Citizen Science

Scan 2023

Landscape and evolution of citizen science in Belgium

Scivil

Flanders
State of the Art

Colophon

Content

Summary

The Citizen Science Scan examines active Belgian citizen science initiatives (reference year 2023).

What is citizen science?

Citizen science is scientific research that is entirely or partially conducted by non-scientists (citizens), often in collaboration with or supervised by professional scientists.

Key findings

Projects

- In 2023, there were 150 active citizen science projects in Belgium.
- The number of new projects has been growing exponentially since 2011.

Participants

- One in three projects involves more than 1,000 participants, with peaks of more than 300,000 engaged citizens. One in three projects works with fewer than 100 participants, sometimes as few as 20.
- It is estimated that citizens have already participated in a citizen science project in Belgium at least 1 million times.

Topics

- 35% of the projects conduct research into biodiversity and biology, 25% are situated in archaeology, history and heritage. The other projects focus on climate and environment (22%), and human behaviour and well-being (18%).
- Since 2020, the diversity of research topics has increased significantly.

Citizen science in schools

- 47 active projects collaborate with schools.
- Students often work on topics from their everyday life: the home-school route, the food environment around the school, mental well-being, and learning support in the classroom.

Activities

- Participants most frequently engage in data collection and analysis of research: think of annotating and transcribing, providing images and texts, counting and identifying, and installing and maintaining sensors.
- Citizens are also increasingly active in other research phases, especially in projects on human behaviour and well-being.

Language

- In most projects (89%), citizens can participate in Dutch.
- Half of the projects offer additional languages, such as English and French. One project is even available in 23 languages.

Initiators	**Partners**	**Funders**
• Most often, a government agency (38%) or a non-profit organisation (32%) is the initiator. Universities and colleges (22%) rank third.	• Half of the projects collaborate with at least two types of partner organisations, often research partners, policy agencies, or non-profit organisations.	• Most projects operate on their own resources and funding from Flanders, Wallonia, or Brussels.
• Two out of three initiators are research institutions.	• Universities and colleges in particular work with various types of partners.	• More than half of the projects have only one funding source.

Conclusions and recommendations

The Belgian citizen science landscape is large, diverse, and vibrant. We can be proud of the diversity of initiatives and the engagement of initiators and citizens.

To ensure this landscape continues to thrive in the future, the funding of these projects remains an important focus. There is still a need for specific project funding for citizen science, more attention to citizen science in existing funding channels, and new funding models to sustain projects beyond the start-up phase. Additionally, (potential) initiators themselves can contribute to the substantive and methodological broadening of Belgian citizen science.

Foreword

"How many citizen science projects are there actually in Belgium?"

I regularly get this question in conversations with academics, policymakers, and organisations. Until recently, I had to admit I didn't know the answer. Apart from a rough count in 2021, there simply were no complete data available.

With the Citizen Science Scan, we can now answer that question. We now have a better understanding of how many and what kind of citizen science projects are underway in Belgium. We know what topics citizens are working on, what activities they are undertaking, and what funding sources are being tapped into... All this information helps Scivil further tailor its services to the needs, gaps, strengths, and opportunities of our citizen science community. We can more quickly seek synergies, connect similar projects, exchange experiences, and identify good practice.

The Citizen Science Scan also allows us to compare our uniqueness and strengths with other European regions and countries. In what areas is Belgian citizen science 'state of the art' and in what areas can we still learn from our European partners? With these insights, we and policymakers can further develop a forward-looking and internationally leading policy for citizen science.

I am therefore pleased to present this first edition of the Citizen Science Scan on behalf of the entire Scivil team. I say 'first edition' because the Citizen Science Scan is set up as a living inventory that we will periodically update. In this way we will keep our finger on the pulse of citizen science in Belgium.

Annelies Duerinckx
Head of Scivil

Introduction

The Citizen Science Scan provides insight into the **state, nature, and evolutions** of the citizen science landscape in Belgium. To this end, we make an inventory and analyse active citizen science initiatives for a specific reference year. To map evolutions across different reference years, we conduct this scan periodically. This first edition of the Citizen Science Scan looks at citizen science in Belgium for the **reference year 2023**.

This report includes the methodology behind this inventory and the insights derived from the analyses.

Methodology

Research

From 17th July to 3rd August 2023, we conducted an online search for citizen science activities via Google, social media (Facebook, Instagram and X, formerly Twitter), various citizen science platforms and funding lists. We used search terms such as 'burgerwetenschap' and 'citizen science' as well as related terms and their English and French language variants such as 'sciences citoyennes', 'participatory research', 'sciences participatives', 'co-creation', 'crowdsourcing', 'fablabs', 'DIY labs', 'biolabs', 'citizen engagement', 'community science', 'crowd science', 'citizen sensing', 'citizen observatory', 'samen meten', 'monitoring', 'smart city', 'grassroots', 'patient-led research', 'patient participation' and so on. These search terms were logged.

Additionally, in October 2023, we put out a call through Scivil's newsletter and social media for citizen science projects to come forward and provide information for the inventory.

1. For data collection and initial data analysis, three students were recruited with experience in data analysis, knowledge of citizen science and diverse academic backgrounds (natural sciences, biomedical sciences and human sciences).

Platforms and funders

- **Citizen science platforms:**
  - Iedereen Wetenschapper
  - Doedat
  - Velehanden
  - Zooniverse
  - Mijn Tuinlab
  - Waarnemingen.be
  - Histories.vzw
  - Eu-citizen.science
- **Funders list:**
  - FWO
  - Horizon Europe
  - European Commission
  - Interreg Europe
  - VLAIO

Delimitation

The inventory aims for as exhaustive a listing of citizen science initiatives as possible. To be included in the inventory, a project must meet the following criteria:

- The project fits within Scivil's definition of citizen science or identifies itself as citizen science;

- The project seeks to answer a research question or collects data for future research (e.g. digitisation of archives);

- The project team includes at least one Belgian partner;
- Citizen scientists can contribute from Belgium, or the research setup has a geographical relevance to (a part of) Belgium;
- The project has an online presence linked to the citizen science activity.

Citizen science and citizen scientists

Citizen science is scientific research that is entirely or partially conducted by non-scientists (citizens), often in collaboration with or supervised by professional scientists. The citizens who engage in citizen science are called citizen scientists or "burgerwetenschappers" in Dutch. Scivil's full vision for citizen science can be found here.

Although common definitions of the term "project" include a time duration, we also include long-term and permanent initiatives where data are collected process-wise or in project-like cycles.

Related citizen science activities organised by different project teams are considered to be separate projects (e.g. the digitisation of an archive organised by different local teams at various locations). Similarly, related activities with different research goals are considered to be separate projects in this inventory (e.g. 'CurieuzeneuzenAir' and 'CurieuzeNeuzen in de Tuin').

Citizen science activities conducted entirely by individual citizens, independent of a broader initiative (e.g. individual volunteers delving into a paleontological theme), are not included in this inventory. Local history groups are also excluded (see box). Events where you can participate in activities for different citizen science projects (e.g. Zeekerweten) are not considered standalone citizen science projects here.

Not inventoried, but appreciated

This delimitation means that we do not include every citizen science activity, even though they can be just as valuable as the inventoried initiatives. We must not overlook the many citizens who work individually or in small groups on a scientific theme. The annual Palaeontologica Belgica awards ceremony is a good example of how we can appreciate their engagement.

Local history groups also deserve a special mention. Although local history groups do not often identify themselves as citizen science initiatives, we regard them as a clear and particularly valuable form of citizen science. Moreover, our country has a particularly large number of local history groups, making it a very popular form of citizen science in Belgium.

To map these possibly hundreds of associations, we would need to set up an entirely separate inventory. Given their uniqueness and large numbers, we do not include local history groups in this inventory, but not without emphasizing the importance and engagement of these citizen scientists.

Data collection

For each citizen science project in the inventory, we filled in 25 attributes. These attributes are based on the PPSR Core-standard[2] and have been adjusted - if necessary - to fit our own context and information needs. We filled in the attributes using publicly available information and supplemented missing information from our own sources. Finally, we asked the projects with online contact details to complete the missing information and verify the information already collected via a survey.

After data collection, we analysed these attributes. The next chapter discusses the key results.

