

Promoting and educating on citizen science in the context of a small Central European country: The case of Slovakia



Topic: Best practices dealing with Open Science education and science communication to the broad public

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Abstract

Citizen Science (CS) engages the public in scientific projects, bringing benefits to both research and society. Scientists gain the opportunity to collect or process larger amounts of data with the help of volunteers (and also cooperate with citizens in various other ways), to open a social debate on their topic, to learn about the issues that concern citizens the most and to increase their organizational skills. CS bridges the gap between science and public increases scientific literacy and society's trust in science.

The growth of CS is not uniform, even within Europe – while the CS concept is thriving in Western Europe, it is only starting to get recognized in post-socialist countries of Central and Eastern Europe. These countries face similar challenges, they can collaborate and share experience on international platforms, but simultaneously they must build the foundations in their specific circumstances.

In Slovakia, only a few scientific projects have used participatory methods so far. We surveyed them and contacted their representatives. Most of the projects deal with biology and the environment; we found just one project in social sciences. Only some of the participatory projects refer to the term citizen science (mostly those belonging to international cooperation). There is little awareness of CS in the local academic environment and in the broader public. It has no representation in university curricula and rarely appears in the media. This may be caused by a shorter existence of civil society, low support for science in general, lack of openness, and the language barrier.

To raise awareness of CS in our country, we created a short introductory open course (titled *Začnime si s občianskou vedou* – Let's start with the citizen science) on EU-Citizen.Science platform.

Our course is in the Slovak language because there is a lot of material on CS in dominant European languages, but a minimum in Slovak. The use of English as a universal language of science brings many advantages, however, the academic community is now relearning to appreciate the importance of communication in locally relevant languages (see e.g. the Helsinki Initiative on Multilingualism in Scholarly Communication). In CS, communication and the creation of open educational materials in the local language is essential, since the success of participatory research requires the involvement of several partners with different level of scientific and language skills.

Our course covers brief history, definition, and benefits of CS, design of the project, finding partners, questions of data and ethics, and impact of the project. The course is supplemented with video interviews of representatives of particular projects from Slovakia, to increase the visibility of good practice, demonstrate to the audience that CS is also useful in conditions of a small country and encourage other researchers to use participatory methods. We will promote the course among potential stakeholders, ask for feedback, and measure participation.

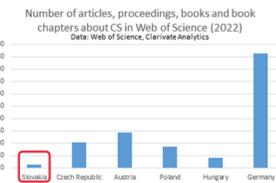
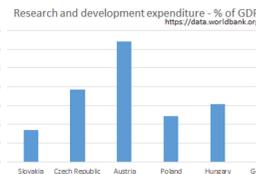
As a next step, we propose to create a national CS platform as a venue for education and networking, where all potential CS stakeholders will be able to find general information and discover the projects that are most relevant for them to join.

Slovakia in comparison - and the citizen science

Slovakia in comparison with the Czech Republic, Poland, and Hungary as neighboring post-socialist Central European countries, Austria as a nearby example of good practice regarding citizen science, and Germany as a country representing Western Europe.

term	language	number of results in Google
Citizen science	English	12 200 000
Bürgerwissenschaft	German	20 100
Nauka obywatelska	Polish	3 830
Közösségi tudomány	Hungarian	1 640
Občianská veda	Czech	6 700
Občianska veda	Slovak	1 500
громадянська наука	Ukrainian	1 110

Slovakia:
• small country,
• with the lowest investment in science,
• underfunded scholarly community,
• sparsely involved in citizen science.



There are only 12 publications co-authored by Slovak scientists in the Web of Science published until now (Feb. 2022). This illustrates low awareness of citizen science in the Slovak scholarly community compared to neighboring as well as western European countries. However, scientific databases are not the only place where people may look for citizen science. An Internet search reveals a relatively low number of results on citizen science in the Slovak language.

Web pages of particular projects can be found, but there is no national platform that would create common venue, help to increase the findability of the citizen science projects, openly educate in local language everyone who is interested in the topic, and facilitate networking between the participants, as can be seen in Germany (platform *Bürger schaffen Wissen*), Austria (platform *Österreich forscht*), the Czech Republic (*citizenscience.cz* - *Občianská veda v České republice*), or recently in Hungary (*Járókelő kutatás*).

Plans to promote citizen science in Slovakia

1. Raising awareness and informative activities

- looking for CS projects in Slovakia,
- talking about CS at local conferences, speaking on the topic with scientists, creating a Wikipedia article on CS in the Slovak language, mentioning the potential of CS in Slovak National Strategy for Open Science,
- webinars on CS with representatives of Slovak projects,
- creating an introductory course for EU-Citizen.Science platform (<https://moodle.eu-citizen.science>),
- creating section dedicated to CS on the Open Science webpage (<https://otvorenaveda.cvtisr.sk>).

2. Working with CS projects in Slovakia

- looking for more CS projects (scientific databases, internet, asking scientists),
- contacting representatives of the projects,
- recording videos to increase their visibility and inspire other scientists to engage in CS,
- adding information about the projects on the OS webpage, creating the first list of CS projects in Slovakia.

3. Promoting the course, the projects, and citizen science as a concept (in progress)

- publishing journal article on citizen science in Slovak,
- publishing handbook on CS in Slovak,
- series of specialized webinars (about the course, new CS projects, CS for teachers, CS for libraries and museums, CS for journalists, the potential of CS for policymakers and local governance...),
- advocating with representatives of universities to add CS in curricula,
- advocating for appreciation of participatory methods and science communication in the evaluation system,
- blog or podcast on CS,
- collaboration with mass media and science popularizers to address the wider public,
- participating in international events, educating ourselves, and bringing interesting information to the local CS community,
- organizing a local conference or workshop on citizen science to address scientists and students.

