluge asistencije djeci s teškoćama u razvoju svrstane su u razinu odgovornosti za planiranje i organizaciju socijalnih usluga jedinica lokalne samouprave.

Pomoćnik/ica u nastavi i **stručni komunikacijski posrednik/ca** pruža neposrednu potporu učeniku u odgojno-obrazovnom procesu kako je propisano Pravilnikom o pomoćnicima u nastavi i stručnim komunikacijskim posrednicima (NN 102/2018.). Procjena potrebnih resursa temelji se na pretpostavci da se usluga korisniku/cima pruža u prosjeku 30 sati tjedno tijekom školske godine, odnosno 37 tjedana.

Na temelju rasprave u stručnom panelu u paket temeljnih socijalnih usluga uvrštene su usluge asistencije i posredovanja za pripadnike nacionalnih manjina i izbjeglice. Te su usluge, s obzirom na potencijalni broj korisnika i neravnomjeran razmještaj, u modelu dodijeljene regionalnoj razini odgovornosti.

Romski pomagač u pripremi za školu i nastavi pruža podršku učenicima pripadnicima romske nacionalne manjine asistencijom u nastavi, u produženom boravku ili tijekom izvannastavnih aktivnosti, u interkulturalnom i komunikacijskom posredovanju između škole i obitelji. Romski pomagač prioritetna je socijalna usluga za djecu pripadnike romske nacionalne manjine kada oni i/ili njihove obitelji nedovoljno poznaju hrvatski jezik, a cilj je otklanjanje prepreka za uključivanje u obrazovni proces i zajednicu. Prema procijenjenom broju potencijalnih korisnika na regionalnoj razini, na 25 000 stanovnika potrebno je osigurati romskog pomagača za osam korisnika/ca. U zajednicama s većim udjelom pripadnika romske nacionalne manjine povećava se broj potencijalnih korisnika ove usluge proporcionalno tom udjelu. Uz pretpostavku da jedan romski pomagač pruža komunikacijsku podršku za dvoje djece i da to radi u prosjeku 30 sati tjedno tijekom školske godine (37 tjedana), na navedenoj razini potrebno je osigurati dva romska pomagača koji rade u punom radnom vremenu.

Prevoditelj/ca romskog jezika pruža komunikacijsku podršku pripadnicima romske nacionalne manjine s nedovoljnim znanjem hrvatskog jezika prilikom ostvarivanja prava, izricanja i provedbe različitih mjera te pružanja javnih usluga. Prema procijenjenom broju potencijalnih korisnika, na regionalnoj razini na 25 000 stanovnika potrebno je osigurati prevoditelja/icu romskog jezika za sedam korisnika, a taj se broj povećava u zajednicama s većim udjelom pripadnika romske nacionalne manjine, i to proporcionalno tom udjelu. Uz pretpostavku da korisnik dobiva uslugu prevođenja 2,5 sata tjedno 40 tjedana u godini, na ovoj je razini potrebno osigurati trećinu punog radnog vremena prevoditelja/ice romskog jezika za pružanje ove usluge.

Prevođenje i tumačenje za izbjeglice i migrante pruža se korisnicima koji ne znaju ili nedovoljno znaju hrvatski jezik prilikom ostvarivanja prava i osiguravanja pristupa javnim uslugama. Temeljem projekcije potencijalnih korisnika ove usluge na regionalnoj razini, na 25 000 stanovnika može se očekivati da će šest do sedam korisnika trebati ovu vrstu podrške. Uz pretpostavku da će korisnik prosječno koristiti uslugu prevođenja i tumačenja 5 sati tjedno tijekom 40 tjedana godišnje, treba na ovoj razini imati prevoditelje na raspolaganju za 1260 sati godišnje.

Interkulturni medijator za izbjeglice i migrante olakšava socijalno uključivanje osoba drugačije jezične, etničke i kulturalne pozadine te pruža podršku u socijalno-kulturnoj orijentaciji i premošćivanju kulturalnih barijera osobama koje se uključuju u novu sredinu i dionicima u lokalnoj zajednici. Imajući u vidu procijenjeni broj potencijalnih korisnika, na 25 000 stanovnika mogu se očekivati tri do četiri korisnika ove usluge. Uz pretpostavku da će se usluga pružati po korisniku/ci 2,5 sata tjedno, tijekom 40 tjedana godišnje, potrebno je na ovoj razini osigurati interkulturne medijatore za 130 sati godišnje.

Tečaj hrvatskog jezika za izbjeglice. Program učenja hrvatskog jezika, povijesti i kulture za azilante i strance pod supsidijarnom zaštitom radi uključivanja u društvo predviđa osnovni tečaj od 280 sati, koji je ekvivalent razini A1.0 prema Zajedničkom europskom referentnom okviru za jezike i "omogućuje najosnovniju komunikaciju na hrvatskome jeziku" (Odluka o Programu učenja hrvatskoga jezika, povijesti i kulture za azilante i strance pod supsidijarnom zaštitom radi uključivanja u hrvatsko društvo, NN 154/2014.). Kako je u panelu stručnjaka zaključeno da učenje hrvatskog jezika na toj razini i prema predviđenom Programu ne ispunjava svrhu uključivanja u društvo, za ovaj model predložena je satnica koju u tečajevima hrvatskog jezika kao drugog jezika (za strance) ima Croaticum – Centar za hrvatski kao drugi i strani jezik - 225 školskih sati po semestru, 3 školska sata svaki radni dan tijekom 15 tjedana (Croaticum - Centar za hrvatski kao drugi i strani jezik, Filozofski fakultet Sveučilišta u Zagrebu 2022.). Ovu je uslugu potrebno osigurati za 6,3 korisnika na svakih 25 000 stanovnika.

5.5.3. Servisi u zajednici za prevladavanje funkcionalnih teškoća građana i podmirenje osnovnih potreba

Prilagođeni prijevoz i pratnja. Postoji visoki stupanj suglasnosti o prioritetima usluga prilagođenog ili specijaliziranog prijevoza, uz pratnju, i kad je riječ o učenicima s teškoćama u razvoju, starijim i nemoćnim osobama te osobama s invaliditetom.

Prilagođeni prijevoz za učenike s teškoćama u razvoju reguliralo je i financira ga nadležno Ministarstvo znanosti i obrazovanja (2021.), a razina odgovornosti i sufinanciranja je na županiji / Gradu Zagrebu, što u ovom modelu znači da je na regionalnoj razini odgovornost za planiranje i organizaciju socijalnih usluga.

Za ostale oblike prilagođenog ili specijaliziranog prijevoza i pratnje u ovom modelu odgovorne su jedinice lokalne samouprave. Potrebni resursi i način njihove procjene predstavljeni su u tablici 50.

Tablica 50. Procjena stručnih i ljudskih resursa te intenziteta i trajanja usluga prijevoza

KORISNIČKA SKUPINA	STRUČNI I LJUDSKI RESURSI	INTENZITET I TRAJANJE
Organizirani prijevoz i pratnja za starije i nemoćne osobe	Vozač/ica Pratnja: gerontodomaćin/ca ili volonter pružatelja socijalnih usluga	Projekcija potrebnih resursa temelji se na pretpostavci da se u jednom vozilu može voziti do 7 starijih i nemoćnih osoba uz pratnju te da se usluga pruža kontinuirano tijekom godine, odnosno 52 tjedna
Specijalizirani prijevoz i pratnja za osobe s invaliditetom	Vozač/ica Pratnja: prevoditelj/ca znakovnog jezika ili videći pratitelj/ica ili osobni asistent/kinja ili volonter pružatelja socijalnih usluga	Projekcija potrebnih resursa temelji se na pretpostavci da se u jednom vozilu može voziti do 5 osoba s invaliditetom uz pratnju te da se usluga pruža kontinuirano tijekom godine, odnosno 52 tjedna

Podrška na daljinu. Usluge podrške na daljinu, s obzirom na obuhvat te infrastrukturne i stručne resurse, u ovom su modelu pripisane regionalnoj razini odgovornosti.

SOS telefon za žrtve nasilja – besplatna telefonska linija za pružanje informacija i savjetodavne psihosocijalne i pravne podrške. U organizaciji i pružanju ove usluge uz profesionalne pomagače, socijalnog radnika/ce, psihologa/inje, psihosocijalnog savjetovatelja/ice te pravnika/ice sudjeluju educirani volonteri. Osim edukacije volontera, potrebno je i volonterima i profesionalnim pomagačima osigurati kontinuiranu superviziju.

Alarmni dojavni sustav za starije osobe, kako je pokazala praksa Udruge Prisutnost, zahtijeva telekomunikacijsku opremu - socijalni uređaj koji se nalazi kod korisnika i povezan je s dojavnim centrom u kojem je osigurano dežurstvo operatera. U dojavnom centru nalaze se posebna telefonska centrala za prijem alarmnog poziva i identificiranju korisnika koji je aktivirao alarm, računalo na koji je priključena centrala i instaliran program s podacima o korisnicima te programskim funkcijama za komunikaciju (Udruga Prisutnost, 2022.). Za organizaciju i pružanje usluge potrebno je osigurati dežurstvo operatera/volontera, njihovu obuku te koordinaciju, tehničku i stručnu podršku profesionalnih ili neprofesionalnih pomagača (suradnika ustanova ili organizacija pružatelja socijalnih usluga).

Dojavni sustav za osobe s invaliditetom u krizama i katastrofama funkcionira po istom principu kao i dojavni sustav za starije osobe. No ne osigurava stalno dežurstvo nego se aktivira u slučaju katastrofa i kriza radi osiguravanja i olakšavanja informiranja i komuniciranja s osobama s invaliditetom ovisno o njihovim potrebama.

Usluge osiguravanja prehrane siromašnim stanovnicima. Istraživanje je pokazalo da je nekoliko usluga za osobe u siromaštvu povezanih s osiguravanjem prehrane prioritetno, a to su pučka kuhinja, priprema i dostava toplih obroka za starije osobe te dostava namirnica i toplih obroka siromašnim građanima. Kako ove usluge zahtijevaju slične, odnosno dijeljene resurse, procjena potreba za tim resursima prikazana je u tablici 51.

Tablica 51. Procjena stručnih i ljudskih resursa te intenziteta i trajanja usluga osiguravanja prehrane

USLUGA	STRUČNI I LJUDSKI RESURSI	INTENZITET I TRAJANJE
Pučka kuhinja	Kuhar / pomoćni kuhar Neprofesionalni pomagač - suradnik u ustanovi/ organizaciji pružatelju socijalnih usluga za poslove organizacije i koordinacije Vozač/ica	Za pripremu obroka za 50 korisnika 20 sati tjedno kuhar i 40 sati tjedno pomoćni kuhar, prema uvjetima propisanim Pravilnikom (NN 40/2014.), te 40 sati suradnik - neprofesionalni pomagač
Priprema i dostava toplih obroka za starije osobe		Za pripremu obroka za 77 korisnika 30 sati tjedno kuhar i 60 sati tjedno pomoćni kuhar, prema uvjetima propisanim Pravilnikom (NN 40/2014.), 60 sati suradnik - neprofesionalni pomagač te 120 sati vozač/ica
Dostava namirnica i/ili toplih obroka siromašnim građanima		

Ostale humanitarne usluge. Postignuta je visoka suglasnost o tome da su socijalna samoposluga i posudionica ortopedskih i medicinskih pomagala prioritetne usluge za osobe koje žive u siromaštvu. S obzirom na potrebne resurse, ove su usluge u modelu svrstane u razinu odgovornosti jedinica lokalne samouprave.

Socijalna samoposluga uključuje prikupljanje, skladištenje i raspodjelu maloprodajnih proizvoda (prehrambenih i higijenskih) građanima u siromaštvu. Projekcija resursa temelji se na pretpostavci da je usluga dostupna svaki radni dan te da u pružanju sudjeluje neprofesionalni pomagač - suradnik u ustanovi/organizaciji pružatelju socijalnih usluga (humanitarnoj organizaciji u zajednici), i to 20 sati tjedno, kao i volonteri u ustanovama i organizacijama socijalne, sportsko-rekreativne, kulturno-umjetničke, tehničko-hobističke i obrazovne djelatnosti 20 sati tjedno ukupno.

Posudionica ortopedskih i medicinskih pomagala omogućuje besplatno posuđivanje medicinskih i ortopedskih pomagala osobama koje su u kućnoj njezi, a ne ostvaruju pravo na pomagalo koje im je potrebno ili to pravo nije propisano Pravilnikom o ortopedskim i drugim pomagalima (Crveni križ, 2022.). Projekcija potrebnih resursa u ovom se modelu temelji na procjeni da ovakva posudionica u zajednici radi 2 dana - 16 sati tjedno te da u usluzi sudjeluju suradnici u pružateljima socijalnih usluga - neprofesionalni pomagači te volonteri u ustanovama i organizacijama socijalne, sportsko-rekreativne, kulturno-umjetničke, tehničko-hobističke i obrazovne djelatnosti.

5.6 NEIZRAVNE SOCIJALNE USLUGE

Osim usluga koje se pružaju izravno korisnicima, istraživanje je pokazalo visoku suglasnost o prioritetnim usluga kojima je svrha povećanje kapaciteta stručnjaka koji rade s određenim skupinama korisnika te uređivanje suradnje i prijenosa znanja među stručnjacima. Usluga pomoći pri uključivanju u programe odgoja i redovitog obrazovanja djece s teškoćama u razvoju i međusektorski programi rane prevencije siromaštva u ovom modelu pripisani su razini odgovornosti klastera jedinica lokalne samouprave.