2. *PPSR Core (Public Participation in Scientific Research) is a global, transdisciplinary data and metadata standard for public participation in scientific research (citizen science). This allows data to be used in a consistent manner across platforms and projects. In the appendix, we explain where and how we deviated from the PPSR Core in our research.*

Results

1. Projects

The inventory includes 266 Belgian citizen science projects[3], of which 150 were active during the reference period (summer 2023). 81 of these 150 projects provided additional information through our survey.

116 with survey data

150 without survey data

150 active projects
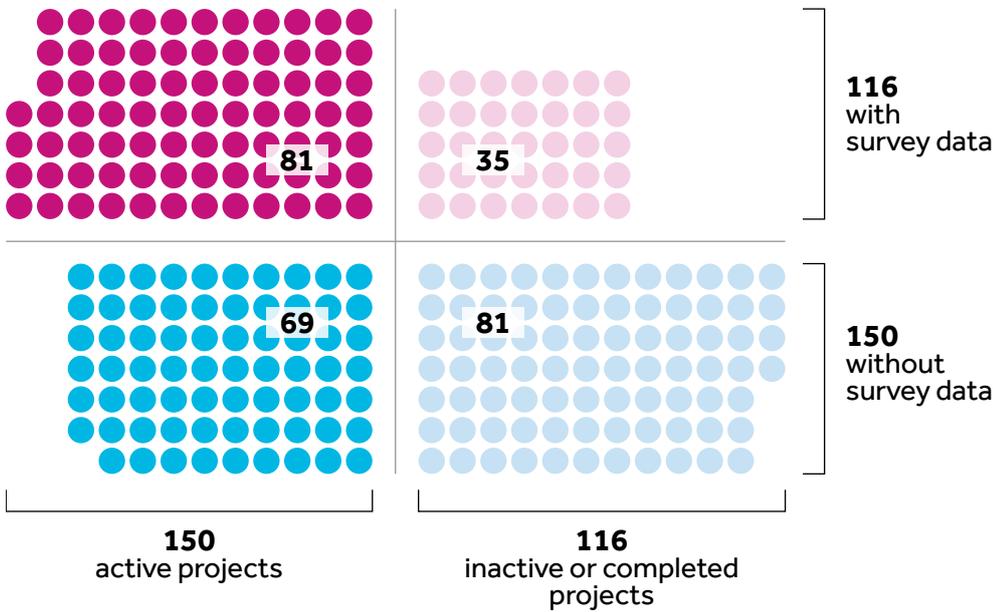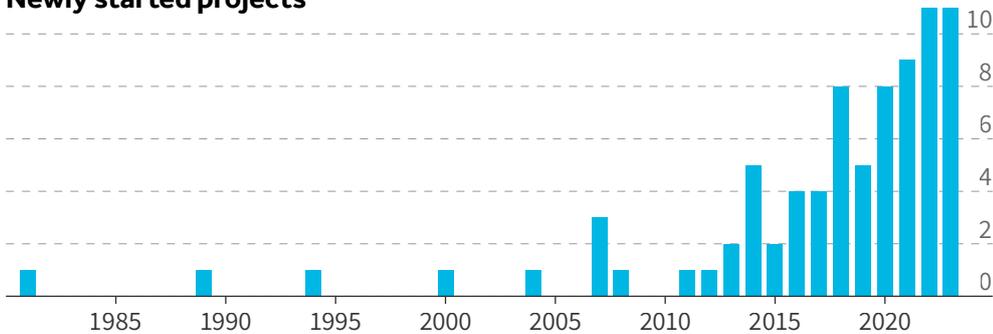
116 inactive or completed projects

Figure 1
Citizen science projects in Belgium

The results in this report pertain to the active projects (n=150). For analyses involving survey data, we use only the survey sample (n=81).

Newly started projects

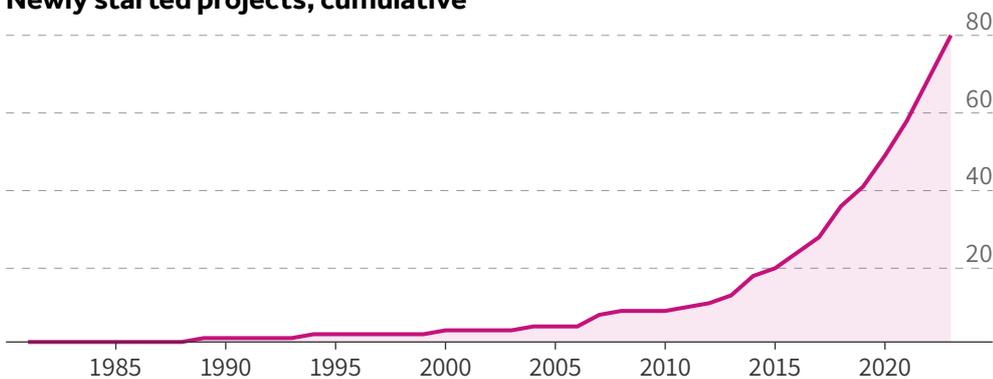

Newly started projects, cumulative

Figure 2
Newly started projects per year (survey sample, n=80, 1 missing value)

⚡ **In the summer of 2023, you could participate in 150 Belgian citizen science projects.**

Since 2011, at least one new project has started each year. Since then, the number of new projects has been increasing, resulting in exponential growth in active projects[4]. Since 2020, at least eight new projects have started each year.

4. In the cumulative analysis, we assume that a project has not temporarily stopped between the start year and the reference period (summer 2023).

> " We are very pleased with this explosion of new citizen science projects. At the same time, it highlights an ongoing need for support. With Scivil, we aim to remain the Flemish hub for citizen science in the future, providing new projects with expertise and connecting them with potential partners.
>
> *- Annelies Duerinckx, Head of Scivil*

2. Topics

Biodiversity and Biology 51
Archeology, History and Heritage 36
Climate research 11
Sociology and Demography 7
Environment: Air quality 7
Mobility 6
Geography: GIS, Cartography 6
Environment: Water quality 5
Healthcare and Biomedical sciences 4
Environment: Litter and plastic pollution 3
Computer and Information sciences 3
Psychology 2
Physics, Mathematics and Astronomy 2
Environment: Other 2
Language and Literature 1
Environmental noise 1
Arts and Culture 1
Interdisciplinary 1
Geology, Paleontology 1

Figure 3
Number of projects per topic (n=150)

5. We categorise the 150 active citizen science projects according to the PPSR Core Classification. We also asked the initiators to categorise their own project via the survey as a quality check. The topics 'Biodiversity' and 'Biology: Plant and animal science' were combined because the survey revealed confusion over the difference between the two.
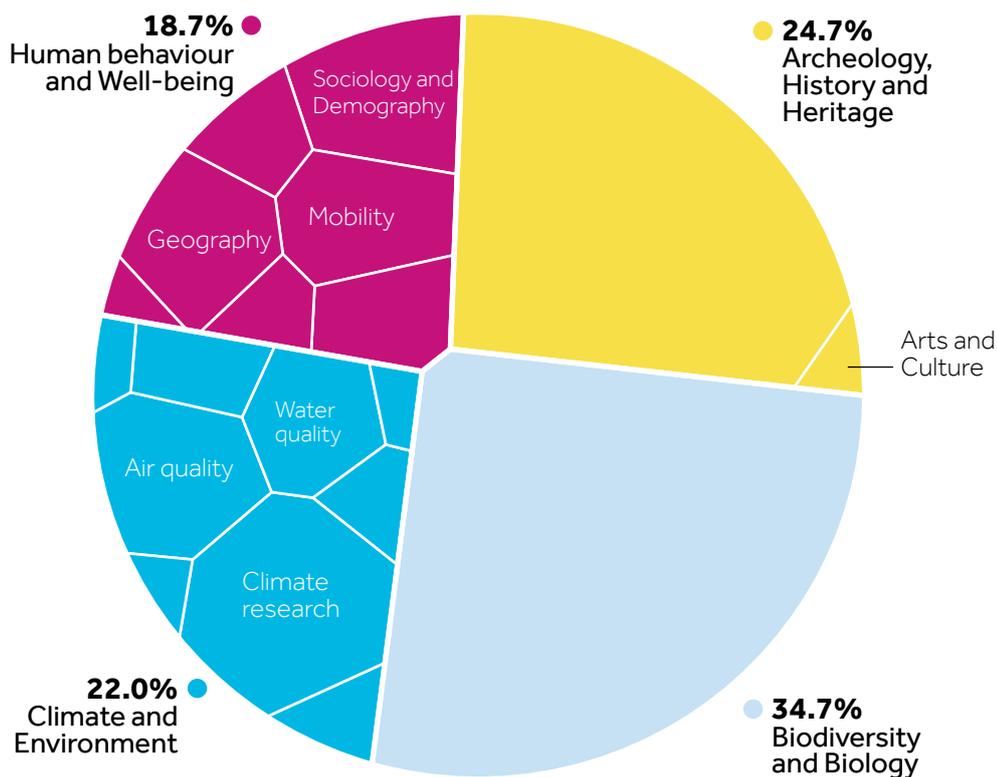
More than half of the projects belong to the topics of 'Biodiversity and Biology' and 'Archaeology, History and Heritage'[5]. The other topics can be grouped into two major clusters: 'Climate and Environment' and 'Human Behaviour and Well-being'.