4. Maintaining and improving existing achievements

- continually searching for new projects, supporting them and networking with their representatives,
- continually collecting feedback (discussing on CS events or with attendees of our course), measuring participation with the tools of EU-Citizen.Science platform,
- regularly adding fresh material to the course and correcting errors in the text (if found),
- adding any new CS project and emerging educational materials on Open Science webpage,
- translating environment of EU-Citizen.Science platform and important educational materials to Slovak.

5. Proposing, developing a project and creating of the national CS platform for Slovakia.

Conclusion

Citizen science is a valuable tool to bring science closer to the public and people closer to science. In Slovakia we are just beginning to unlock its great potential for scientific and societal benefits. According to our opinion, key factors of success are presence of good practice examples, lively communication and educational material in Slovak language.

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Citizen science

Citizen science as a joint effort of many partners ... with various needs

CS brings multiple benefits but also demands various communication strategies to address partners with different scientific and language skills. English is useful as a bridge language in large international collaborations, while contact with local communities is most effective in local language.

<https://www.helsinki-initiative.org>

Helsinki Initiative on Multilingualism

Hi!

Groups such as pupils, young students, seniors, people with a lower level of education, or socially excluded minorities can engage in citizen science projects only if the organizers speak to them and create educational materials in a language they understand. Communication of science in locally relevant languages makes science more accessible for wide discussion, increases its impact, helps to achieve all societal benefits of science (Helsinki Initiative on Multilingualism in Scholarly Communication), and makes society more resilient to misinformation. That is the reason why we created an introductory course on citizen science in Slovak.

Online course *Začnime si s občianskou vedou* / Let's start with citizen science

European platform for citizen science EU-Citizen.Science brings together projects and training material including MOOCs (massive open online courses) in several languages.

Our course familiarizes participants with the concept of citizen science, its advantages for the scientific community as well as for the general public while providing participants with basic terminology and insight into the importance of the connection between the scientific community and active citizens.

The module consists of 5 sections dedicated to particular development steps substantial for building and success of citizen science project – looking for opportunities, designing the project, cooperation with partners, data management and ethical issues, and an impact of the project. Each section contains theoretical background and short videos of people contributing to or working on citizen science projects in practice sharing their experiences.

LET'S START WITH THE CITIZEN SCIENCE

In the Slovak Republic, the concept of citizen science is not yet widely familiar or taught at university level. Only a small number of citizen science projects is running. Therefore, we developed an introductory course in Slovak to spread the ideas of citizen science. Its society-advancing potential and good practice awareness in and outside of the scientific community. In the field calling for participation of stakeholders with different professional and educational backgrounds (not equally proficient in English), it is essential to start, lay the foundation of knowledge and discuss the terminology in the Slovak language.

WHY THIS COURSE?	5 SECTIONS
Online course for all	Section 1: What is citizen science?
Free of charge	Section 2: Designing the project
In the Slovak language	Section 3: Seeking partners
Badge at the end	Section 4: Data and ethics issues
Open science	Section 5: Impact
Open access	

Step-by-step guide how to sign in: https://otvorenaveda.cvtisr.sk/wp-content/uploads/2022/02/Obcianska_veda_letak_registracia.pdf

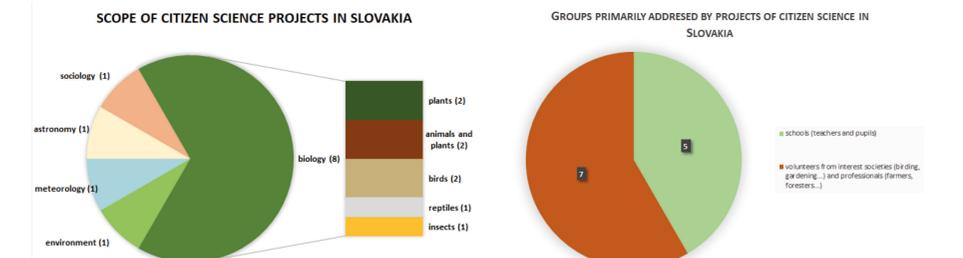
Citizen science projects in Slovakia

To encourage Slovak scientists to develop their own projects of citizen science, we needed examples of good practice in Slovakia. We searched the scientific databases, internet and asked scientists from various disciplines whether they know any project engaging the public beyond the role of the research subject. Five of these projects were derived from the international collaboration, seven were original to Slovak researchers or NGOs. We contacted representatives of these projects and recorded videos to supplement our course.



Globe at Night	Current Images of Societian	Visitor

Projects using participatory methods in Slovakia are led by scientists from universities, Slovak academy of sciences or learned societies (5), state agencies or research organizations (3), and non-governmental organizations (4). They are mostly concerned with nature observation and environmental protection. However, some of them (e.g. Eco-educational program *White Stork*, *Winter waterbird census*) do not use the term „citizen science“ based on the fact that, at the time of their beginnings (the 1970s), this concept was not yet known. In the fields of science outside biology and environmental sciences, we found rare citizen science projects in Slovakia in meteorology (drought monitoring), astronomy (light pollution), or sociology (perception of socialism).



Projects of participatory research in Slovakia vary in size - from large international collaborations (such as *City Nature Challenge*, *Pl@ntNet*, *Globe at Night*, *InterDrought*) to nation-wide projects (*Enviroza* - students searching for environmental burdens), medium-sized projects (occurrence of a reptile species in one region observed during several years) to small projects resulting in a single publication (the first record of certain aphid species in Slovakia confirmed with the help of the community of gardeners growing exotic plants). Groups primarily addressed by the projects also differ - five projects focus on schools, while the rest work with the general public, most frequently volunteers from interest societies (birding, gardening...) and professionals (farmers, foresters...).