Pomoć pri uključivanju u programe odgoja i redovitog obrazovanja djece s teškoćama u razvoju - međusektorski prijenos znanja pruža se odgojiteljima, učiteljima i nastavnicima u predškolskim i školskim ustanovama radi uključivanja djeteta s teškoćama u razvoju ili mlađe punoljetne osobe s invaliditetom u programe redovitih predškolskih ili školskih ustanova (Zakon o socijalnoj skrbi, NN 18/2022.). Pomoć pri uključivanju pružaju socijalni radnik/ca, psiholog/inja, rehabilitator/ica, logoped/inja i socijalni pedagog/inja, a u međusektorskom prijenosu znanja sudjeluju stručnjaci u obrazovanju. Projekcija potrebnih resursa temelji se na procjeni da će suradnja biti intenzivna u prvom mjesecu uključivanja djeteta s teškoćama u odgoj i obrazovanje (5 sati tjedno), a u druga dva bit će potrebno po 10 sati mjesečno. Ukupno bi po djetetu s teškoćama koje se uključuje u odgoj i obrazovanje radno opterećenje svih stručnjaka koji sudjeluju u suradnji i prijenosu znanja i informacija bilo 40 sati u godini u kojoj se dijete uključuje u odgoj i obrazovanje.

Međusektorski program rane prevencije siromaštva jest usluga koja u Hrvatskoj trenutačno ne postoji kao formaliziran oblik suradnje stručnjaka, ali je procijenjena prioritetnom za suzbijanje međugeneracijskog prijenosa siromaštva. Usluga podrazumijeva međusobno informiranje, suradnju i planiranje aktivnosti podrške i socijalnog uključivanja djece iz obitelji u siromaštvu radi prevencije i poboljšanja obrazovnih ishoda, zdravlja i opće dobrobiti te rješavanja specifičnih teškoća i izazova. U panelu stručnjaka procijenjeno je da u ovakvom obliku međusektorske suradnje mogu sudjelovati profesionalni pomagači - socijalni radnik/ca, psiholog/inja, rehabilitator/ica, socijalni pedagog/inja, stručnjaci u obrazovanju – odgojitelj predškolskog odgoja, učitelj/ica ili nastavnik/ica i pedagog/inja, stručnjaci u zdravstvenom sektoru – liječnik/ica i medicinski tehničar/sestra te neprofesionalni pomagači – pravnik/ca i suradnik organizacija ili ustanova - pružatelja socijalnih usluga. Procjena potrebnih resursa temelji se na pretpostavci da će po korisniku stručnjaci iz različitih sektora izdvojiti 5,5 sati mjesečno pa je u izračunu ukupno vrijeme ravnomjerno raspoređeno na sve predviđene pomagače.

Neizravne usluge koje se odnose na kapacitiranje stručnjaka za rad s pripadnicima nacionalnih manjina i izbjeglicama te za rad s osobama s glasovno-komunikacijskim teškoćama u modelu su pripisane regionalnoj razini odgovornosti za organizaciju socijalnih usluga.

Educiranje pružatelja usluga za rad s osobama različitog etničkog/kulturnog porijekla radi razvoja interkulturalne osjetljivosti i kompetencija provodi se jednokratno za sve profesionalne pomagače, stručnjake u obrazovanju i zdravstvu, paraprofesionalne pomagače te neprofesionalne pomagače i volontere koji pružaju usluge korisnicima u interkulturalnom kontekstu (pripadnicima nacionalnih manjina, izbjeglicama i migrantima). Prema primjerima iz prakse (projekt WELCOMM, 2019.) edukacija može trajati 30 sati.

Edukacija i supervizija interkulturnih medijatora i romskih pomagača/prevoditelja prema primjerima iz prakse (Centar za mirovne studije, CMS, 2019.) može trajati 30 sati jednokratno te 9 sati godišnje supervizije.

Tečaj znakovnog jezika za pružatelje usluga, na temelju izbornog kolegija Odsjeka za lingvistiku Filozofskog fakulteta Sveučilišta u Zagrebu, ima dvije razine (Hrvatski znakovni jezik 1 i Hrvatski znakovni jezik 2) i provodi se u dva semestra; ukupno 90 sati – 30 sati predavanja i 60 sati lektorske vježbe (Odsjek za lingvistiku, Filozofski fakultet Sveučilišta u Zagrebu, 2020., 2021.).

Na osnovi ovako izrađenih procjena potrebni ljudski resursi za osiguravanje temeljnih socijalnih usluga u zajednici od približno 5000 stanovnika, odnosno onih koje su na razini odgovornosti klastera jedinica lokalne samouprave i pojedinih jedinica samouprave, prikazani su u tablici 52. U procjenu nisu uključeni stručnjaci za pružanje socijalnih usluga koje su na regionalnoj razini odgovornosti.

Tablica 52. Projekcija potrebnih ljudskih resursa za temeljne socijalne usluge u idealtipskoj zajednici od 5000 stanovnika

POMAGAČI		PROCIJENJENI BROJ SATI GODIŠNJE	BR. OSOBA KOJE RADE U PUNOM RADNOM VREMENU (2080 SATI GODIŠNJE)
Profesionalni pomagači	socijalni radnik/ca	4421,62	2,13
	psiholog/inja	4129,99	1,99
	rehabilitator/ica	2310,21	1,11
	socijalni pedagog/inja	1950,21	0,94
	logoped/inja	530	0,25
	psihosocijalni savjetovatelj/ica	2228,64	1,07
Stručnjaci - obrazovanje	odgojitelj predškolskog odgoja	285,50	0,14
	učitelj/ica ili nastavnik/ica	576,80	0,28
	kineziolog/inja	139,20	0,07
	pedagog/inja	662,30	0,32
Stručnjaci - zdravstvo	liječnik/ica obiteljske medicine	2339,60	1,12
	medicinska sestra/tehničar	5571,20	2,68
	njegovatelj/ica	26022,97	12,51
	radni terapeut/kinja	1368,95	0,66
	fizioterapeut/kinja	1076,95	0,52

Neprofesionalni pomagači	pravnik/ca	234	0,11
	suradnici u pružateljima socijalnih usluga (ustanovama i udrugama)	9276,34	4,46
	suradnici u kulturno-umjetničkim organizacijama	704,88	0,34
	suradnici u sportsko-rekreativnim klubovima	704,88	0,34
	suradnici u hobističkim klubovima	704,88	0,34
Paraprofesionalni pomagači	Udomitelj/ica		1,5 udomitelja starijih osoba
	gerontodomaćin/ca	32452,58	15,6
	pomoćnik/ica u nastavi	4456	2,14
	stručni komunikacijski posrednik/ca	759,7	0,37
	prevoditelj/ca znakovnog jezika	1082,6	0,52
	osobni asistent/kinja	4372,6	2,10
	vršnjački mentor/ica	161,25	0,08
	videći pratitelj/ica	1472,6	0,71
	Kuhar/ica	6000	2,88
	Vozač/ica	7244	3,48
Volonteri	volonteri u pružateljima socijalnih usluga (ustanovama i udrugama)	4489,83	3,83
	volonteri u kulturno-umjetničkim organizacijama	1313,08	1,08
	volonteri u sportsko-rekreativnim klubovima	1313,08	1,10
	volonteri u hobističkim klubovima	1313,08	1,08

5.7 PROCJENA OSTALIH RESURSA ZA REALIZACIJU UNIVERZALNE DOSTUPNOSTI TEMELJNIH SOCIJALNIH USLUGA

U modelu je napravljena procjena ostalih resursa za osiguravanje dostupnosti temeljnih socijalnih usluga, odnosno onih o kojima je postignuta visoka razina stručnog konsenzusa da su prioritetne za korisnike. Procjena je napravljena za one usluge za koje je ne temelju prethodne analize zaključeno da su komunalne – pružaju se na razini lokalne zajednice, bilo da su u domeni odgovornosti klastera jedinica lokalne samouprave ili pojedinih jedinica lokalne samouprave. Potrebni prostorni resursi za socijalne usluge koje su u ovom modelu izvedivosti pripisane regionalnoj razini odgovornosti nisu specificirani jer se imalo u vidu da je riječ o uslugama za koje su minimalni prostorni uvjeti već definirani relevantnim podzakonskim dokumentima ili se trebaju planirati na području većeg obuhvata uzimajući u obzir potencijalni broj korisnika ili u određenim referentnim centrima.

Procjene se temelje na očekivanom broju korisnika na 5000 stanovnika i intenzitetu stručnog rada po korisniku ili grupi korisnika kako je prije prezentirano. Način izračuna prostornih resursa prikazan je u Dopunskoj datoteci 2.

5.7.1. Prostorni resursi

U procjeni potrebnih prostornih resursa polazi se od pretpostavke da se socijalne usluge, kako bi se osigurala njihova optimalna dostupnost, mogu pružati u jednom ili više od sljedećih prostora u zajednici:

- prostori za individualni rad površine oko 20 m^2
- prostori za grupni rad površine oko 60 m^2
- dislocirani, opremljeni prostori u zajednici koji se mogu koristiti za individualni i grupni rad, a disperzirani su u zajednici i dostupni potencijalnim korisnicima
- prostori za veća okupljanja – predavanja, tribine i druge javne događaje
- uredi stručnjaka.

Procjena potrebnih prostornih resursa napravljena je na temelju raspodjele ukupnog broja sati stručnog rada za socijalne usluge koje se ne pružaju primarno u kući korisnika/ce te ne uključuju smještaj izvan vlastite obitelji. U izračunu je pretpostavljen optimalan raspored korištenja prostora.

Za svaku je uslugu pretpostavljena raspodjela ukupnog broja radnih sati (za sve potencijalne korisnike, odnosno grupe korisnika) po prostorima u kojima se ona može pružati kako bi bila optimalno dostupna. Raspodjele su prikazane u nastavku teksta.

5.7.1.1. Prostorni resursi za usluge za psihosocijalno osnaživanje korisnika

U procijeni potrebnih prostornih resursa za psihosocijalno savjetovanje koje se pruža izravno pojedincu ili obitelji pretpostavljeno je da se usluga pruža u prostorima za individualni rad ili dislociranim opremljenim prostorima u zajednici te da se ukupni procijenjeni broj sati stručnog rada ravnomjerno raspodjeljuje u omjeru 1 : 1.

U procjeni potrebnih prostornih resursa za usluge multidisciplinarne psihosocijalne podrške, koje se pružaju izravno pojedincu ili obitelji te uključuju veći broj stručnjaka koji surađuju i međusobno se koordiniraju, pretpostavljeno je da je omjer izravnog rada i rada u uredu (suradnja i koordinacija) 2 : 1. Izravni rad može se odvijati u prostorima za individualni rad ili dislociranim opremljenim prostorima u zajednici te je pretpostavljeni omjer 1 : 1.

Za uslugu socijalnog mentorstva koja se pruža izravno pojedincu pretpostavljeno je korištenje prostora za individualni rad i dislociranih opremljenih prostora u zajednici, i to u omjeru 1 : 1.

Za usluge vršnjačkog mentorstva mladima s problemima u ponašanju i mladima iz alternativne skrbi procjena potrebnih prostornih resursa temelji se na pretpostavci da je odnos izravnog mentorskog rada i stručne podrške u procesu mentoriranja 2 : 1 te da se za izravni mentorski rad podjednako koriste prostori za individualni rad i dislocirani opremljeni prostori u zajednici.

Za grupe podrške i klubove procjena potrebnih prostornih resursa temelji se na pretpostavci da će se pružati u prostorima za grupni rad u zajednici te u dislociranim opremljenim prostorima, a ukupni broj sati stručnog rada ravnomjerno je raspodijeljen.

Procjena potrebnih prostornih resursa za usluge vođenja slučaja temelji se na pretpostavci da se pružaju u prostorima za individualni rad.

Za uslugu rane razvojne podrške djeci od 0 do 3 godine procjena potrebnih prostornih resursa temelji se na pretpostavci da je odnos izravnog rada s djetetom i obitelji i neizravnog rada i suradnje stručnjaka 2 : 1 te da se izravni rad odvija u prostorima za individualni rad i dislociranim prostorima u zajednici u jednakim omjerima. U pružanju usluge rane razvojne podrške djeci od 4 do 7 godina pretpostavljen je odnos izravnog i neizravnog rada 3 : 1, kao i podjednaka raspodjela izravnog rada na namjenski prostor za individualni rad i dislocirani prostor u zajednici.

Za usluge logopedske terapije i individualnog socijalno-pedagoškog rada pretpostavljena je ravnomjerna raspodjela ukupnog vremena stručne podrške između namjenskih prostora za individualni rad i dislociranih prostora u zajednici.

Kad su u pitanju terapijske i radno-okupacijske aktivnosti za osobe s invaliditetom, procjena prostornih resursa temelji se na pretpostavci da će se one pružati u podjednakim omjerima individualno i grupno te u namjenskim prostorima za individualni, odnosno grupni rad u zajednici ili u dislociranim opremljenim prostorima. Pretpostavka je da će se usluga radne terapije u najvećem omjeru pružati u kući korisnika.

Za aktivnosti prevencije u zajednici namijenjene zaštiti mentalnog zdravlja i specifično mladima pretpostavljeno je da se većim dijelom provode grupno. Procjena potrebnih prostornih resursa temelji se na pretpostavci da će se ove aktivnosti u podjednakim omjerima odvijati u prostorima za grupni rad, prostorima za veća okupljanja u zajednici te dislociranim opremljenim prostorima. Za aktivnosti univerzalne prevencije mentalnog zdravlja, koja uključuje osmišljavanje i izradu informativnih materijala te kampanja, dio ukupnog vremena, u omjeru 1 : 3 u odnosu na izravni rad s korisnicima, planiran je i u uredima stručnjaka.

Procjena potrebnih prostornih resursa za edukativnu, preventivnu i savjetodavnu pomoć tijekom tranzicije u roditeljstvo i podrška trudnicama, roditeljima i novorođenčadi u zajednici temelji se na pretpostavci da će se ove aktivnosti provoditi u prostorima za grupni rad, a procijenjeno vrijeme pripreme pripisano je uredima stručnjaka. Savjetovanje roditelja novorođenčadi dominantno se provodi u kući korisnika/ce.