Figure 4
Number of projects per topic cluster (n=150)

In projects related to **biodiversity and biology** (34,7%), citizen scientists primarily collect data through observations of animals or plants. In addition to counts such as Het Grote Vogeltelweekend ('The Great Bird Count Weekend'), citizens also undertake indirect measurements. For instance, in the Bodemleven project, citizens investigate soil biodiversity using tea bags. Projects on biodiversity and biology generally fall into three types of research location: predetermined places and times (such as Grote Schelpenteldag ('Great Shell Count Day')), private gardens (such as Spintmijt), and free observations in nature (such as Snapp de Natuur and Buurtnatuur). Sometimes participation in research also involves activating behaviour to enhance or protect biodiversity, as seen with MaaiMeiNiet. Citizens can also digitise inventories from museums and research institutions for later analysis, as is the case with the CRESCO-project from the AfricaMuseum.

Climate and environmental projects (22%) often focus on air measurements (such as Luchtpijp, COMPAIR and airQmap), but also address other themes such as litter (WasteWatchers, Plastic Pirates …), water quality (Stiemerlab, SeaWatch-B …) and heat (Bomen zijn cool!, Leuven.cool …). The citizen science project 'Atlantis-Geomag' even aims to detect anomalies in the Earth's magnetic field[6]. Typically, citizens use a sensor to take readings in these projects. These projects also frequently include an action-oriented component to translate research results into policy, through public pressure or concrete policy recommendations.

Projects in **archaeology, history and heritage** (24.7%) mainly focus on the digitisation of archives and inventories. In addition to mere digitisation and transcription, citizen scientists often need to catalogue or describe the archival items for new historical analyses. For example, in the SOS Antwerpen project,

6. *Within the 'Climate and Environment' cluster, we also include two citizen science projects related to astronomy: Radio Meteor Zoo and Val-u-Sun.*

citizens can digitally transcribe, codify, analyse and even disseminate the Antwerp register of causes of death.

Projects on **human behaviour and well-being** (18.7%) cover various disciplines such as social sciences (NieuwsWijsNeuzen, Bruss'Help telling …), mobility (Straatvinken, Telraam …) and biomedical sciences (Infectieradar, Vlaams Darmflora Project …). As in climate and environmental projects, citizens often take measurements using a sensor or an app. These projects also frequently include an action-oriented component to influence political policy, particularly in mobility projects.

⚡ **Since 2020 the diversity of research topics has significantly increased.**

● **Biodiversity and Biology**

● **Climate and Environment**

● **Archeology, History and Heritage**

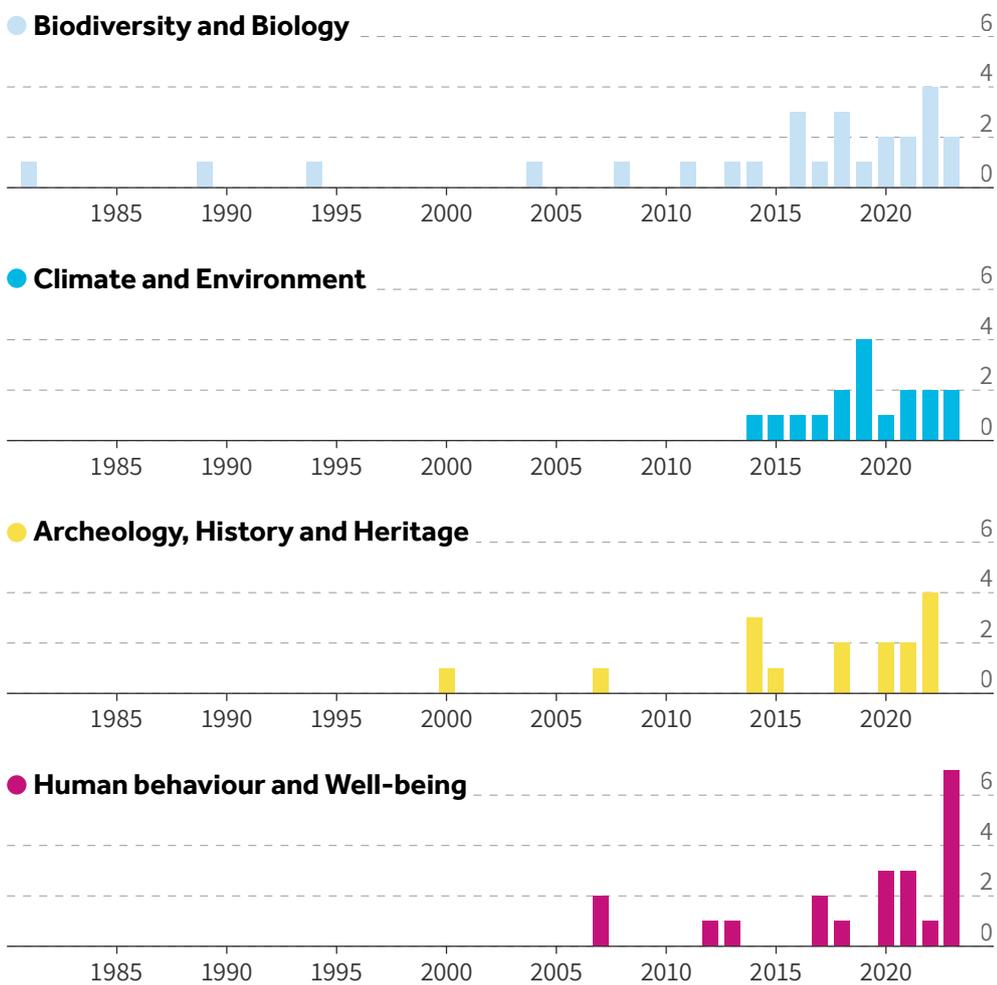● **Human behaviour and Well-being**

Figure 5
Number of projects per start year and topic (survey sample, n=80, 1 missing value)

For a long time, citizen science appeared to be solely concerned with natural research. Only in the past decade have we seen diversification in research topics, with projects covering mobility, air quality, and an increasing number of social science research themes.

3. Activities

Citizens participate in citizen science in various ways:

- **Defining research questions**
  - Contributing to the definition of research questions
- **Co-creation**
  - Shaping the research design or intervention through a co-creation process
- **Data collection**
  - Executing a scientific protocol with multiple steps
  - Installing and maintaining sensors
  - Counting / Identifying
  - Providing data
  - Filling out a questionnaire
  - Taking a sample
- **Data analysis**[7]
  - Annotating / Transcribing
  - Interpreting data
- **Communication and dissemination**
  - Formulating recommendations
  - Communicating results

Participants most often engage in the data collection and data analysis phase of a research project.

