



Inclusive  
Science and  
European  
Democracies

Policy Brief Series  
Promoting Deliberative Participation in Europe  
**TECHNOLOGY AVAILABILITY AND  
DIGITAL LITERACY**

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## Innovation Targets

Taking **Citizen Science** initiatives, in all their diversity, as a **Methodological Toolbox** to improve participation and deliberation in Democracy.

Taking the **role of science-based knowledge** in public policy and democratic decision-making – central to knowledge societies – to improve **Participatory and Deliberative Processes** and to complement **Representative Democracy**.



## Consortium

<b>UNIVE</b>	Ca'Foscari University of Venice – Lead Partner	Italy
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<b>Observa</b>	Science and Society	Italy
<b>MNHM</b>	Museum National d'Histoire Naturelle Paris	France
<b>ENS</b>	L'École Normale Supérieure	France
<b>UNIWAR</b>	University of Warsaw	Poland
<b>NTNU</b>	Norwegian University of Science and Technology	Norway
<b>IRMiR</b>	Institute of Urban and Regional Development of Warsaw	Poland
<b>DBT</b>	Danish Board of Technology	Denmark
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<b>MEC</b>	Ministry of Education of Uruguay	Uruguay
<b>UNEXE</b>	University of Exeter	United Kingdom

## Technology Availability and Digital Literacy

Citizen science is a social innovation that requires the adoption of the proper technological solutions by a critical mass of people in order to work.

If people are not familiar with the technological solutions that citizen science projects require, or if the use of technology is complex, this could present a barrier for people joining the project.

In such a scenario, the initiator of the citizen science project needs not only to get people interested in the problem that the project refers to but also to promote the adoption of an unknown technology.

Users' perspective on technology is one of the most significant factors influencing the adoption and usage of mobile data collection technologies.

## OUR POLICY RECOMMENDATIONS

1. Increase the recognition of Citizen Science approaches among civil society organizations.
2. Allocate special funds that will support Civil Society Organizations in the development of tailored technological solutions for Citizen Science projects.
3. Build data management skills among members of Civil Society Organizations.
4. Create networking opportunities for different sectors, such as Civil Society Organizations, policymakers, tech gurus, etc.
5. Promote activities in the concerned areas to include citizens in an engaging process of data collection and public deliberation.

## RESEARCH OVERVIEW

In our work, we investigated the technology that Civil Society Organizations in Poland are utilizing and how it facilitates citizen science. The study was conducted by the University of Warsaw in 2021 and 2022.

## METHODS

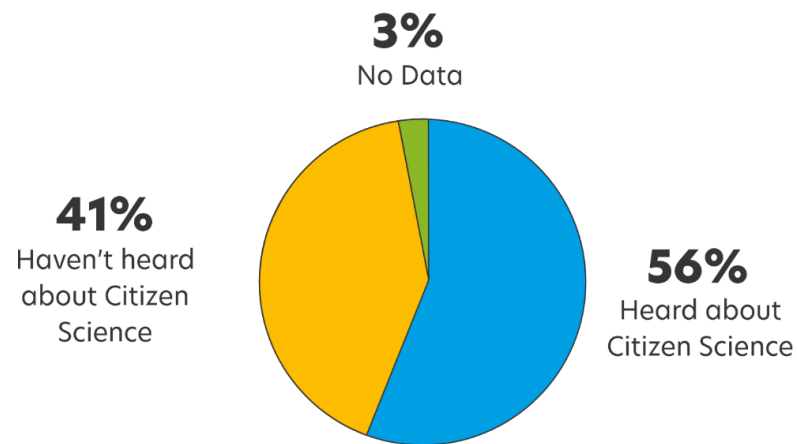
We conducted a text analysis of the web pages and Facebook accounts of 65 formal and informal environmental grassroots movements, including 30 associations, 17 foundations, and 18 social initiatives from different parts of Poland with a diversified scope of activities

related to urban greenery, sustainable cities, protection of tree alleys, forests, natural reserves, national parks, and rivers, as well as environmental education and nature inventory. The vast majority of organizations/initiatives operated locally (65%), while the remaining 35% were operating nationwide. The studied organizations/initiatives differed in terms of their experience, counted in years of activity from 2 to 35 (on average 12 years). Moreover, we conducted interviews with a total of 28 people representing civic society organizations (9 foundations, 10 associations, and 8 informal groups).