5.7.1.2. Prostorni resursi za provedbu usluga podrške u zajednici za uključivanje u obrazovanje, zapošljavanje i život zajednice

S obzirom na procijenjeni broj potencijalnih korisnika usluge boravka, potrebni prostorni resursi ograničeni su na namjenske prostore za grupni rad za područje koje obuhvaća veći broj stanovnika. Iznimka je poludnevni boravak za starije osobe, gdje je očekivan veći broj korisnika te se ukupno vrijeme stručnog rada u modelu raspodjeljuje između namjenskih prostora za grupni rad i dislociranih opremljenih prostora u zajednici koji su dostupniji potencijalnim korisnicima. Na isti su način procijenjeni potrebni prostorni resursi za provedbu organiziranih kreativnih, rekreativnih i socijalizacijskih aktivnosti strukturiranog provođenja slobodnog vremena za osobe s teškoćama mentalnog zdravlja.

Prostorni resursi za provedbu socijalizacijskih i razvojnih aktivnosti za djecu te pomoći i podrške u obrazovanju za djecu i mlade iz obitelji u siromaštvu uključuju namjenske prostore za grupni rad u zajednici i dislocirane opremljene prostore u zajednici, što uključuje i škole. Ukupno vrijeme pružanja ove usluge jednako je raspodijeljeno između centralnih i dislociranih prostora.

Aktivnosti pomoći i podrške u stjecanju kvalifikacija i zapošljavanju za žrtve obiteljskog nasilja, građane u siromaštvu i osobe s invaliditetom provode se najvećim dijelom individualno i uključuju dio neizravnog stručnog rada, koji je procijenjen na trećinu ukupnog radnog opterećenja i obavlja se u uredu stručnjaka. Izravni rad s korisnicima ravnomjerno je raspoređen između namjenskih prostora za individualni rad i dislociranih prostora u zajednici.

Usluge centra za starije osobe u zajednici i informativnog centra za mlade zahtijevaju namjenske multifunkcionalne prostore u zajednici u kojima se može organizirati nekoliko aktivnosti istodobno te imaju i urede za stručnjake koji organiziraju ove aktivnosti. Ovi multifunkcionalni prostori mogu se koristiti i za sve već opisane usluge.

Za osiguravanje usluga vezanih uz prehranu u zajednici, odnosno na 5000 stanovnika, potrebno je osigurati profesionalnu kuhinju/e s kapacitetima pripreme 127 obroka dnevno te skladišne prostore, prostor za izdavanje i/ili konzumaciju obroka i ostalu opremu u skladu s propisanim higijenskim i sanitarnim standardima.

Za potrebe socijalne samoposluge u zajednici potrebno je osigurati skladišni prostor koji ima higijenske i sanitarne uvjete za skladištenje i izdavanje namirnica i robe široke potrošnje. Skladište je potrebno osigurati i za posudionicu ortopedskih i medicinskih pomagala, a ono može biti i dio nekoga drugog skladišnog prostora u zajednici.

5.7.1.3. Uredski prostori

Osim prostora za izravno pružanje usluge ili aktivnosti s korisnicima, za osiguravanje temeljnih socijalnih usluga u zajednici potrebno je osigurati uredski prostor za ostali, neizravni rad svih uključenih pomagača.

Procjena potrebnih uredskih prostora temelji se na procijenjenom broju pomagača kojima je potreban uredski prostor za pripremu i indirektan rad vezan uz pružanje socijalnih usluga, pretpostavljenom intenzitetu pripremnog, odnosno indirektnog rada te pruža li se usluga primarno u domu korisnika ili tijekom njegovih svakodnevnih aktivnosti.

Za pružanje temeljnih socijalnih usluga koje su pripisane razini odgovornosti klastera jedinica lokalne samouprave i pojedinim jedinicama lokalne samouprave, u zajednici od 5000 stanovnika, potreban je rad 7,49 profesionalnih pomagača u punom radnom vremenu na godišnjoj razini. Uz pretpostavku da ured dijele dva do tri pomagača, potrebna su tri uredska prostora za njihov rad.

Procjenjuje se da su stručnjaci u obrazovanju za pružanje temeljnih socijalnih usluga potrebni u opsegu od 0,8 punog radnog vremena na godišnjoj razini. S obzirom na prirodu i mjesto njihovog rada, pretpostavlja se da će u ovom modelu stručnjaci koristiti jedan uredski prostor.

Kad su u pitanju potrebe za stručnjacima u zdravstvenom sustavu ili zdravstvenog profila, prema procjeni najveće su za njegovateljima/cama – 12,5 osoba s punim radnim vremenom na godišnjoj razini. Uz pretpostavku da je njihov pripremni, odnosno indirektni rad u pružanju socijalnih usluga manjeg intenziteta u odnosu na profesionalne pomagače, pretpostavljamo da jedan ured mogu dijeliti četiri njegovatelja/ce te da je broj potrebnih uredskih prostora 3,1.

Ostali stručnjaci u zdravstvenom sektoru potrebni za pružanje temeljnih socijalnih usluga - liječnik/ica, medicinski tehničar/sestr, radni terapeut/kinja i fizioterapeut/kinja - s obzirom na ukupno potrebno radno vrijeme (4,98 punih radnih vremena) mogu dijeliti dva uredska prostora.

Procijenjeni udio rada neprofesionalnih pomagača za pružanje temeljnih socijalnih usluga je u opsegu od 5,59 punog radnog vremena. Uz pretpostavku da jedan uredski prostor mogu dijeliti dvije do tri osobe koje rade puno radno vrijeme, za njihov je rad u zajednici potrebno osigurati 2,2 uredska prostora.

U ovom je modelu procijenjeno da je za zadovoljavanje potreba za temeljnim socijalnim uslugama u zajednici od približno 5000 stanovnika potreban rad 15,6 gerontodomaćina/ca koji rade u punom radnom vremenu. Uz pretpostavku da je njihov pripremni, odnosno indirektni rad u pružanju socijalnih usluga manjeg intenziteta te da će jedan uredski prostor dijeliti četiri osobe, za njihov je rad potrebno osigurati 3,9 uredskih prostora.

Pomoćnici u nastavi, stručni komunikacijski posrednici, osobni/radni asistenti, videći pratitelji, prevoditelji znakovnog jezika i ostali prevoditelji i medijatori uslugu pružaju uz korisnika, odnosno prateći ga u obavljanju različitih aktivnosti. S obzirom na ukupni intenzitet njihovog procijenjenog rada (u opsegu od 5,92 punog radnog vremena godišnje), procjenjuje se da će svi ovi paraprofesionalni pomagači dijeliti jedan uredski prostor. Ista se pretpostavka odnosi i na kuhare, čiji je ukupni potrebni opseg rada na godišnjoj razini 2,88 punog radnog vremena, kao i za vozače, čiji je ukupni potrebni opseg rada na godišnjoj razini 3,84 puna radna vremena – svaka će skupina koristiti po jedan uredski prostor.

Ukupni iznos potrebnog volonterskog rada je u opsegu od 8,1 punog radnog vremena na godišnjoj razini, ali se pretpostavlja da će volonteri pripremne i indirektne aktivnosti provoditi s ostalim pomagačima ili u namjenskim prostorima u zajednici (centar za starije, informativni centar za mlade, socijalna samoposluga, posudionica ortopedskih i medicinskih pomagala) te se ne predviđaju zasebni uredski prostori za njihov rad.

Ukupno se procjenjuje da je u zajednici od približno 5000 stanovnika potrebno 17,3 uredskih prostora veličine oko 20 m2 s odgovarajućim uredskim namještajem i opremom.

Svi navedeni prostori trebali bi biti pristupačni osobama s invaliditetom i smanjene pokretljivosti u skladu s Pravilnikom o osiguranju pristupačnosti građevina osobama s invaliditetom i smanjene pokretljivosti (NN 78/2013.).

5.7.2. Stambeni resursi

Potrebni stambeni resursi procijenjeni su za usluge za čije su planiranje i organizaciju u ovom modelu odgovorni klasteri jedinica lokalne samouprave te pojedinačne jedinice lokalne samouprave. To su organizirano stanovanje za starije i nemoćne osobe, privremeni/povremeni smještaj za starije osobe i osobe s teškoćama mentalnog zdravlja, što uključuje i smještaj zbog predaha od skrbi njegovatelja te smještaj u kriznim situacijama.

Organizirano stanovanje ili stanovanje uz podršku, kao usluga dugotrajnog smještaja izvan vlastitog doma, procjenjuje se potrebnim za šest starijih osoba, a za tu je svrhu u zajednici od 5000 stanovnika potrebna jedna ili dvije stambene jedinice s odgovarajućim smještajnim kapacitetima.

Povremeni ili privremeni smještaj procjenjuje se potrebnim za tri starije osobe i dvije osobe s teškoćama mentalnog zdravlja u zajednici od 5000 stanovnika. Kako je ovo vremenski ograničen oblik smještaja izvan vlastitog doma/obitelji, opravdano je pretpostaviti da ga svi potencijalni korisnici neće koristiti istodobno. Stoga je potrebno u zajednici osigurati u pričuvi dvije stambene jedinice sa smještajnim kapacitetima za jednu do dvije osobe za privremeni smještaj.

Smještaj u kriznim situacijama je najkraći i najmanje predvidiv oblik smještaj pa je poželjno da lokalna zajednica raspolaže jednom stambenom jedinicom u koju se može smjestiti obitelj u slučaju takve situacije.

Stambene jedinice trebaju biti pristupačne svim osobama s invaliditetom i smanjene pokretljivosti.

5.7.3. Vozila

Određeni broj temeljnih usluga zahtijeva specijalizirana, odnosno prilagođena vozila za prijevoz korisnika te dostavna vozila za potrebe dostave robe, namirnica i obroka. Također, određeni broj usluga pruža se u domu korisnika i/ili u dislociranim prostorima kako bi se osigurala optimalna dostupnost. Za takve usluge napravljena je procjena potrebnih osobnih automobila kao resursa za postizanje univerzalne dostupnosti. Broj vozila za prijevoz korisnika procijenjen je na temelju broja potencijalnih korisnika i vrste prijevoza.

Procijenjeni broj korisnika organiziranog prijevoza za starije i nemoćne osobe je 24 na 5000 stanovnika. Ako se kombijem može prevesti šest korisnika/ca istodobno, uz pratnju, potrebno je u zajednici približne veličine imati jedno kombi vozilo kapaciteta osam putnika za ovu uslugu.

Potencijalnih korisnika specijaliziranog prijevoza uz pratnju za osobe s invaliditetom je 33. Ako se specijaliziranim vozilom može istodobno prevesti pet osoba s invaliditetom uz pratnju, potrebno je u zajednici od približno 5000 stanovnika imati jedno takvo vozilo koje se koristi u punom radnom vremenu.

Broj potrebnih osobnih automobila za pružanje mobilnih usluga procijenjen je na temelju pretpostavljenog udjela ukupnog stručnog rada u dislociranim prostorima te ukupnog broja sati podrške u kući korisnika za usluge koje se pružaju u tom modalitetu. Na ovaj način procijenjeno je da je za mobilnost socijalnih usluga na 5000 stanovnika u klasteru jedinica lokalne samouprave potrebno 11,48, a u jedinicama lokalne samouprave 4,85 osobnih automobila koji se koriste u punom radnom vremenu.

5.7.4. Oprema

Za sve usluge za koje odgovornost imaju jedinice lokalne samouprave ili klasteri jedinica lokalne samouprave treba osigurati adekvatne uvjete za rad stručnjaka te ih opremiti adekvatnom uredskom opremom.

Nadalje, kako je za znatan broj usluga predviđeno da se mogu pružati i na daljinu (tablica 11.), potrebno je osigurati adekvatnu digitalnu opremu (računalo s mogućnosti povezivanja na internet te pouzdane programske pakete za povezivanje i komunikaciju s korisnicima).

Za određene usluge namijenjene stjecanju znanja i vještina korisnika ili stručnjaka potrebno je osigurati opremu za poučavanje, što uključuje adekvatan namještaj za pisanje, projektor s projektnim platnom, ploče za pisanje, bazu literature i videomaterijala. Ovakva oprema potrebna je u različitim uslugama boravka i klubova u zajednici, ranoj razvojnoj podršci za djecu, pružanju pravne pomoći, uslugama podrške u obrazovanju i zapošljavanju, terapijskim uslugama za osobe s invaliditetom e svim uslugama za jačanje kapaciteta stručnjaka.

Osim ove opreme na općoj razini, potrebno je osigurati specifičnu opremu za određene usluge.

Za usluge podrške na daljinu (SOS i dojavni sustavi za osobe s invaliditetom, starije osobe i žrtve nasilja) potrebno je osigurati posebnu telefonsku liniju s odgovarajućom opremom i mobilne telefone. Osim toga, za starije osobe i osobe s invaliditetom potrebno je osigurati opremu za SOS pozive za korisnike (specijalizirane dojavne uređaje ili SOS narukvice).

Za usluge koje su socijalizacijske (boravci, klubovi), za korisnike u smještaju te za potrebe terapije za djecu s teškoćama u razvoju / osobe s invaliditetom i osobe s teškoćama mentalnog zdravlja potrebno je osigurati opremu za glazbenu i likovnu terapiju i kreativni rad te oprema za kineziterapiju i sportsko-rekreacijske aktivnosti.