Defining research question
0.6%

Co-creation
3.0%

Data collection
58.3%

Data analysis
32.0%

Communication
6.0%
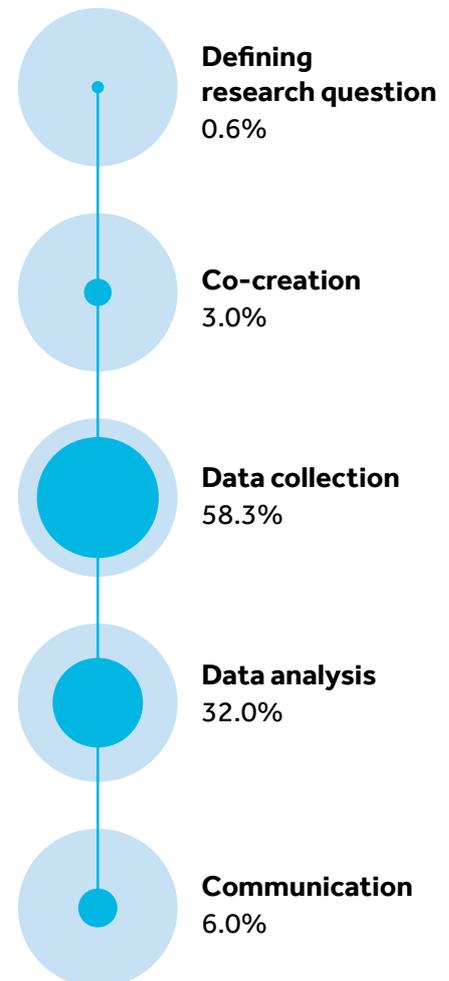
Figure 6
Percentage of projects in which citizens participate in a specific research phase (n=150)

7. By data collection, we mean activities where data is purely collected. Data analysis, in this context, means interpreting data (as opposed to pure data collection). Here, data analysis does not refer to performing quantitative or qualitative analyses on the collected, aggregated data. In the citizen science projects identified, citizens are not involved in this step of the research.
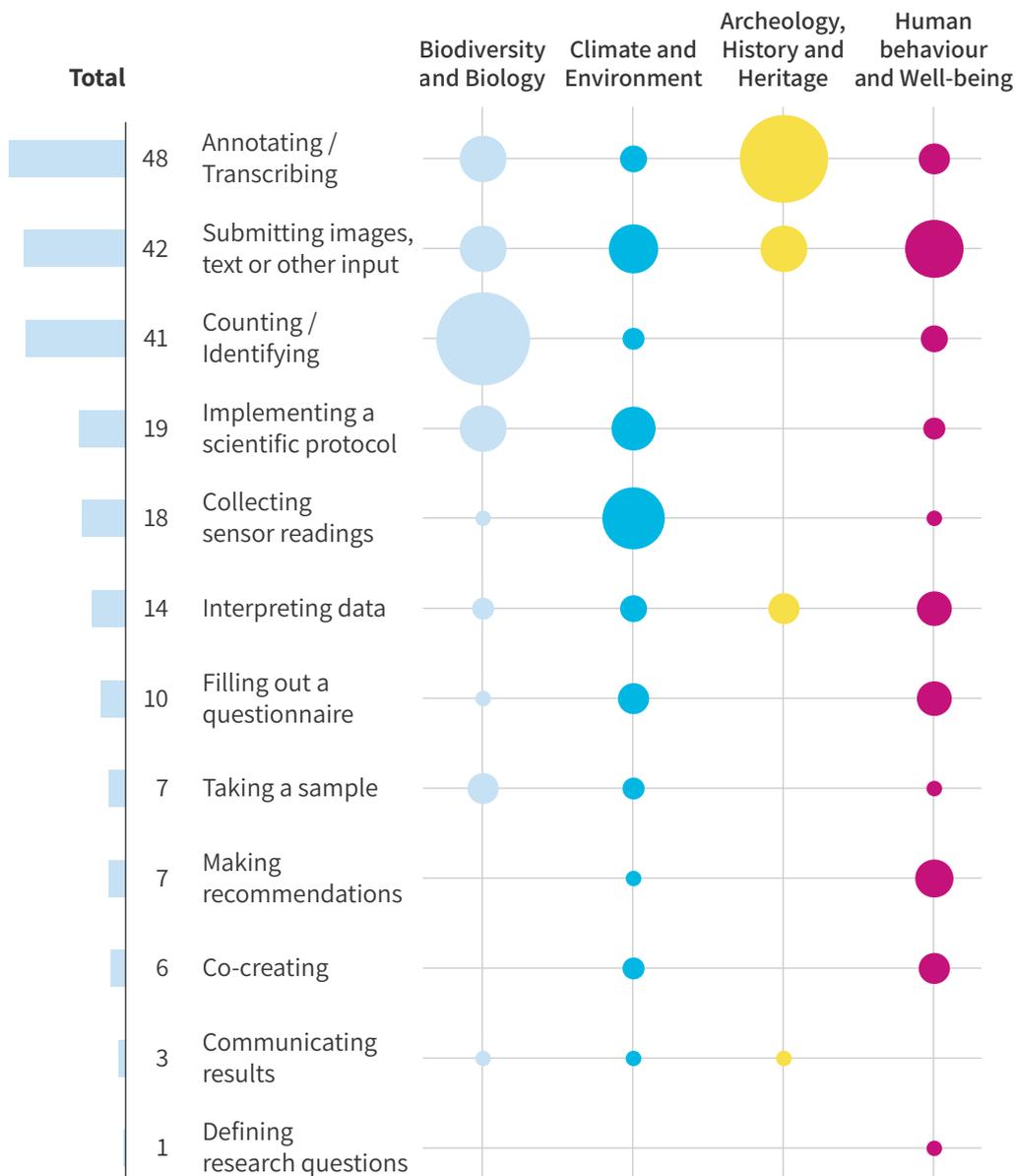
Figure 7
Number of projects in which citizens participate in a specific research activity, broken down by topic (n=150)

Total		Biodiversity and Biology	Climate and Environment	Archeology, History and Heritage	Human behaviour and Well-being
48	Annotating / Transcribing				
42	Submitting images, text or other input				
41	Counting / Identifying				
19	Implementing a scientific protocol				
18	Collecting sensor readings				
14	Interpreting data				
10	Filling out a questionnaire				
7	Taking a sample				
7	Making recommendations				
6	Co-creating				
3	Communicating results				
1	Defining research questions				

The most common activity is annotating and transcribing, which primarily occurs in projects related to archaeology, history, and heritage. This mainly involves the digitisation of inventories and archives. Providing images, text or input ranks second and is found in every major topic cluster. Counting and identifying completes the top three and is seen almost exclusively in projects on biodiversity and biology, such as various animal counting days and apps like ObsIdentify. Lastly, sensor readings are almost exclusively found in projects related to climate and the environment, usually in the form of air quality sensors.

⚡ **Data collection is the core activity, but citizens are increasingly participating in various research phases.**

Projects on human behaviour and well-being most frequently involve citizens in less common research activities. For instance, citizens can help formulate recommendations in projects such as PING and School op de teller. Projects like the Lunchbox Monitor and SMARTS engage citizens through co-creation sessions to shape the activity collaboratively.

Number of research phases

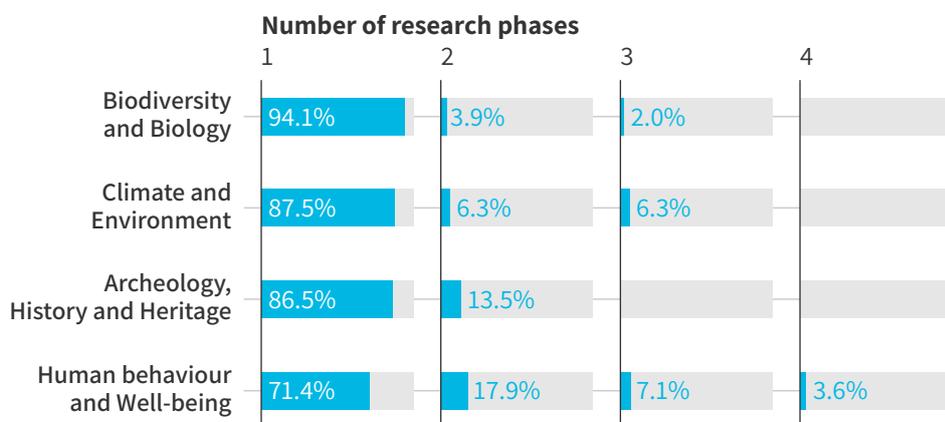|	1	2	3	4
Biodiversity and Biology	94.1%	3.9%	2.0%	
Climate and Environment	87.5%	6.3%	6.3%	
Archeology, History and Heritage	86.5%	13.5%		
Human behaviour and Well-being	71.4%	17.9%	7.1%	3.6%

Figure 8
Number of projects by number of research phases involving citizens, broken down by topic (n=150)

The vast majority of projects (85%) involve citizens in a single research phase, often data collection (55%) or data analysis (27%). When citizens can participate in multiple research phases, this always means a combination of data collection and another phase, usually data analysis. Involving citizens in multiple research phases seems to be a relatively new practice: in the survey, we see the first projects doing this only in 2017. In relative terms, projects on human behaviour and well-being do this most frequently; we have also seen a strong increase in these types of projects in recent years.