## RESULTS

Our analysis of the technological advancement of grassroots movements in Poland reveals that the full potential for launching Citizen Science projects has not yet been reached in Poland. There are many obstacles that need to be addressed.

First of all, the recognition of the Citizen Science approach among members of Civil Society Organizations is still low. Secondly, grassroots movements operate using standard and easily accessible technological solutions, rarely developing tailored and more advanced technologies that would better suit their needs. The results indicate that in Poland, the concept of Citizen Science is still new and not fully recognized. The awareness rate in the studied sample was rather average, as only 56% of respondents had heard about the Citizen Science before the study. The actual implementation rate of Citizen Science is even lower: only 15% of interviewees had carried out a Citizen Science project in the past.



*Concept of Citizen Science by NGOs and grassroots movements.*

While non-governmental and grassroots organizations use various technological solutions, they did not use any that could comprehensively support Citizen Science projects, especially in involving citizens in the research process, i.e., from selecting a research question to discussing the results. Currently, it would be hard to reach the highest level of citizen participation defined by Haklay, i.e., extreme citizen science, which enables citizens' active participation in the entire scientific process.

What prevented activists in the past from using certain technological solutions was the lack of time and financial resources. Due to these limitations, some interviewees reported that certain technological solutions that would help them in their work were out of their reach. The scarcity of financial resources can also partially explain why NGOs and grassroots movements rarely use solutions tailored to their particular needs.

These might be the reasons why NGOs reach out for easily accessible and low-cost solutions rather than develop tailored ones. We found only two examples of technologies that were developed locally. The process of building technological solutions requires skills and financial resources that NGOs and grassroots movements are often lacking.

## DISCUSSION

Although there is a great potential in Citizen Science, there are also many challenges connected to the level of citizen participation, such as time requirements, community specificity, a sufficient level of trust, communication strategy, transparency and accountability in the process, as well as ethics. Our research adds one more element to this list: the technological advancement of citizens and grassroots movements.

The technological advancement of grassroots movements is a key aspect in planning Citizen Science projects because the choice of technology results from digital fluency and competence with existing digital technologies (digital online platforms and mobile platforms).

Choosing the right technical tool translates directly into participation. Citizens are used to intuitive, simple tools, and any difficulty or incomprehension may discourage them, especially those least motivated and digitally fluent.

The low sign-up and high drop-off rates for those groups of citizens can create a problem for the inclusiveness, representativeness, completeness or the power of such studies.

## RELEVANCE TO POLICY-MAKING

Our research shows that civil society organizations adopt social media quite fast and in an effective manner. They know how to use technology to reach out to people and manage coordinated processes with its help. Therefore, they might seem like natural initiators of Citizen Science projects. However, these projects require specific tools that support all the steps of the research process, from the development of research questions to the dissemination of outcomes through the collection of data and its analysis. The stakeholders interested in our results include:

- Local administration (municipalities) who may wish to use the potential of Citizen Science approaches.
- The Polish Ministry of Digital Affairs.
- The European Commission.
- The Polish Ministry of Education.
- Civil Society Organizations who are working with Citizen Science initiatives or are interested in this approach.

ISEED maps and explores how inclusive science can support European democracies.

For more information feel free to contact us at: [communication@iseedeurope.eu](mailto:communication@iseedeurope.eu)

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*Author: Magdalena Roszczyńska-Kurasińska*

*Series Editor: Sophia Efstathiou*

*Designer: Sarah Santos*



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