Za terapijski rad s djecom s teškoćama u razvoju i osobama s invaliditetom (rana razvojna podrška, psihosocijalna podrška, terapijske aktivnosti za osobe s invaliditetom) pružateljima usluga potrebno je osigurati sljedeće uvjete (Pravilnik o minimalnim uvjetima za pružanje socijalnih usluga, NN 40/2014.):

- opremu za rehabilitaciju slušanja koja uključuje: stimulaciju tjelesnih i slušnih putova - fonetski ritmovi, stimulaciju pokretom, situacijsko učenje govora i jezika, prevenciju, dijagnostiku i tretman poremećaja slušanja, govora jezika i drugih oblika komunikacije, poticanje govornog i jezičnog razvoja kod djece oštećenog sluha i djece s kohlearnim implantatom, razvijanje alternativnih i augmentativnih oblika komunikacije kod djece s višestrukim oštećenjima (čl. 126)
- senzornu sobu
- logopedski kabinet

- opremu za fizikalne vježbe
- opremu za vježbe orijentacije i kretanja koje uključuju: kretanje uz pomoć videćeg vodiča, kretanje uz pomoć dugog bijelog štapa, tehniku praćenja zida uz zaštitne tehnike, kretanje uz pomoć psa vodiča, kretanje uz pomoć elektronskih pomagala (čl. 121)
- opremu za vježbe vida koje uključuju: sustav vježbi za učinkovito korištenje ostatka vida – fiksacija, praćenje objekta, akomodacija, oštrina vida, uočavanje boja, motorička koordinacija očnih mišića, adaptacija na svjetlo i tamu i dr., percepcija prostora, razumijevanje perspektive, izdvajanje predmeta od pozadine, vizualno pamćenje i dr. (čl. 123)
- opremu za tiflotehničku obuku koja uključuje: upoznavanje i osposobljavanje za samostalno i učinkovito korištenje elektronskih i ostalih pomagala kojima se koriste slijepe i slabovidne osobe – uvježbavanje pravilnog korištenja tipkovnice računala, usvajanje praktičnih znanja i vještina korištenja računala s čitačem ekrana, govornom jedinicom i Brajevim retkom te drugih pomagala ovisno o individualnim potrebama svake slijepe ili slabovidne osobe (čl. 124).

Za terapijske aktivnosti s djecom s teškoćama, osobama s invaliditetom te za usluge pomoći i njege starijih osobama potrebno je osigurati opremu za fizikalne aktivnosti koja uključuje: ležajeve za vježbanje, strunjače, štapove za vježbe, ogledalo za vježbe, utege od 1,5 do 3 kg za ruke i noge, elastične široke trake za vježbanje, stolić za uređaje, umivaonik, paravane te ostala pomoćna sredstva i pomagala za fizikalnu terapiju (čl. 190, st. 14).

Za sve usluge njege za starije osobe i osobe s invaliditetom, kao i palijativne bolesnike, potrebno je osigurati minimum opreme i pomagala za njegu: termofore, vrećice za led, zračne jastuke, irigatore, posude za umivanje, posude za stavljanje obloga, veliki umivaonik za umivanje u krevetu, vagu, invalidska kolica, nosila, servisna kolica i stolić, toplomjere, tlakomjere, plahte, pokrivače, gumirane plahte, čaše, hladnjake, posude za mokrenje, sušila za kosu, brijaće aparate, gumene pregače, sredstva za dezinfekciju te drugo (čl. 157). Ako je riječ o težim oboljenjima korisnika, potrebni su i ležajevi s električnim mehanizmom za podizanje i spuštanje te antidekubitalni madrac (čl. 190, st. 2).

VI

IZVEDIVOST UNIVERZALNE DOSTUPNOSTI TEMELJNIH SOCIJALNIH USLUGA U HRVATSKOJ

Cjelovit prikaz očekivanog broja korisnika i ukupna procjena resursa potrebnih za realizaciju temeljnih socijalnih usluga detaljno su navedeni u Dopunskoj datoteci 2.

U ovom poglavlju želimo odgovoriti na pitanje je li ovaj model uopće izvediv te koje su njegove dobrobiti za društvo u cjelini, odnosno isplati li se promišljati o implementaciji ovog pristupa.

Kada je riječ o izvedivosti, vjerujemo da u Hrvatskoj zaista postoje dostatni resursi za postizanje univerzalne dostupnosti temeljnih socijalnih usluga. U svakoj jedinici lokalne samouprave postoje resursi koji nisu adekvatno stavljeni u javnu namjenu, od praznih i zapuštenih prostora, nedovoljno korištene opreme do digitalnih i drugih inovacija koje uz podršku europskih fondova postaju sve dostupnije.

Ključnim nam se čini pitanje imamo li dovoljno stručnjaka, odnosno jesmo li kao društvo spremni uložiti više sredstava u angažiranje pružatelja socijalnih usluga. U postojećoj situaciji iskustvo i praksa pokazuju da se dostupni ljudski resursi ne koriste adekvatno, a tome uvelike pridonosi zatvorenost i ograničena suradnja među organizacijama, sektorima i različitim razinama odlučivanja. Iako je organizacija socijalnih usluga povjerena sustavu socijalne skrbi, cijeli model koji predlažemo može se ostvariti uz pretpostavku koordinacije, integriranog pristupa u planiranju, organizaciji i pružanju socijalnih usluga te stvarne sinergije među akterima, kako unutar sustava socijalne skrbi, tako i između sustava socijalne skrbi i drugih sustava (npr. obrazovanja, zdravstva, kulture, sporta).

Na temelju projekcije potrebnih resursa za osiguravanje temeljnih socijalnih usluga (onih koje su u ovom modelu na razini odgovornosti klastera jedinica lokalne samouprave ili pojedinih jedinica lokalne samouprave) u idealtipskoj zajednici od približno 5000 stanovnika na nacionalnoj razini potrebni su ljudski resursi kako je navedeno u tablici 52.

Ako na razini Hrvatske želimo da građani u svojoj lokalnoj zajednici dobiju sve potrebne temeljne socijalne usluge, to podrazumijeva angažman u punom radnom vremenu 20 054 stručnjaka iz sektora socijalne skrbi, obrazovanja i zdravstva, 4348 stručnjaka nepomažućih djelatnosti (neprofesionalnih pomagača), 21 695 paraprofesionalnih pomagača u sektoru skrbi (bez udomitelja) te 6229 volontera. U daljnjem tekstu obrazložit ćemo što bi ovakve projekcije značile s obzirom na postojeću strukturu zaposlenika te proračunska izdvajanja. Ukupan trošak procijenjen je na temelju broja zaposlenika i prosječne plaće za odgovarajuću stručnu spremu u 2019. na godišnjoj razini (DZS, 2019.). Kada bi riječ bila o novim zapošljavanjima i kada bi se ona financirala iz državnog proračuna, taj bi trošak na godišnjoj razini iznosio 5 284 142 020,00 kn[73]. Odnosno, svaki građanin u Hrvatskoj trebao bi godišnje imati na raspolaganju 1358,91 kn za temeljne socijalne usluge. No ovaj trošak za središnju državu ne bi bio novi jer vjerujemo da je većina ovih sredstava već na raspolaganju u proračunskoj funkciji socijalne zaštite, unutar kojega je sustav socijalne skrbi[74], te kroz druge sustave (tablica 53).

73 Radi se o trošku Bruto 2 plaće pod pretpostavkom da stručnjak/inja živi u lokalnoj zajednici sa stopom prireza od 10%.

74 Trenutno su u obzir uzeta samo proračunska sredstva središnje države. No model pretpostavlja aktivaciju sredstava na svim razinama. Prema funkcijskoj klasifikaciji, funkcija Socijalna zaštita u državnom proračunu uključuje: Bolest i invaliditet, Starost, Sljednici, Obitelj i djeca, Nezaposlenost, Socijalna pomoć stanovništvu koje nije obuhvaćeno redovnim socijalnim programima, Istraživanje i razvoj socijalne zaštite, Aktivnosti socijalne zaštite koje nisu drugdje svrstane. Socijalna zaštita u državnom proračunu ne uključuje Zdravstvo, ali je uključena u socijalnu zaštitu prema ESSPROS metodologiji o čemu će biti riječi kasnije.

Tablica 53. Procijenjeni broj stručnjaka i ljudskih resursa na nacionalnoj razini za temeljne socijalne usluge za koje su odgovorne jedinice lokalne samouprave i klasteri JLS-a

		BROJ STRUČNJAKA NA NACIONALNOJ RAZINI ZA TEMELJNE SOCIJALNE USLUGE	UDIO U UKUPNOM BROJU ZAPOSLENIKA U SEKTORU (DZS, 2022., siječanj 2022. godine)	UDIO UKUPNOG TROŠKA ZA SVE POTREBNE ZAPOSLENIKE U TRENUTAČNOM PRORAČUNU (Izvor: Ministarstvo financija, 2022.)
Profesionalni pomagači	socijalni radnik/ca/ca	1653,86	N = 24 065 u sektoru socijalne skrbi 24,2 %	% trenutačnog proračuna RH: funkcija socijalne zaštite = 1,49 %
	psiholog/inja	1544,77		
	rehabilitator/ica	864,11		
	socijalni pedagog/inja	729,45		
	logoped/inja	198,24		
	psihosocijalni savjetovatelj/ica	833,60		
Stručnjaci - obrazovanje[75]	odgojitelj/ica predškolskog odgoja	106,79	N = 122 528 u sektoru obrazovanja 0,5 % bez pomoćnika u nastavi 2,10 % s pomoćnicima u nastavi	% trenutačnog proračuna obrazovanja = 0,72 % bez pomoćnika u nastavi 2,29 % s pomoćnicima u nastavi
	učitelj/ica ili nastavnik/ica	215,75		
	kineziolog/inja	52,07		
	pedagog/inja	247,73		
	pomoćnik/ica u nastavi	1666,72		
	stručni komunikacijski posrednik/ca	284,16		
Stručnjaci - zdravstvo	liječnik/ica OM	875,10	N = 81 645 u sektoru zdravstva 4,74 % bez njegovatelja 16,67% s njegovateljima	% trenutačnog proračuna zdravstva = 10,50 % 3,63 % bez njegovatelja
	medicinska sestra/tehničar	2083,84		
	njegovatelj/ica	9733,59		
	radni terapeut/kinja	512,04		
	fizioterapeut/kinja	402,82		

75 Iako u sektoru obrazovanja djeluju i psiholozi, socijalni radnici, socijalni pedagozi i drugi stručni radnici, ovdje mislimo u užem smislu na stručnjake u obrazovanju. To međutim u izvedbi ne ograničava uključivanje stručnjaka drugih profila koji trenutno rade u sektoru obrazovanja u pružanje socijalnih usluga.

Neprofesionalni pomagači	pravnik/ca	87,53	N = 13 080 u sektoru pravne i računovodstvene djelatnosti 0,67 %	% trenutačnog proračuna na funkciji javnog reda i sigurnosti = 0,13 %
	suradnici u pružateljima socijalnih usluga (ustanovama i udrugama)	3469,71	N = 24 065 u sektoru socijalne skrbi 14,42 %	% trenutačnog proračuna socijalne zaštite = 0,89 %
	suradnici u kulturno-umjetničkim organizacijama	263,65	N = 8540 u sportskim djelatnostima te zabavne i rekreacijske djelatnosti N = 6455 knjižnice, arhivi, muzeji i ostale kulturne djelatnosti N = 3977 kreativne, umjetničke i zabavne djelatnosti N = 10 092 ostale aktivnosti članskih organizacija 2,72 %	% trenutačnog proračuna na funkciji rekreacija, kultura i religija = 2,31 %
	suradnici u sportsko-rekreativnim klubovima	263,65		
	suradnici u hobističkim klubovima	263,65		
Paraprofesionalni pomagači	gerontodomaćin/ca	12138,51	N = 24 065 u sektoru socijalne skrbi 82,04 %	% trenutačnog proračuna socijalne zaštite = 3,18 %
	prevoditelj/ca znakovnog jezika	404,93		
	osobni asistent/kinja	1635,52		
	mentor/ica	60,31		
	videći pratitelj/ica	550,81		
	kuhar/ica	2244,23		
	vozač/ica	2709,53		

Volonteri	volonteri u pružateljima socijalnih usluga (ustanovama i udrugama)	2977,85	Ukupno volontera u 2020. godini 48 386 (Ministarstvo rada, mirovinskog sustava, obitelji i socijalne politike, 2021.) 12,87 %	
	volonteri u kulturno-umjetničkim organizacijama	843,41		
	volonteri u sportsko-rekreativnim klubovima	858,37		
	volonteri u hobističkim klubovima	843,41		
	volonteri u obrazovnim ustanovama	705,92		

Iako je sustav socijalne skrbi na nacionalnoj razini koordinator razvoja socijalnih usluga, ovaj model podrazumijeva puno snažniju suradnju između socijalne skrbi i drugih sektora (zdravstva, obrazovanja i drugih). To će značiti uspostavljanje novih oblika međusektorske suradnje, no već i sada gotovo sve socijalne usluge podrazumijevaju neki vid međusektorske suradnje. Prema sadašnjim projekcijama, u ovom modelu mogu se aktivirati ljudski resursi koji već postoje u sektoru obrazovanja, pravne djelatnosti te kulture, umjetnosti, sporta, rekreacije i zabave, tehničke kulture i drugih područja rada članskih organizacija. Za izvedivost i održivost modela važno je aktivirati volontere u zajednici, tj. na nacionalnoj razini njih 6229 koji možda u tom obimu već sudjeluju u sustavu podrške ranjivim skupinama građana. Spomenimo da se tijekom pandemije bolesti COVID-19 broj volontera smanjio za 25 %, što znači da postoje i dodatni potencijali koji se mogu aktivirati u budućnosti (Ministarstvo rada, mirovinskoga sustava, obitelji i socijalne politike, 2021.).