"
There is still a lot of potential for involving citizens in the various phases of research. In the amai!-project, we specifically focus on this by engaging citizens from the 'very first idea' phase to co-creation sessions and project execution.

- Karen Verstraelen, Project Coordinator amai!

4. Participants

101-500 participants
21.0%

501-1,000 participants
13.6%

21-100 participants
22.2%

1,001-5,000 participants
14.8%

1-20 participants
8.6%

5,000+ participants
19.8%
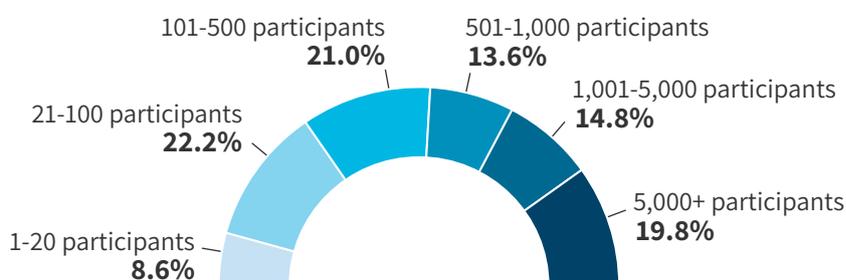
Figure 9
Number of participants per project (survey sample, n=81)

8. Through the survey (n=81), we assessed the number of participants using predefined response options.

Approximately one-third of the surveyed projects (survey sample, n=81) engage fewer than 100 citizens, another third involves between 100 and 1,000 citizens, and the remaining projects work with more than 1,000 participants[8].

These 81 active projects account for at least 813,000 and at most 1,025,000 unique participations[9] (see calculation in Appendix 2).

> **"** We identified 266 ongoing and completed projects. Even with conservative estimates, we are looking at at least one million unique participations in citizen science in Belgium. Whether it's the occasional use of a nature app or a long-term commitment to an archive, every participation represents a valuable connection between citizens and science.
>
> The number of unique participants might be somewhat lower than the number of unique participations, as enthusiastic citizen scientists may engage in multiple citizen science initiatives. A public survey, such as the Flemish Science Barometer, could help map the actual number of unique participants.
>
> *- Annelies Duerinckx, Head of Scivil*

9. A unique participation is one citizen participating in one citizen science project. A citizen transcribing several documents for an archive project counts as one unique participation. A citizen participating in an animal counting from project X in addition to an aerial sensor measurement from project Y counts as two unique participations.
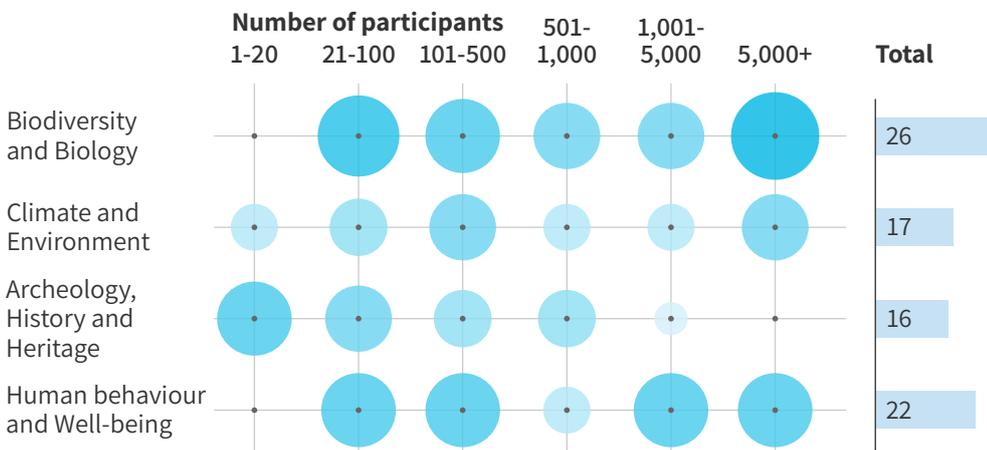
Figure 10
Number of projects by number of participants and topic (survey sample, n=81)

Projects in archaeology, history, and heritage generally involve fewer participants compared to other thematic clusters. These projects are typically led by small teams and often focus on data collection within a small geographical area. In contrast, projects on biodiversity and biology are the most numerous and generally involve the largest number of participants.

Figure 11
Number of participants per project, classified by geographical scope (survey sample, n=81)

A majority of projects have a regional scope (one of the regions or communities in Belgium). Projects with more than 5,000 participants also typically have a regional scope. Along with projects at the urban or neighbourhood level, regionally focused projects make up half of the surveyed sample. The other half are at national, international, or global levels. While neighbourhood or city-level projects have a smaller scope, international and global projects involve larger numbers of participants.
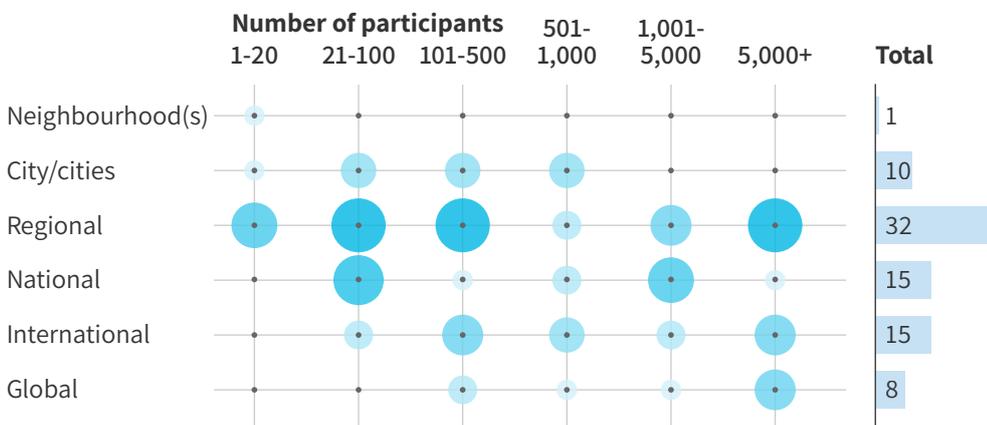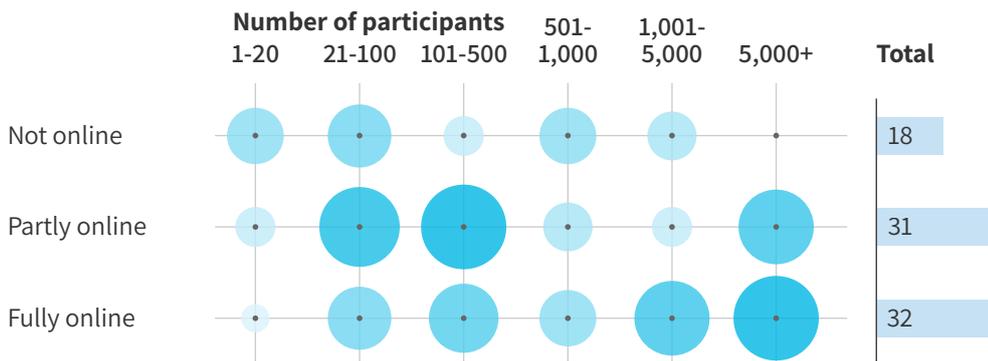

Figure 12
Number of participants per project, classified by type of participation (survey sample, n=81)

In most projects, citizens can participate (at least partially) online. Projects with exclusively online participation tend to have the highest average number of participants, though there are also projects with more than 5,000 participants in hybrid formats.

> " Citizen science doesn't always have to be a mega undertaking. The most visible projects are often the largest, but even initiatives with just a handful of citizen scientists, as is often the case with projects by archives and museums, make a valuable contribution to science.
>
> *- Jef Van Laer, Advisor citizen science*

5. Citizen science in schools

36.2% Human behaviour and Well-being

10.6% Archeology, History and Heritage

27.7% Biodiversity and Biology

25.5% Climate and Environment

Figure 13
Number of projects collaborating with schools, by topic (n=47)

With schools

Without schools

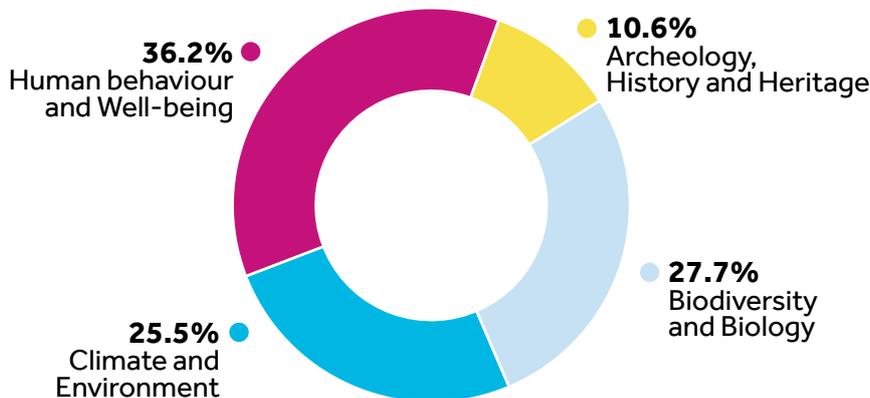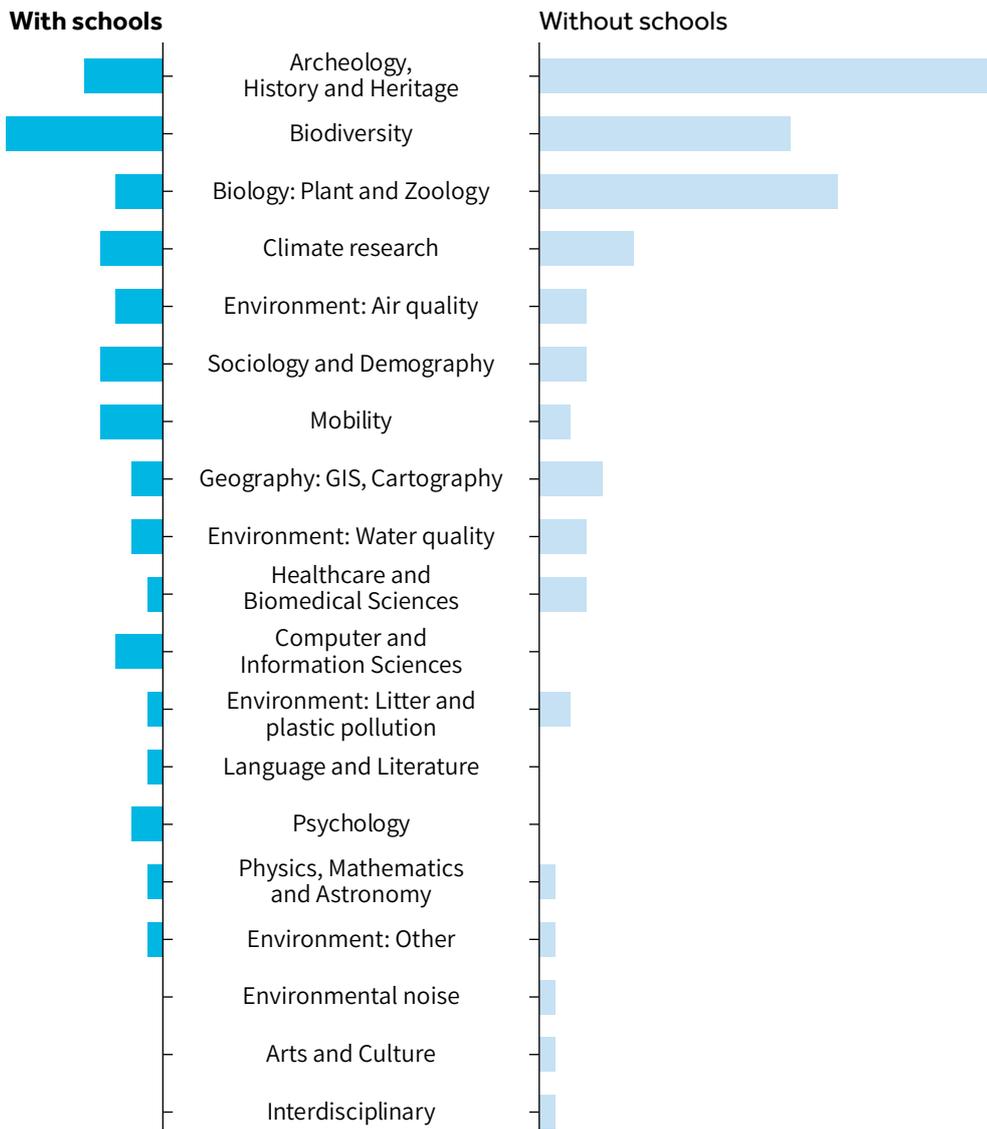| Topic |
|---|
| Archeology, History and Heritage |
| Biodiversity |
| Biology: Plant and Zoology |
| Climate research |
| Environment: Air quality |
| Sociology and Demography |
| Mobility |
| Geography: GIS, Cartography |
| Environment: Water quality |
| Healthcare and Biomedical Sciences |
| Computer and Information Sciences |
| Environment: Litter and plastic pollution |
| Language and Literature |
| Psychology |
| Physics, Mathematics and Astronomy |
| Environment: Other |
| Environmental noise |
| Arts and Culture |
| Interdisciplinary |

Figure 14
Number of projects by topic, broken down by collaboration with schools (n=142, 8 missing values)

47 projects collaborate with schools. Many of these projects originate from a university or university of applied sciences (see also 'Initiators'). One in three projects falls within the broad domain of human behaviour and well-being, including topics like mobility, sociology, demography, computer science, language and literature, and psychology. These projects often resonate closely with students' everyday experiences, with research topics such as the journey from home to school, the food environment around schools, mental well-being, and learning support in the classroom.

The domains of climate and environment, as well as biodiversity and biology, are also frequently represented. Many classes engage in outdoor air quality measurements as well as those conducted indoors. Animal and plant counting projects are also popular.

Currently, archaeology, history, and heritage are less commonly featured in school-based citizen science projects. Notable exceptions include projects such as Gezelles Brieven and Onder de radar.
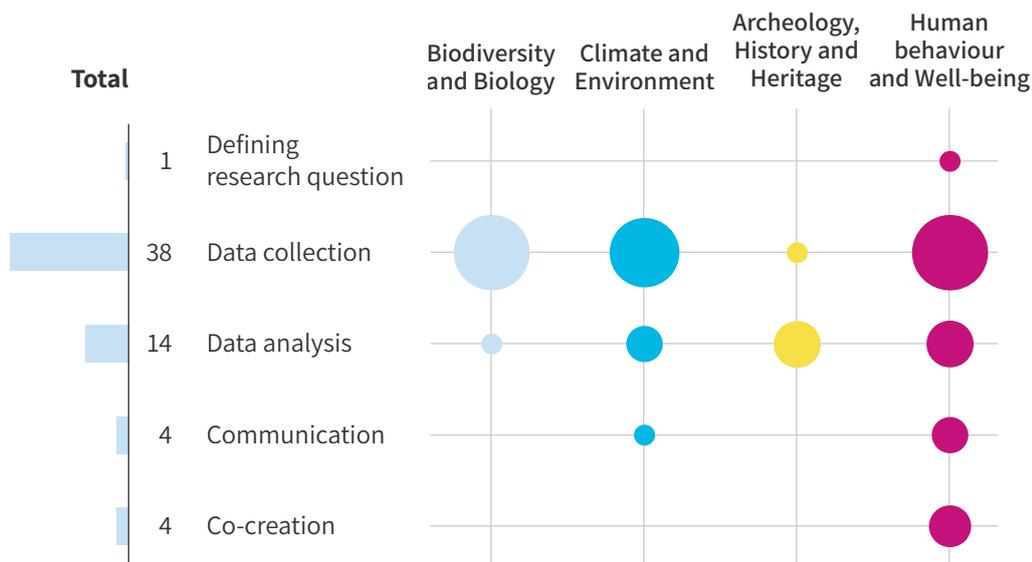
Figure15
Number of projects collaborating with schools by topic, broken down by research phase (n=47)

Usually, students engage in one to two research activities within a single research phase, primarily focusing on data collection. The three most common activities are counting and identifying, providing images, text, or input, and undertaking sensor readings. Students rarely work on communication: when they do, it typically involves formulating recommendations based on research results. In the classroom, projects related to human behaviour and well-being often involve research phases beyond just data collection.