Što se tiče sustava zdravstva i socijalne skrbi, očigledno je nužno povećanje izdvajanja za socijalne usluge. Opravdano je pretpostaviti da stručnjaci koji rade u sustavu socijalne skrbi već pokrivaju dio procijenjenih potreba za temeljnim socijalnim uslugama u zajednici; dio njih angažiran je u pružanju socijalnih usluga koje su u ovom modelu svrstane u regionalnu razinu odgovornosti ili u uslugama institucionalnog tipa, a dio se bavi drugim poslovima socijalne skrbi. Vrlo često ovi stručnjaci imaju višestruke uloge pa je teško procijeniti koji se dio njihovog ukupnog radnog vremena odnosi na pružanje socijalnih usluga. Uz pretpostavku da bi se iz postojećeg bazena profesionalnih pomagača u socijalnoj skrbi moglo zadovoljiti 50 % potreba za osiguravanjem temeljnih socijalnih usluga na razini lokalne zajednice, tj. njih 2912, isto bi toliko bilo potrebno novih zapošljavanja uz ukupan procijenjeni trošak u iznosu 433 968 277,00 kn godišnje.

Važno je u ova razmatranja uključiti i kapacitete organizacija civilnog društva - udruga i vjerskih organizacija koje djeluju u području socijalne skrbi. Prema Izvješću o financiranju projekata i programa organizacija civilnoga društva iz javnih izvora u 2018. godini (Ured za udruge, 2020.), ukupno je iz svih javnih izvora na nacionalnoj, regionalnoj i lokalnoj razini za programe i projekte u području socijalne djelatnosti utrošeno 471 890 693,73 kn. Ne postoje podaci o broju i strukturi zaposlenih u udrugama i ostalim neprofitnim organizacijama, ali je nedvojbeno da one zapošljavaju znatan broj kako profesionalnih tako i neprofesionalnih pomagača, mobiliziraju mnogo volontera i neodvojivi su dio sustava socijalnih usluga. Opravdano je očekivati da dio profesionalnih pomagača sada zaposlenih u organizacijama civilnog društva već pruža neke od temeljnih usluga u zajednici, kao i da bi se i iz tog bazena mogle pokriti potrebe usmjerenim financiranjem. U ovom su području izazov velike

regionalne nejednakosti u rasprostranjenosti i razvijenosti udruga te drugih neprofitnih organizacija koje pružaju socijalne usluge. Prema teritorijalnoj rasprostranjenosti, najviše udruga djeluje i provodi svoje projekte i programe u razvijenijim regijama i urbanim sredinama, gdje su socijalne usluge inače razvijenije i dostupnije (Ured za udruge, 2020.).

Kad je riječ o zdravstvenom sektoru, uz pretpostavku da se 50 % procijenjenih potreba za stručnjacima koji će pružati temeljne socijalne usluge može zadovoljiti iz postojećeg broja liječnika, medicinskih tehničara, radnih terapeuta i fizioterapeuta u sustavu (njih ukupno 1937), za isto toliko novih zapošljavanja očekivani trošak iznosi 291 188 092,5 kn godišnje. Osim osiguravanja ovih dodatnih sredstava, još je važnija funkcionalna vertikalna i horizontalna integracija socijalnih i zdravstvenih usluga, osobito za korisnike kojima je potrebna dugotrajna skrb. U ovom je modelu za takve potrebe fokus stavljen na usluge u kući korisnika, što povećava trošak na strani ljudskih resursa, ali je opravdano pretpostaviti da ga smanjuje na strani infrastrukturnih skraćivanjem očekivanog boravka u ustanovama, kako u socijalnoj tako i u zdravstvenoj skrbi.

Najveći novi trošak možemo očekivati u sektoru skrbi te svim personaliziranim uslugama (pomoć u kući, njegovatelji, osobni/radni asistent i slično). Ovdje ćemo ukalkulirati novi trošak za najveću skupinu pružatelja socijalnih usluga, tj. pružatelje usluge pomoći u kući i njegovatelje. Naime, sustavu je potrebno čak 21 872 pomagača koji će pružati usluge pomoći u kući i njege, odnosno nešto više od 0,5 % populacije trebalo bi se baviti poslovima njege i skrbi. Ukupni trošak za njih iznosio bi 2 225 057 930,00 kn godišnje, a smatramo da iz postojećeg sustava ne postoji mogućnost angažiranja ovih resursa. Usluge skrbi u užem smislu uglavnom su financirane neodrživim projektnim sredstvima, dok su stručnjaci za poslove njege u zdravstvenom sustavu i sustavu socijalne skrbi već sada deficitarni, a kapaciteti prenapregnuti. Značajan dio stručnjaka usluge pruža u okviru privatne zdravstvene zaštite. Ovako veliki trend porasta formalizacije neformalne skrbi uobičajen je na razini Europske unije, gdje se procjenjuje da čak 80 % njege i skrbi dolazi iz neformalnih izvora ili neplaćenog rada koji najčešće obavljaju žene (Zigante, 2018.). Ipak, ulaganje u formalizaciju neformalne skrbi zapravo se smatra dugoročno isplativijom metodom od institucionalizacije korisnika (Zigante, 2018.). Podsjetimo, naše procjene broja korisnika bile su vrlo restriktivne i konzervativne, usmjerene zaista na korisnike koji su ekonomski deprivirani i imaju ozbiljna ograničenja u svakodnevnom funkcioniranju. To pokazuje da su ove potrebe zaista goruće. Na osnovi svega navedenog, procjenjujemo da su u sustav socijalnih usluga potrebna dodatna ulaganja u iznosu 2 988 136 716,37 kn, i to 1 392 856 054,57 kn u sektoru zdravstva te 1 595 280 662,00 kn u sektoru socijalne skrbi. Prema ESSPROS metodologiji, sa ovim ukalkuliranim izdacima troškovi socijalne zaštite narasli bi na 94 786 466 716,00 kn[76]. Time bi udio izdvajanja za socijalnu zaštitu u BDP-u iznosio oko 22%[77] te bi i dalje bio ispod EU prosjeka koji iznosi 27,7% (Eurostat, 2022.). Povećanje izdvajanja bi stoga bilo i potrebno i legitimno. Spomenimo, primjerice, da u odnosu na EU prosjek Hrvatska ima tri puta manja izdvajanja za funkciju stanovanje i socijalna isključenost. Akcijskim planom razvoja sustava socijalne skrbi predviđeno je ulaganje od 6.537.852.946 kn do 2024., od čega 2.143.029.990 kn za novo zapošljavanje u javnom sustavu socijalne skrbi (Ministarstvo rada, mirovinskoga sustava, obitelji i socijalne politike, 2021.). Smatramo iznimno važnim da se raspoloživa sredstva ciljano usmjere kako bi se cjelovito odgovorilo na potrebe korisnika te posebno za osiguravanje univerzalne dostupnosti temeljnih socijalnih usluga.

Napomenimo i da je, osim navedenih ulaganja, nužno ulagati i u pružanje usluga o kojima trenutačno nema konsenzusa da pripadaju osnovnom paketu temeljnih usluga, posebice ondje gdje već postoje

76 U 2020. godini ukupni izdaci za socijalnu zaštitu prema ESSPROS metodologiji iznosio je 91 798 330 000 kn. ESSPROS metodologija obuhvaća sljedeće funkcije: Bolest/zdravstvena skrb, Invaliditet, Starost, Preživjeli uzdržavani članovi, Obitelj/djeca, Nezaposlenost, Stanovanje, Socijalna isključenost koja nije drugdje klasificirana te obuhvaća izdatke na nacionalnoj i lokalnoj razini.

77 Prema podacima HNB-a (Hrvatska narodna banka, HNB, 2022), BDP Hrvatske je 2021. godine 431 454 000 000 kn.

i za njima je uočena potreba te osobito u razvoj i pilotiranje inovativnih socijalnih usluga. Projektna sredstva europskih fondova ponajprije treba usmjeravati u razvoj novih, učinkovitijih rješenja koja će u budućnosti zamijeniti neke od usluga o kojima sada postoji konsenzus da su potrebne korisnicima. S tim u vezi nužno je ulagati i u kontinuirano unapređenje, praćenje i evaluaciju kvalitete pruženih usluga te posebice u vrednovanje njihove učinkovitosti. Neovisno o tome postoji li za neku uslugu stručni i društveni konsenzus da je temeljna ili u ovom trenutku predstavlja „nadstandard", ona bi trebala ostvarivati željene učinke za korisnika, njegovu obitelj i okruženje, zajednicu, sustav socijalne skrbi te društvo u cjelini. Takvo kontinuirano vrednovanje učinaka trebalo bi biti preduvjet za revidiranje stručnog konsenzusa o tome koje su socijalne usluge kritično i ključno važne za korisnike te ih je potrebno univerzalno osigurati.

Izvedivost ovog modela počiva na nekoliko ključnih pretpostavki:

- odustajanje od restriktivnog i ograničavajućeg definiranja i razumijevanja socijalnih usluga isključivo kao dijela sustava socijalne skrbi koji traži specijalistička znanja i vještine, jer kao što je u ovom modelu prezentirano, one uključuju mnogo širu lepezu aktivnosti, kao i aktera i dionika uključenih u njihovo pružanje
- nadilaženje sektorskih granica te suštinsko i funkcionalno integriranje aktivnosti iz različitih sektora u jedinstvenu socijalnu uslugu kada je to potrebno, a ne samo međusektorska suradnja i koordinacija
- decentralizacija u planiranju, organiziranju, praćenju i vrednovanju učinaka socijalnih usluga te davanje veće autonomije i odgovornosti, uključujući i odgovarajuća financijska sredstva, jedinicama lokalne samouprave.

Možemo zaključiti da je povećanje izdvajanja za socijalne usluge ne samo opravdan, nego i nužan trošak u budućnosti s obzirom na trendove u promjeni koncepta skrbi i starenju stanovništva. Vjerujemo da će se vremenom intenzitet određenih socijalnih usluga, posebno tretmanskih, smanjivati te da će preventivne usluge pridonijeti odgodi ili smanjenju razmjera skupljih i za intenzivnu skrb ili instituciju vezanih usluga. Procjene takvih učinaka nadilaze okvir ovog rada, ali ih je svakako važno pratiti ako se implementira ovaj model.

Za razliku od socijalnih naknada, socijalne usluge imaju puno snažniji efekt na tržište rada i u javnoj potrošnji, uz pretpostavku zapošljavanja novih 26 712 pružatelja usluga, od čega je 21 872 pomagača sa srednjom stručnom spremom. Takav pristup dat će snažan poticaj zapošljavanju skupina koje teže nalaze posao, i to u sredinama u kojima nedostaje ponude radnih mjesta s obzirom na to da su usluge vezane uz potrebe lokalne zajednice.

Univerzalna dostupnost temeljnih socijalnih usluga ima višestruke pozitivne implikacije na kvalitetu života korisnika u potrebi te izjednačavanje mogućnosti poticanjem obrazovanja i zapošljavanja. Socijalne usluge pomažu očuvati i poboljšati zdravlje, funkcionalne sposobnosti te podmiriti egzistencijalne potrebe građana koji nemaju dovoljnu sigurnosnu mrežu.

Ukupno gledajući, predloženi pristup ima snažne pozitivne učinke na društvo u cjelini, na socijalnu koheziju, solidarnost, socijalnu pravdu i ravnomjeran razvoj lokalnih zajednica.

VII

UNIVERZALNA DOSTUPNOST TEMELJNIH SOCIJALNIH USLUGA I IMPLIKACIJE ZA JAVNE POLITIKE

7.1 RAZINE ODGOVORNOSTI U RAZVOJU SOCIJALNIH USLUGA

Socijalne usluge su prema Zakonu o socijalnoj skrbi (18/22) propisane, ali nisu zajamčene. Korisnici u potrebi nemaju jednake mogućnosti pristupa potrebnim socijalnim uslugama s obzirom na mjesto življenja. Ako žive u urbanim, većim sredinama, njihove su šanse veće, kao i ako žive u području gdje slučajno postoji pružatelj koji je razvio određenu socijalnu uslugu. Već ove činjenice stvaraju veliku odgovornost donositelja socijalnih politika da se nešto temeljito treba promijeniti.

Razloge ovakvoj situaciji pripisujemo sljedećim faktorima:

1. ukupna javna sredstva za financiranje socijalnih usluga u okviru socijalne skrbi nisu dostatna. Funkcija stanovanja i socijalne isključenosti u ukupnim izdacima socijalne zaštite prema ESSPROS metodologiji nose tek 1,4% (DZS, 2021.).

2. jedinice lokalne i regionalne samouprave nemaju dostatne fiskalne kapacitete za razvoj i financiranje socijalnih usluga. Od 98 540 530 000,00 kn primitaka za socijalnu zaštitu, 55% dolazi iz socijalnog osiguranja, 36% od središnje države. Samo 4% primitaka dolazi od jedinica lokalne/regionalne samouprave, 1% iz drugih programa te 4% iz ostalih izvora.

3. u razvoju socijalnih usluga participiraju brojni društveni dionici čija odgovornost nije koordinirana, stoga se razvoj događa relativno stihijski.

Želimo li postići da temeljne socijalne usluge budu zajamčene, tj. univerzalno dostupne za sve korisnike u potrebi, čini nam se važnim izgraditi **koordinirani sustav podijeljene odgovornosti**.

Prema zakonskim izvorima, nekoliko je aktera koji imaju legitimitet sudjelovati u razvoju lokalnih socijalnih usluga:

1. središnja država temeljem odredbi Ustava Republike Hrvatske (NN 56/90, 135/97, 08/98, 113/00, 124/00, 28/01, 41/01, 55/01, 76/10, 85/10, 05/14, čl. 1. 58 i 64.) i Zakona o socijalnoj skrbi (NN 18/2022.)

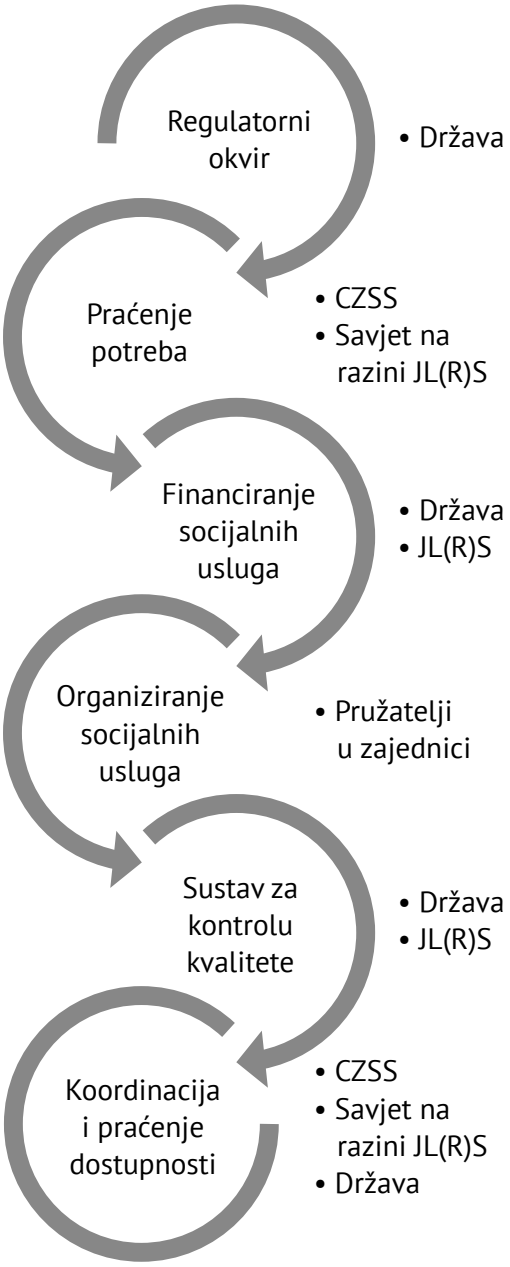
2. jedinice lokalne samouprave (gradovi i općine) i gradovi središta županija temeljem Zakona o lokalnoj i područnoj (regionalnoj) samoupravi (čl. 19 i 19a, NN 33/01, 60/01, 129/05, 109/07, 125/08, 36/09, 36/09, 150/11, 144/12, 19/13, 137/15, 123/17, 98/19, 144/20)

3. županije za ustroj mreže socijalnih ustanova temeljem Zakona o lokalnoj i područnoj (regionalnoj) samoupravi (čl. 20, NN 33/01, 60/01, 129/05, 109/07, 125/08, 36/09, 36/09, 150/11, 144/12, 19/13, 137/15, 123/17, 98/19, 144/20) te Zakona o socijalnoj skrbi djelovanjem Savjeta za socijalnu skrb (čl. 241, NN 18/2022.)

4. Hrvatski zavod za socijalni rad s mrežom podružnica i ispostava centara za socijalnu skrb koji „predlaže razvoj novih socijalnih usluga u skladu s prepoznatim potrebama u lokalnoj zajednici i prati razinu dostupnosti socijalnih usluga˝ (čl. 178, st. 2, NN 18/2022.).

S obzirom na cjelokupan sustav razvoja socijalnih usluga, smatramo da trebaju postojati sljedeći podsustavi s predloženim funkcijama ili razinama odgovornosti (slika 1.).

Slika 1. Idealtipske razine odgovornosti u razvoju socijalnih usluga



Na sličan način i Martinelli (2017.) ukazuje na potrebu usklađivanja četiri podsustava: za regulaciju, financiranje, koordinaciju, planiranje i praćenje te za pružanje socijalnih usluga. Autorica ističe kako se unutar tih sustava treba podijeliti odgovornost među društvenim dionicima, pri čemu država treba zadržati ulogu u regulaciji i financiranju što je jamac postizanja univerzalnosti u dostupnosti socijalnih usluga.

1. **Sustav za uspostavu regulatornog okvira.** U ovom sustavu temeljna je uloga središnje države, preciznije sustava socijalne skrbi koji stvara strateške dokumente, predlaže financijske i druge mehanizme za postizanje dostupnosti te predlaže zakonske i podzakonske propise. Sustav socijalne skrbi trebao bi biti odgovoran i za izgradnju modela međusektorske suradnje kojom će se aktivirati resursi u drugim sustavima te pridonijeti organskoj integraciji socijalnih usluga u skladu sa stvarnom prirodom potreba korisnika.

2. **Sustav za praćenje potreba u lokalnoj zajednici i planiranje potrebnih usluga.** Uvažavajući činjenicu da je svaka lokalna sredina drugačija i da lokalni dionici najbolje poznaju potrebe na terenu, čini se logičnim da temeljne potrebe prepoznaju stručna tijela na lokalnoj razini (centri za socijalnu skrb) te koordinacija dionika na lokalnoj i regionalnoj razini (Savjet za socijalnu skrb).

3. **Osiguravanje financiranja za održive i univerzalno dostupne socijalne usluge.** Prema načelu dostupnosti socijalne zaštite, socijalne usluge trebale bi se financirati iz javnih sredstava kojima upravlja središnja ili lokalna država, barem kada je riječ o korisnicima niskog socijalno-ekonomskog statusa i/ili korisnicima koji su visoko izloženi socijalnom riziku. Ovaj oblik financiranja može se institucionalno urediti postojanjem fonda na nacionalnoj razini iz kojega se izravno financiraju socijalne usluge na temelju lokalno utvrđenih potreba ili spuštanjem sredstava s nacionalne na lokalnu razinu na osnovi broja stanovnika i projekcije potreba. U svakom slučaju, sredstva trebaju biti dostupna lokalnoj zajednici što je moguće neposrednije, i to zajamčeno prema potrebama u zajednici.

4. **Organiziranje socijalnih usluga** je u nadležnosti pružatelja u zajednici koji, kao i dosad, mogu biti raznovrsni dionici (lokalne, regionalne ili državne ustanove, udruge, vjerske zajednice, privatne osobe i drugo). Kao i dosad, za određene socijalne usluge može se predvidjeti uloga podružnice Hrvatskog zavoda za socijalni rad (mreže centara za socijalnu skrb) koji će procijeniti potrebe korisnika i uputiti ih na odgovarajuće pružatelje. Pritom, kada god je moguće, potrebno je osigurati da korisnik može odabrati odgovarajuću uslugu.

5. **Nadzor nad radom pružatelja i praćenje standarda kvalitete socijalnih usluga.** S obzirom na to da su socijalne usluge od javnog interesa, opravdano je da je praćenje kvalitete rada u nadležnosti središnje države, što ona čini mehanizmima inspekcijskog i upravnog nadzora (Zakon o socijalnoj skrbi, 18/22, čl. 265). Novim Zakonom o socijalnoj skrbi predviđeno je da uz nadležno ministarstvo standarde kvalitete i uvjete pružanja socijalnih usluga utvrđuju i jedinice regionalne samouprave imenovanjem povjerenstva (čl. 164, NN 18/22). Smatramo da bi ova tijela, osim na razini prvotnog utvrđivanja uvjeta za pružanje socijalnih usluga i nadzora, trebala uvesti i druge oblike poticanja kvalitete socijalnih usluga (primjerice nagrađivanjem, proglašavanjem centara izvrsnosti i referentnih centara i drugo). Dakako, potrebno je potaknuti i same pružatelje na konstantnu evaluaciju kvalitete i učinkovitosti socijalnih usluga te ulaganje napora u njihovo poboljšanje.

6. **Koordinacija pružatelja i praćenje dostupnosti socijalnih usluga.** Ovaj podsustav ponovno vidimo u nadležnosti podružnica Hrvatskog zavoda za socijalni rada (dosadašnjih centara za socijalnu skrb) te stručnih tijela/savjeta pri JL(R)PS. Njima ova funkcija i sada pripada na osnovi mandata za razvoj i praćenje socijalnih usluga. To se prije svega odnosi na sustavno prikupljanje podataka o pružateljima i strukturi korisnika, popunjenosti kapaciteta i cjelovitom

informiranju građana o dostupnim socijalnim uslugama. Ovakva koordinacijska tijela izravni su alat međusektorske suradnje i integracije, jer praksa i sada pokazuje da u savjetima za socijalnu skrb u županijama uključeni su predstavnici različitih sektora pored socijalne skrbi. Putem koordinacijske uloge Hrvatskog zavoda za socijalni rad, povratno u koordinaciji sudjeluje središnja država što je nužno za daljnje strateško planiranje razvoja socijalnih usluga.

U odnosu na idealtipski, postojeći sustav sastoji se od aktera koji zaista imaju raznovrsne odgovornosti, a one nisu međusobno usklađene. Naime, trenutačna situacija je takva da centri za socijalnu skrb zbog velikih radnih opterećenja nisu mogli kvalitetno davati inicijative za razvoj socijalnih usluga. Kao iznimku spomenimo Centar za socijalnu skrb Hrvatska Kostajnica koji je izradio Plan razvoja socijalnih usluga za područje svoje nadležnosti (Rehabilitacijski centar za stres i traumu, 2015.). Županije su temeljem zakonske obveze donijele svoje socijalne planove, ali njihovi akti ni na koji način nisu bili obvezujući za Ministarstvo koje bi na temelju toga planiralo financiranje pružatelja socijalnih usluga i njihovo ugovaranje. Dakle, između podsustava za utvrđivanje potreba i sustava financiranja nije bilo dostatne povezanosti. Čini se da novi Zakon o socijalnoj skrbi (18/22) ovaj problem nije otklonio. Tako se u čl. 243, st. 1. predviđa: *Ministarstvo po potrebi raspisuje javni poziv za podnošenje ponuda za sklapanje ugovora za pružanje socijalnih usluga sukladno iskazanim potrebama u mreži socijalnih usluga.* Pritom nije zakonom predviđeno kada se utvrđuju potrebe za socijalnim uslugama, kao ni to da će one biti utvrđene na temelju socijalnih planova koje su obvezne donositi županije.

Što se tiče financiranja socijalnih usluga, u Hrvatskoj postoji dualni sustav – u mreži socijalnih usluga koje financira Ministarstvo te izvan mreže preko dostupnih sredstava za koja se izbore sami pružatelji (najčešće vremenski ograničeno projektno financiranje). Dosad je resorno Ministarstvo financijski izravno ugovaralo socijalne usluge s konkretnim pružateljima, bez obvezne i sustavne koordinacije s lokalnom zajednicom. Taj je sustav zadržan i u novom Zakonu te unatoč mandatu gradova, općina, županija i Hrvatskog zavoda za socijalni rad da prate potrebu za socijalnim uslugama, resorno Ministarstvo ostalo je pri stavu da izravno (a to znači i dalje parcijalno i nekoordinirano) dogovara cijenu i trošak pružanja socijalnih usluga s pojedinim pružateljem. Pritom izostaje predvidiva dinamika raspisivanja javnih natječaja. Što se tiče petog predviđenog sustava za koordinaciju i praćenje dostupnosti socijalnih usluga, on danas *de facto* ne postoji. Ni samo resorno Ministarstvo nema podatke o tome koliko su usluge (ne)dostupne na lokalnoj razini, koji sve pružatelji u ovom dualnom sustavu postoje te, ono najvažnije, koliko su zadovoljene potrebe građana. U lokalnim zajednicama nema cjelovite mape pružatelja socijalnih usluga, jasne strukture i brojnosti korisnika pa se na terenu može očekivati dupliranje istovrsnih programa, dok neki drugi nedostaju.

7.2 NOVIM SUSTAVOM POSTIĆI ĆE SE UNIVERZALNA DOSTUPNOST TEMELJNIH SOCIJALNIH USLUGA

Zaključno u obrazloženju modela univerzalno dostupnih temeljnih socijalnih usluga možemo reći da postoji puno opravdanje za njegovu implementaciju, da postoje dostupni resursi koji se trebaju aktivirati te da je potrebno predložene podsustave bolje povezati kako bi sinergijski dali željeni učinak na korist građana Republike Hrvatske.

Da bi to bilo moguće, smatramo nužnim učiniti nekoliko prijelaznih pretpostavki:

A. Cjelovito procijeniti dostupne resurse koji sada postoje na lokalnoj i regionalnoj razini. Oni se prije svega odnose na dostupne stručnjake, ali i infrastrukturne uvjete te raspoloživa sredstva za financiranje socijalnih usluga na lokalnoj i regionalnoj razini. U tu će svrhu u sklopu projekta *Zajednice uključuju: Inicijativa za univerzalno dostupne temeljne socijalne usluge* biti razvijen digitalni alat koji će omogućiti jedinicama lokalne samouprave i njihovim klasterima da sami procijene u kojoj mjeri mogu sada svojim građanima osigurati temeljne socijalne usluge.

B. Unaprijediti kapacitete profesionalnih, paraprofesionalnih i neprofesionalnih pomagača koji sudjeluju u pružanju socijalnih usluga. Predloženi model temelji se na uključivanju velikog broja pružatelja usluga sa srednjom stručnom spremom u poslove koji će zamijeniti neformalnu skrb. Za ovaj model iznimno je važno aktiviranje volontera pa će biti nužno uložiti u edukacije i lokalni menadžment volontera. Što se tiče stručnjaka, važno je ojačati njihove kapacitete za proaktivno djelovanje s obzirom na to da je sustav dosad funkcionirao po načelu gašenja požara i nametao stručnjacima reaktivni, krizni rad. Prema ovom modelu, očekujemo razvoj usluga koje će biti preventivne i zamijeniti ono što u sustavu socijalne skrbi danas znamo kao mjere ili represivni oblik djelovanja sustava. Poslovi koordinacije i praćenja zahtijevaju dodatno jačanje vještina za lokalno socijalno planiranje i upravljanje.