> „ Citizen science and schools are a 'match made in heaven'. With the right support, a classroom can blossom into an engaged research team. Furthermore, students gain significant knowledge not only about the research topic but also about the nature of scientific research. That's why supporting schools and teachers is an essential focus for Scivil.
>
> **- Charlotte Hens, Advisor citizen science & education**

6. Language

In 89% of the projects, participants can contribute in Dutch; French and English are options respectively in 39% and 34% of the projects.

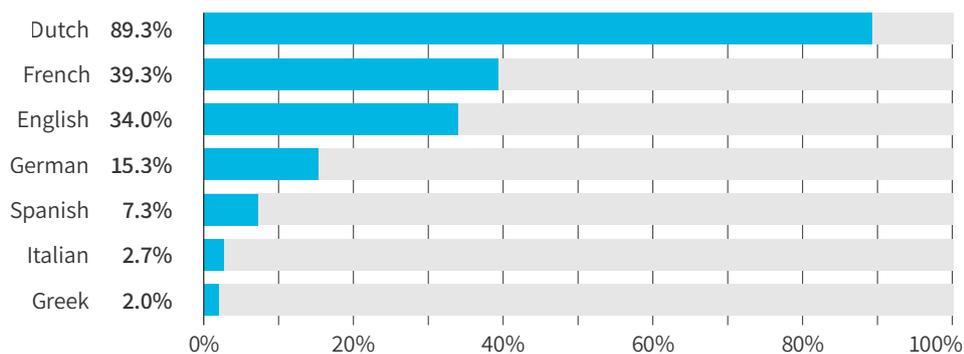| Language	%
Dutch	89.3%
French	39.3%
English	34.0%
German	15.3%
Spanish	7.3%
Italian	2.7%
Greek	2.0%

Figure 16
Percentage of projects where citizens can participate in a particular language (n=150)

⚡ **Dutch is clearly the dominant language for citizen science in Belgium.**

Just over half of the projects (84) use a single language, which is usually Dutch. In the remaining 66 projects, participants can contribute in multiple languages. When there are two language options, it almost always involves a combination of Dutch with either French (16), English (9), or German (1). Generally, combinations including Dutch and French are the most common. When German is an option, Dutch is always included as well.
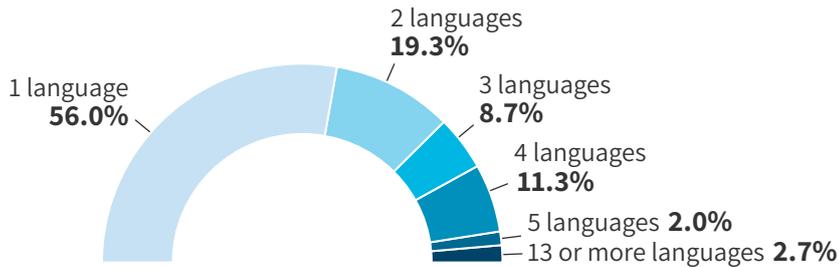
Figure 17
Percentage of projects by number of available languages (n=150)

In projects with three languages, the combination almost always includes Dutch, French, and English. For projects with four languages, it nearly always consists of the three national languages and English. Four projects even offer participation in 13 to 23 languages; these four projects all have at least an international scope.

Projects at the urban or neighbourhood level almost always use a single language. Exceptions include PING from Mobiel 21 and airQmap from VITO. Even in projects with a regional scope, participants rarely have the option to contribute in languages other than Dutch. International and global projects, however, are usually available in multiple languages. Projects related to biology and biodiversity, as well as human behaviour and well-being, relatively more often offer three or more languages.

Figure 18
Number of projects by geographic scope, broken down by number of available languages (n=81, survey sample)

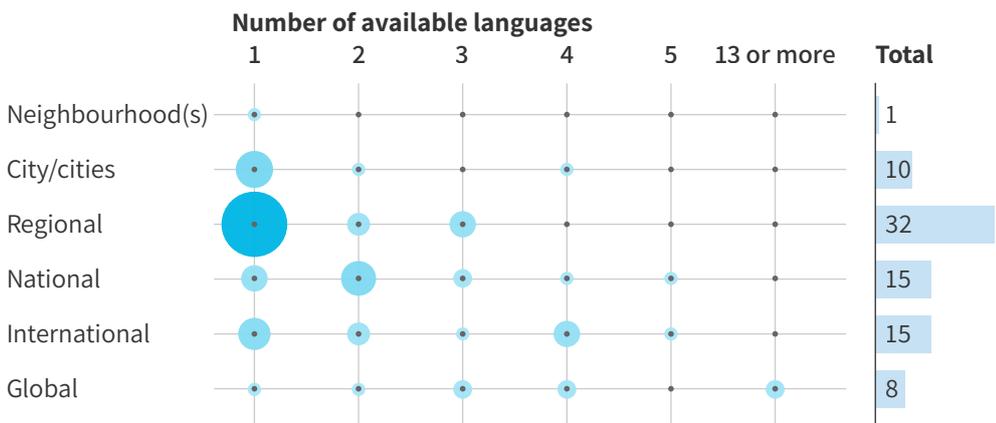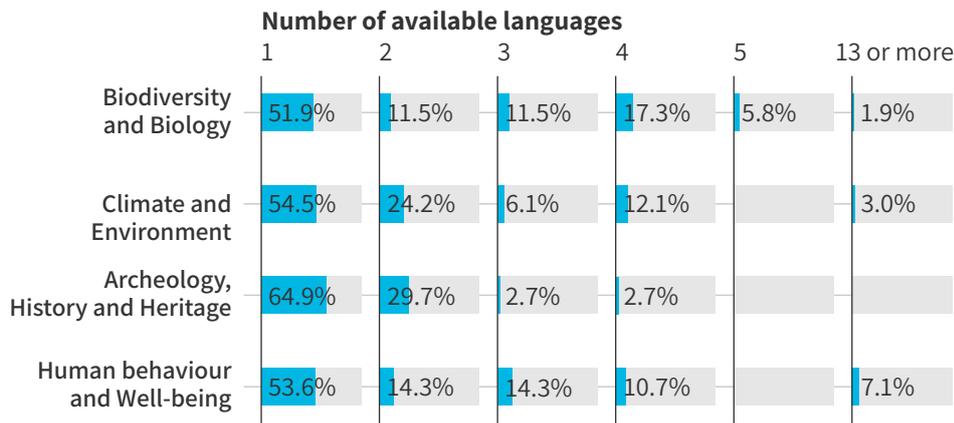|	1	2	3	4	5	13 or more
Biodiversity and Biology	51.9%	11.5%	11.5%	17.3%	5.8%	1.9%
Climate and Environment	54.5%	24.2%	6.1%	12.1%		3.0%
Archeology, History and Heritage	64.9%	29.7%	2.7%	2.7%		
Human behaviour and Well-being	53.6%	14.3%	14.3%	10.7%		7.1%

Figure 19
Number of projects by topic, broken down by number of available languages (n=81, survey sample)

> " Multilingualism is a challenge, especially for smaller projects with a limited reach. Even in urban or neighbourhood projects, we mostly see monolingual initiatives. However, a multilingual approach can make a project more inclusive and better represent local residents or city dwellers. Perhaps AI applications for interpreting and translation will soon offer accessible opportunities.
>
> *- Isaak Vandermaesen, Project officer AI & education*