C. Unaprijediti suradnju među sektorima. Ova pretpostavka čini nam se ključnom da bi se iskoristili dostupni resursi i organski povezale usluge koje sada, sasvim umjetno, pripadaju različitim sektorima. Međusektorsku suradnju treba poticati od najviših razina (ministarskih) do modela financiranja koji će omogućiti razvoj usluga među sektorima. Sustav socijalne skrbi vidimo i dalje kao nositelja razvoja socijalnih usluga koji bi trebao biti odgovoran za uspostavu djelotvornih mehanizama međusektorske suradnje i integracije. Sustav socijalne skrbi u pružanje socijalnih usluga treba maksimalno staviti u funkciju svoje raspoložive resurse, ali pozvati i na mobilizaciju drugih resursa koji postoji u povezanim sustavima (obrazovanju, zdravstvu i drugima). Iz sadašnje perspektive međusektorska suradnja čini se teže ostvarivom na razini središnje države, dok je ona nerijetko lakše ostvariva na lokalnim i regionalnim razinama. Zbog toga u podsustavu stvaranja regulatornog okvira i podsustavu za koordinaciju treba predvidjeti mehanizme međusektorske suradnje.

D. Smanjiti administrativne postupke i rasteretiti stručni rad od tog dijela posla. Čini se da novi Zakon o socijalnoj skrbi (NN 18/2022.) neće pridonijeti smanjenju administrativnih poslova, nego dapače njegovu povećanju. U predloženom Zakonu o socijalnoj skrbi uočava se tendencija zakonodavca da poveća administrativni dio posla stručnih radnika kako bi se korisniku „odobrilo ili priznalo pravo na socijalnu uslugu“ (čl. 75 - 80). Tako je prijašnji članak 75. (NN 157/13, 152/14, 99/15, 52/16, 16/17, 130/17, 98/19, 64/20, 138/20) s jednim stavkom sada narastao na četiri članka i 19 stavka propisujući cijeli niz radnji koje se provode od trenutka kada korisnik iskaže svoju potrebu do trenutka realizacije socijalne usluge. Naglasak na administrativnim postupcima predstavlja rizik od gušenja stručnog rada i smanjenja dostupnosti socijalne

usluge za krajnjeg korisnika (posebice ako ima brojne komunikacijske, jezične, prometne, obrazovne i druge barijere). Osim toga, Zakon nastavlja tendenciju razdvajanja postupaka procjene, informiranja i tretmana kao odvojenih usluga kada je u praksi riječ o organski povezanim postupcima. Ovo razdvajanje ne samo da produljuje postupak dobivanja usluge, nego dodatno fragmentira pružatelje (moguće je da se procjena obavlja na jednom, a tretman na drugom mjestu) i povećava udio administrativnih poslova. Stručnjake koji rade u centrima za socijalnu skrb, ustanovama socijalne skrbi, školama, domovima zdravlja i drugim javnim ustanovama treba maksimalno rasteretiti od nestručnog rada. Njihovi su resursi najdragocjeniji upravo za socijalne usluge, neposredan rad s korisnicima i tamo se trebaju aktivirati.

7.3 UNIVERZALNO DOSTUPNE TEMELJNE SOCIJALNE USLUGE NA REGIONALNOJ RAZINI

Prema projekcijama broja korisnika i potrebnim resursima, regionalnoj razini pripadaju socijalne usluge koje su navedene u tablici 54.

Tablica 54. Temeljne socijalne usluge na razini regionalne/županijske odgovornosti

Korisnička skupina	Socijalna usluga
Djeca	Udomiteljstvo za djecu bez odgovarajuće roditeljske skrbi
Djeca	Specijalizirano udomiteljstvo za djecu s teškoćama u razvoju
Mladi	Specijalizirano udomiteljstvo za djecu s PUP
Obitelji	Udomiteljstvo za majke s djecom
Osobe s invaliditetom	Udomiteljstvo za osobe s invaliditetom
Manjine i izbjeglice	Udomiteljstvo u skladu s etničkim, jezičnim, kulturnim i vjerskim podrijetlom djeteta bez odgovarajuće roditeljske skrbi
Djeca	Prilagođeni prijevoz u zajednici za učenike s teškoćama u razvoju
Manjine i izbjeglice	Educiranje pružatelja usluga za rad s osobama različitog etničkog/ kulturnog porijekla
Manjine i izbjeglice	Edukacija i supervizija interkulturnih medijatora
Djeca	Organizirano stanovanje za djecu (do 18. godina) bez roditeljske skrbi
Djeca	Organizirano stanovanje za djecu (do 18. godina) s teškoćama u razvoju
Mladi	Organizirano stanovanje za mlade u alternativnoj skrbi
Djeca	Organizirano stanovanje za djecu bez pratnje i djecu žrtve trgovanja ljudima
Mladi	Organizirano stanovanje za mlade s invaliditetom
Mladi	Organizirano stanovanje za mlade s problemima u ponašanju
Obitelji	Organizirano stanovanje za majke s djecom
Siromaštvo	˝Kuća na pola puta˝ - za privremeni smještaj osoba koje izlaze iz institucija ili penalnog sustava

Siromaštvo	Organizirano stanovanje za osobe u beskućništvu
Osobe s invaliditetom	Organizirano stanovanje za osobe s invaliditetom uz intenzivnu ili povremenu podršku
Mentalno zdravlje	Organizirano stanovanje za osobe s duševnim smetnjama
Obitelji	SOS telefon za žrtve nasilja
Starije osobe	Alarmni dojavni sustav za starije osobe
Osobe s invaliditetom	Dojavni sustavi za osobe s invaliditetom u krizama i katastrofama
Siromaštvo	Besplatna pravna pomoć građanima u siromaštvu
Obitelji	Besplatna primarna i sekundarna pravna pomoć za žrtve nasilja
Manjine i izbjeglice	Besplatna pravna pomoć pripadnicima romske nacionalne manjine i migrantima
Siromaštvo	Prihvatilište za osobe u beskućništvu
Siromaštvo	Prenoćište za osobe u beskućništvu
Starije osobe	Stacionarna palijativna skrb
Osobe s invaliditetom	Tečajevi znakovnog jezika za pružatelje usluga
Mentalno zdravlje	Programi smanjenja štete za ovisnike (harm reduction)
Manjine i izbjeglice	Tečajevi hrvatskog jezika na osnovnoj i naprednoj razini
Manjine i izbjeglice	Prevođenje i tumačenje za izbjeglice i migrante
Manjine i izbjeglice	Interkulturni medijatori za izbjeglice i migrante
Obitelji	Sigurna kuća (sigurni smještaj) za (žene) žrtve nasilja u obitelji

Regionalnoj razini pripadaju gotovo sve usluge smještaja u zajednici (veliki institucionalni smještaj ovdje nije predviđen i ne smatra se uslugom u zajednici). To uključuje udomiteljstvo, organizirano stanovanje, smještaj osoba u beskućništvu i smještaj žrtvi nasilja. Za udomiteljstvo i organizirano stanovanje poželjno je da su disperzirani po županiji kako bi bili što bliže prirodnom okruženju korisnika. Za ovaj skup usluga odgovorne su podružnice Hrvatskog zavoda za socijalni rad (CZSS) koje prate potrebe u zajednici, predlažu razvoj ovih usluga te s državom i regionalnom (županije / Grad Zagreb) razinom prate kvalitetu socijalnih usluga te ih koordiniraju. Što se tiče financiranja, udomiteljstvo treba nastaviti financirati iz središnje države, dok se u ostale oblike smještaja može uključiti i JL(R)S s oko 1 do 2 % svog proračuna. Sadašnja izdvajanja JL(R)S-a otprilike iznose 5% proračuna, s

time da slabije razvijene jedinice imaju čak veći udio izdvajanja u proračunu iako po stanovniku to nominalno znači manje iznose (Šućur i sur., 2016.). Od ostalih usluga smatramo da županije mogu planirati, financirati i koordinirati pružatelje usluga koji će osigurati dojavne sustave i SOS linije, edukacije za pružatelje određenih usluga te pravnu pomoć, i to financijsku u suradnji sa središnjom državom. Regionalnoj razini odgovornosti pripadaju usluge podrške integracije izbjeglica i stvaranja baze stručnjaka koji će u tome pomoći, poput interkulturalnih medijatora. Ovaj dio usluga također mogu planirati, koordinirati i financirati županije s financijskom participacijom središnje države.

7.4 UNIVERZALNO DOSTUPNE TEMELJNE SOCIJALNE USLUGE NA RAZINI KLASTERA JLS

Predloženi model u velikoj se mjeri oslanja na funkcionalno povezane jedinice lokalne samouprave i ovaj element smatramo važnom institucionalnom inovacijom. Teritorijalni ustroj Hrvatske previše je usitnjen. Iako bi općine, gradovi, veliki gradovi i županije trebali činiti povezane i koordinirane cjeline, nerijetko je slučaj da je riječ o odvojenim i međusobno nepovezanim entitetima koji na osnovi Zakona o lokalnoj i područnoj (regionalnoj) samoupravi imaju samostalnost u obavljanju poslova iz svog djelokruga (NN 33/01, 60/01, 129/05, 109/07, 125/08, 36/09, 36/09, 150/11, 144/12, 19/13, 137/15, 123/17, 98/19, 144/20). Kako bi doskočila dezintegriranosti i nefunkcionalnosti velikog broja općina i gradova, Vlada Republike Hrvatske je u Nacionalnom planu oporavka i otpornosti predvidjela novčane poticaje za dobrovoljno funkcionalno povezivanje jedinica lokalne samouprave (2021.). Dodatno će suradnji i povezivanju pridonijeti mehanizam ITU (Integrirana teritorijalna ulaganja) koji se temelji na jačanju uloge velikih gradova i njihovog povezivanja s neposrednim okruženjem.

Pri izradi projekcija broja korisnika u ovom modelu postalo je evidentno da najveći dio usluga s obzirom na potrebe ne može biti organiziran na razini jedinica lokalne samouprave. Osim toga, na sasvim lokalnoj razini, u velikom broju malih gradova i općina, nema ni dostatnih stručnih i drugih kapaciteta, stoga je ključno povezivanje JLS-a u klaster. Prema sadašnjem institucionalnom ustrojstvu, tome je najbliža mreža centara za socijalnu skrb gdje je svaki CZSS u Hrvatskoj nadležan za određeni skup gradova i općina koji realno čine povezanu cjelinu. Stoga predlažemo da se klasterom JLS-a shvati upravo ona teritorijalna cjelina koja je sada u nadležnosti centara za socijalnu skrb. Oni se najčešće nalaze u urbanim središtima gdje su i druge važne institucije (domovi zdravlja, srednje škole, zavod za zapošljavanje, policijska ispostava i drugo) i kamo stanovništvo iz okolnih JLS-a prirodno gravitira.

Usluge u nadležnosti klastera JLS-a prikazane su u tablici 55.

Tablica 55. Temeljne socijalne usluge na razini klastera jedinice lokalne samouprave

Korisnička skupina	Socijalna usluga
Starije osobe	Udomiteljstvo za starije osobe
Djeca	Rana razvojna podrška (od 0 do 3 godine)
Djeca	Rana razvojna podrška (od 4 do 7 godina)
Djeca	Savjetovanje ili psihološka pomoć za djecu i mlade
Obitelji	Obiteljsko/partnersko savjetovanje
Siromaštvo	Savjetovanje za pojedince i obitelji u siromaštvu
Starije osobe	Savjetovanje za članove obitelji nemoćnih i dementnih starijih osoba
Osobe s invaliditetom	Savjetovanje za osobe s invaliditetom i članove njihovih obitelji
Mentalno zdravlje	Krizne intervencije i prva psihološka pomoć

Mentalno zdravlje	Savjetovanje i psihoterapija
Mentalno zdravlje	Savjetovanje za članove obitelji osobe s teškoćama mentalnog zdravlja
Djeca	Cjelodnevni ili poludnevni boravak za djecu s teškoćama u razvoju
Djeca	Cjelodnevni ili poludnevni boravak za djecu iz obitelji u riziku
Mladi	Cjelodnevni ili poludnevni boravak za djecu i mlade s problemima u ponašanju
Siromaštvo	Dnevni centar za podršku osobama s problemima stanovanja
Osobe s invaliditetom	Cjelodnevni/poludnevni boravak za osobe s invaliditetom
Mentalno zdravlje	Dnevni/poludnevni boravak za osobe s teškoćama mentalnog zdravlja
Djeca	Međusektorski prijenos znanja (pomoć pri uključivanju u programe odgoja i redovitog obrazovanja)
Siromaštvo	Međusektorski programi rane prevencije siromaštva
Starije osobe	Organizirano stanovanje za starije osobe
Mentalno zdravlje	Privremeni/povremeni smještaj za osobe s teškoćama mentalnog zdravlja
Djeca	Multidisciplinarna psihosocijalna podrška za djecu s teškoćama u razvoju (od 8 do 18 godina)
Mladi	Multidisciplinarna psihosocijalna podrška za mlade s problemima u ponašanju
Mladi	Multidisciplinarna psihosocijalna podrška maloljetnim trudnicama i majkama
Obitelji	Multidisciplinarna psihosocijalna pomoć i podrška obiteljima u riziku
Obitelji	Multidisciplinarna psihosocijalna pomoć i podrška roditeljima njegovateljima
Siromaštvo	Multidisciplinarna psihosocijalna podrška osobama u siromaštvu
Starije osobe	Multidisciplinarna psihosocijalna podrška starijim i nemoćnim osobama
Starije osobe	Multidisciplinarna psihosocijalna podrška formalnim i neformalnim njegovateljima
Osobe s invaliditetom	Multidisciplinarna psihosocijalna podrška OSI koji su roditelji
Osobe s invaliditetom	Multidisciplinarna psihosocijalna podrška OSI i članovima njihovih obitelji
Mentalno zdravlje	Multidisciplinarna psihosocijalna podrška obiteljima ovisnika / liječenih ovisnika
Mentalno zdravlje	Multidisciplinarna psihosocijalna podrška osobama s teškoćama mentalnog zdravlja i njihovim obiteljima
Djeca	Logopedska terapija

Mladi	Individualni socijalno-pedagoški rad s mladima s problemima u ponašanju
Mladi	Mentorstvo mladima s problemima u ponašanju
Mladi	Mentorstvo mladima iz alternativne skrbi
Siromaštvo	Socijalno mentorstvo
Obitelji	Pomoć i podrška u stjecanju kvalifikacija i zapošljavanju za žrtve obiteljskog nasilja
Siromaštvo	Podrška u zapošljavanju i stjecanju kvalifikacija za građane u siromaštvu
Osobe s invaliditetom	Pomoć i podrška u stjecanju kvalifikacija i zapošljavanju za osobe s invaliditetom
Starije osobe	Palijativna skrb u kući
Starije osobe	Njega u kući
Starije osobe	Kontinuirana njega u kući za osobe oboljele od Alzheimerove demencije
Osobe s invaliditetom	Cjelodnevna skrb i njega u kući osobe s težim/teškim invaliditetom
Starije osobe	Usluga privremene njege u kući zbog predaha od skrbi primarnog njegovatelja (za starije osobe)
Osobe s invaliditetom	Privremeni njegovatelj u obitelji osobe s invaliditetom zbog predaha od skrbi primarnog njegovatelja
Djeca	Privremeni njegovatelj u obitelji za dijete s teškoćama u razvoju zbog predaha od skrbi
Osobe s invaliditetom	Osobna asistencija za OSI, uključujući asistenciju u obitelji za OSI koji su roditelji
Osobe s invaliditetom	Videći pratitelj
Osobe s invaliditetom	Radni asistent OSI na otvorenom tržištu rada
Osobe s invaliditetom	Terapijske aktivnosti za osobe s invaliditetom
Osobe s invaliditetom	Radna terapija
Osobe s invaliditetom	Prevoditelj znakovnog jezika
Mentalno zdravlje	Integrirana socijalna usluga na razini pojedinca za osobe s težim mentalnim poremećajima (vođenje slučaja)
Manjine i izbjeglice	Koordinator integracije / integrirana socijalna usluga na razini korisnika (vođenje slučaja)
Manjine i izbjeglice	Romski pomagač u pripremi za školu, predškoli i nastavi
Manjine i izbjeglice	Prevoditelj romskog jezika

Na razini klastera JLS-a predviđeno je pružanje visoko stručnih usluga koje se odnose na tretmane korisnika i psihosocijalno osnaživanje. Tako se ovdje nalaze usluge savjetovanja, multidisciplinarne podrške, rane razvojne podrške, međusektorski programi podrške u uključivanju djece u obrazovanje te u prevenciji siromaštva, individualno vođenje i socijalno-pedagoški rad, mentorstvo i integrirana individualna usluga za osobe s teškoćama mentalnog zdravlja i za izbjeglice. Planiranje, procjenu potreba i koordiniranje ovih usluga trebaju preuzeti podružnice Hrvatskog zavoda za socijalni rad (CZSS) u suradnji s predstavnicima drugih institucija i jedinica lokalne samouprave. U provedbi usluge, osim CZSS-a, očekuje se uključivanje i drugih lokalnih stručnjaka i organizacija, a financiranje rada stručnjaka od kojih je znatan dio već u sustavu treba snositi središnja država.

Na razini klastera JLS-a organiziraju se usluge boravka, pomoći i podrške u zapošljavanju te palijativna skrb u kući, a od usluga smještaja organizirano stanovanje za starije osobe i privremeni smještaj za osobe s teškoćama mentalnog zdravlja. Radi planiranja i koordinacije ovih usluga trebao bi postojati savjet za socijalne usluge sastavljen od predstavnika lokalnih pružatelja socijalnih usluga i jedinica lokalne samouprave u klasteru. Očekuje se uključivanje širokog kruga pružatelja usluga, a u financiranju uz središnju državu trebaju sudjelovati i jedinice lokalne samouprave izdvajajući oko 1 % svog proračuna za socijalne usluge.

Na razini klastera JLS-a predviđeno je stvaranje baze pomagača koji će biti angažirani za usluge asistencije, njege i predaha od skrbi. U poglavlju VI. istaknuli smo da je riječ o rastućem sektoru zapošljavanja, a za najpotrebitije korisnike ove usluge treba planirati i koordinirati savjet za socijalne usluge na razini klastera JLS-a, a financirati po modelu sudjelovanja središnje države i svakog JLS-a s oko 1 % proračuna.

7.5 UNIVERZALNO DOSTUPNE TEMELJNE SOCIJALNE USLUGE NA RAZINI JEDINICE LOKALNE SAMOUPRAVE

Na lokalnoj ili komunalnoj razini organiziraju se usluge navedene u tablici 56.

Tablica 56. Temeljne socijalne usluge na razini jedinice lokalne samouprave

Korisnička skupina	Usluge
Starije osobe	Poludnevni/cjelodnevni boravak za starije osobe
Starije osobe	Organizirani prijevoz i pratnja za starije i nemoćne osobe
Osobe s invaliditetom	Specijalizirani prijevoz i pratnja za osobe s invaliditetom
Djeca	Socijalizacijske i razvojne aktivnosti za djecu
Starije osobe	Smještaj starijih osoba u kriznim situacijama
Starije osobe	Privremeni/povremeni smještaj za starije osobe, uključujući smještaj zbog predaha njegovatelja
Obitelji	Krizni smještaj za obitelji /građane pogođene katastrofama
Mladi	Stambeno zbrinjavanje mladih u kriznim situacijama
Mentalno zdravlje	Programi socijalnog uključivanja ovisnika i osoba s teškoćama mentalnog zdravlja u zajednici
Mladi	Programi podrške mladima s problemima ovisnosti
Mladi	Psihoedukativni i preventivni programi za mlade
Mentalno zdravlje	Psihoedukativni i preventivni programi - univerzalna prevencija
Mentalno zdravlje	Psihoedukativni i preventivni programi - selektivna prevencija
Mentalno zdravlje	Psihoedukativni i preventivni programi - indicirana prevencija
Mladi	Grupna i vršnjačka podrška mladima s problemom u ponašanju
Obitelji	Grupe podrške za roditelje/članove obitelji djece s različitim vrstama rizika
Mentalno zdravlje	Grupe podrške i vršnjačka podrška za osobe s teškoćama mentalnog zdravlja
Mentalno zdravlje	Grupe podrške za članove obitelji osoba s teškoćama mentalnog zdravlja
Mentalno zdravlje	Terapijske grupe/klubovi za ovisnike o alkoholu

Mentalno zdravlje	Terapijske grupe/klubovi za ovisnike o drogi
Mentalno zdravlje	Terapijske grupe/klubovi za ovisnike o kocki
Siromaštvo	Pomoć i podrška u obrazovanju za djecu i mlade iz obitelji u siromaštvu
Obitelji	Edukativna, preventivna i savjetodavna pomoć tijekom tranzicije u roditeljstvo te podrška trudnicama, roditeljima i novorođenčadi u zajednici
Siromaštvo	Pučka kuhinja
Siromaštvo	Dostava namirnica i/ili toplih obroka siromašnim građanima
Starije osobe	Priprema i dostava toplih obroka za starije osobe
Siromaštvo	Socijalna samoposluga
Siromaštvo	Posudionica ortopedskih i medicinskih pomagala
Starije osobe	Pomoć i podrška u obavljanju svakodnevnih aktivnosti u domu starije osobe
Starije osobe	Stanovanje starijih osoba u vlastitom domu uz intenzivnu i kontinuiranu podršku
Osobe s invaliditetom	Pomoć u kući i praktična podrška u samostalnom stanovanju za osobe s invaliditetom
Djeca	Pomoćnik u nastavi
Starije osobe	Centar za starije osobe u zajednici s organiziranim kulturnim, umjetničkim, sportskim i drugim aktivnostima
Mentalno zdravlje	Organizirane kreativne, rekreativne i socijalizacijske aktivnosti strukturiranog provođenja slobodnog vremena (teškoće mentalnog zdravlja)
Mladi	Informativni centar za mlade - outreach programi namijenjeni mladima
Djeca	Stručni komunikacijski posrednik za djecu s oštećenjem sluha

Na razini JLS-a trebaju se organizirati brojni servisi u zajednici koji će građanima pomoći zadovoljiti svakodnevne potrebe putem prijevoza i prehrane te podmiriti njihove egzistencijalne potrebe. Na lokalnoj razini organiziraju se i široki programi prevencije mentalnog zdravlja i drugih rizika te grupne podrške osobama s rizicima, kao i aktivnosti za djecu i mlade. S obzirom na brojnost korisnika, JLS organizira i usluge podrške starijim osobama za život u zajednici. Od specifičnih usluga za djecu s teškoćama u razvoju koja su uključena u obrazovanje na razini JLS-a osiguravaju se pomoćnici u nastavi te stručni komunikacijski posrednici djeci s oštećenjem sluha.

Planiranje i koordinaciju ovih usluga treba preuzeti lokalni savjet za socijalnu skrb ili razvoj socijalnih usluga sastavljen od predstavnika lokalnih organizacija i organizacija koje djeluju na razini klastera JLS-a (poput predstavnika CZSS-a, domova zdravlja i drugo). U financiranju bi JLS trebao sudjelovati s 2 % svog proračuna te središnja država, a pružanje usluga organiziraju brojni i raznovrsni lokalni dionici.

7.6 ZAKLJUČNO O UNIVERZALNO DOSTUPNIM TEMELJNIM SOCIJALNIM USLUGAMA

Univerzalno dostupne temeljne socijalne usluge dostižan su cilj za Hrvatsku kao socijalnu državu koja sve više ulaže u sustav socijalne skrbi.

Predloženi model utemeljen je na društvenoj odgovornosti koja se operacionalizira kroz jamstvo središnje države da pristup socijalnim uslugama nije rezultat spleta okolnosti nego strateškog planiranja.

Socijalne usluge, međutim, nisu odgovornost samo središnje države. Dapače, središnja država facilitira i usmjerava lokalne, regionalne i sektorske razine na puni angažman.

Predloženi model treba shvatiti kao živi dokument koji se mijenja periodično kako se mijenjaju:

- okolnosti u zajednici i nastaju nove potrebe
- procjena stručnjaka da bi neke nove usluge trebale postati dio standarda ili prestati biti standard
- ocjene da bi kriteriji prema kojima su procjenjivane potrebe u ovom modelu trebali biti drugačiji ili praksa pokaže da je stvarna motivacija korisnika veća ili manja od one statističke
- standardi stručnog rada i omjer stručnog/nestručnog rada
- strukture lokalnih zajednica i njihovo administrativno uređenje.

Ipak, da bi se sustav uspostavio i bio predvidljiv za korisnike, nije dobro da se često događaju promjene i revizije. Razdoblje od pet godina razumno je vrijeme za reviziju cjelokupnog modela, ali uz pretpostavku da su unaprijeđene baze podataka koje će omogućiti evaluaciju i strateško planiranje utemeljeno na dokazima. U ovom pristupu koristili smo procjene stručnjaka što ima izvjesna ograničenja. U budućnosti bi svakako bilo važno uključiti perspektivu korisnika oko njihovog viđenja prioritetnih socijalnih usluga.

Implementacijom modela univerzalno dostupnih temeljnih socijalnih usluga Republika Hrvatska mogla bi na međunarodnoj razini postati primjer dobre prakse, usporediv s brojnim jakim socijalnim državama pa i ponuditi svoj *know-how* međunarodnoj stručnoj, političkoj i općoj javnosti.

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Studija predstavlja iznimno vrijedan i originalan doprinos naporima usmjerenima razumijevanju i unapređenju stanja temeljnih socijalnih usluga u RH, a koje se pružaju unutar sustava socijalne skrbi (ili se uz njega vežu). Donosi važan uvid u perspektivu brojnih stručnjaka i stručnjakinja koji rade u samom sustavu (ili su u bliskom kontaktu s istim) te imaju dobar uvid i u same potrebe korisnika te vrste usluga koje su im najpotrebnije. Uz vrijedno stručno promišljanje, dodatno nadograđeno dosadašnjim znanstvenim spoznajama i istraživanjima, predloženi model socijalnih usluga ponajprije nosi veliku praktičnu vrijednost te će biti od velike pomoći u planiranju temeljnih socijalnih usluga u zajednici diljem RH.

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Rukopis adresira važno istraživačko pitanje. Dizajnom istraživanja autorice pristupaju problemu na vrlo uvjerljiv način, dobro razrađenom i u potpunosti transparentnom metodologijom. Svi analitički koraci i odluke su vrlo otvoreno prezentirani i prikazani kroz rukopis. U budućnosti bi bilo značajno optimizam autorica u pogledu dostupnosti resursa potrebnih za implementaciju univerzalno dostupnih temeljnih socijalnih usluga u praksi dodatno argumentirati pa i analizirati iz perspektive fiskalnih mogućnosti kako središnje države tako i jedinica lokalne samouprave. Već i sama identifikacija usuglašenog popisa socijalnih usluga i detaljan opis potrebnih resursa pionirski je istraživački poduhvat, pri čemu su svi ostali dijelovi analize dodana vrijednost. Studija koju su autorice pripremile jedinstven je prikaz stanja socijalnih usluga u Hrvatskoj i zasigurno će poslužiti kao predložak donositeljima javnih politika, ali i analitička baza za daljnja stručna i znanstvena promišljanja.

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