7. Initiators

One in three projects is initiated by a government organisation. The National Archives (with 20 different branches across the country) have by far the highest number of projects, primarily focused on digitising inventories. The Meise Botanic Garden also strongly engages in citizen science for digital transcriptions through their online platform DoeDat. Additionally, research institutions, cities, museums and archives frequently collaborate with citizens. Projects in the fields of archaeology, history, and heritage are typically initiated by government organisations. Similarly, in the domain of biodiversity and biology, public institutions are often the initiators.
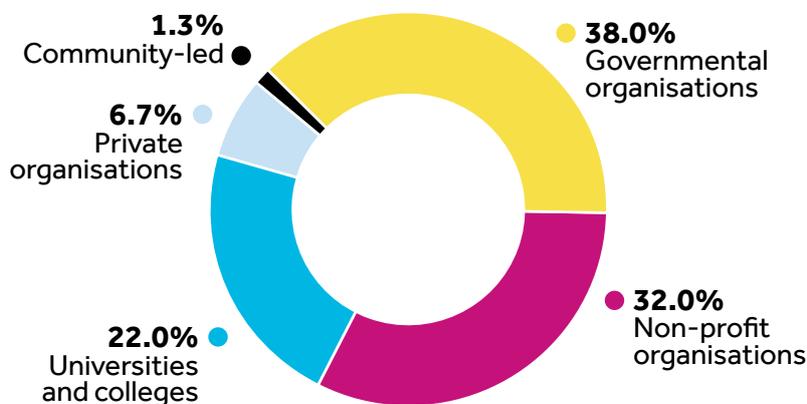

1.3% Community-led
6.7% Private organisations
22.0% Universities and colleges
38.0% Governmental organisations
32.0% Non-profit organisations

Figure 20
Initiators of Belgian citizen science projects (n=150)

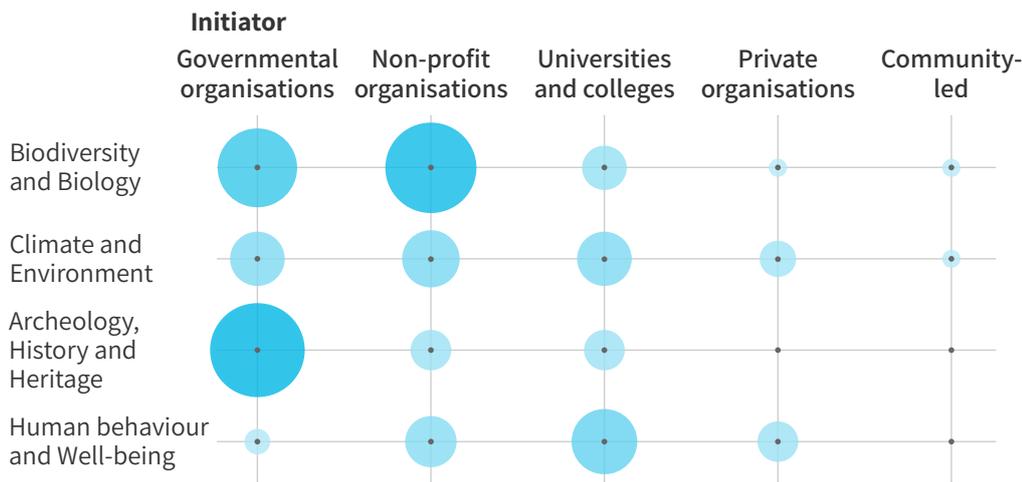|	Governmental organisations	Non-profit organisations	Universities and colleges	Private organisations	Community-led
Biodiversity and Biology	●	●	●	·	·
Climate and Environment	·	●	●	·	·
Archeology, History and Heritage	●	·	·	·	
Human behaviour and Well-being	·	●	●	·	

Figure 21
Number of projects by initiator and topic (n=150)

Another third of all projects is initiated by non-profit organisations. Natuurpunt has a long tradition of citizen participation, which is reflected in numerous active projects focused on species counts. The Flanders Marine Institute (VLIZ), Mobiel 21, and Abllo VZW also run several projects. Non-profit organisations are often the initiators of projects related to biodiversity and biology, climate and environment, and to a lesser extent, mobility. This category also includes smaller non-profits that started as informal initiatives by small groups of citizens, such as Gent on Files and citizen movements like GMF, 'Proper Strand Lopers', and Les Chercheurs d'Air.

> ⚡ **Governments and non-profit organisations most frequently take the lead in citizen science.**

Universities and colleges lead slightly more than 20% of the projects. With a few exceptions, these are almost always universities: four out of five Flemish universities each have at least five active projects. In initiatives related to human behaviour and well-being, universities and colleges are the most frequent initiators. Additionally, a third of the projects that collaborate with schools are initiated by academic institutions.

In about ten projects, a private company is in the lead, such as VITO or Knack. Two projects are informal citizen initiatives.

Research institution as initiator / **Other initiator**

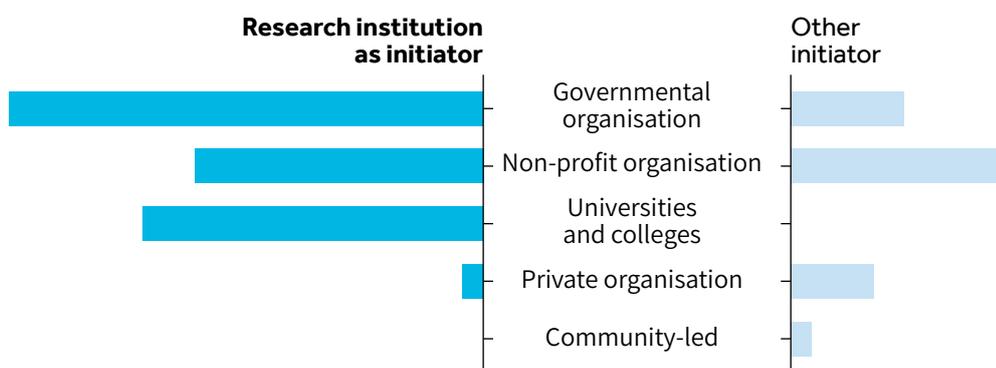|	Research institution	Other
Governmental organisation	▇▇▇	▇
Non-profit organisation	▇▇	▇▇▇
Universities and colleges	▇▇▇	
Private organisation	▇	▇
Community-led		▏

Figure 22
Initiators of Belgian citizen science projects: research institutions and others (n=150)
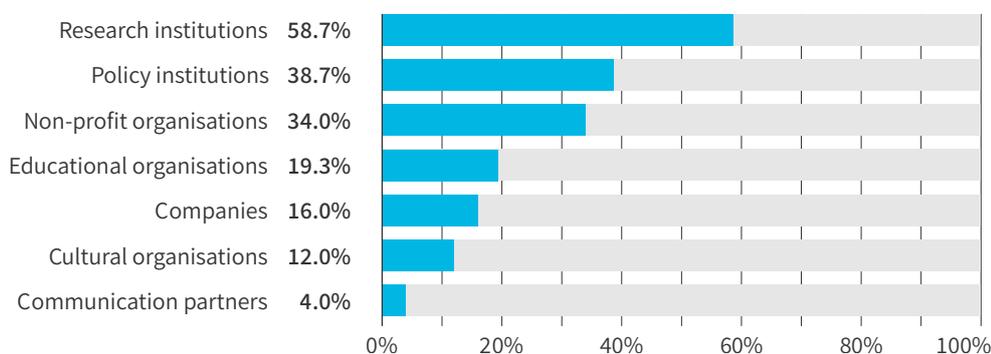
In two-thirds of citizen science projects, a research institution takes the lead. This is of course always the case with universities and colleges, but initiators from government and non-profit sectors also generally have a primary focus on research in their objectives and activities.

> ❝ It may come as a surprise, but the academic world does not have a monopoly on citizen science. In Belgium, it is primarily government agencies and non-profits that take the initiative. While many of these are research institutions, there are also numerous smaller grassroots initiatives. For each citizen science project, scientific quality must be ensured, and this is achieved in various ways. Scivil provides tailored advice to emerging projects to help them maintain these standards.
>
> *- Jef Van Laer, Advisor citizen science*

8. Partners

Citizen science is rarely undertaken solo. More than half of the projects (59%) collaborate with a research partner. Even when a university or other higher education institution is leading, it usually involves an additional research partner (70%). This frequent collaboration likely reflects the interdisciplinary nature of many citizen science projects, which may require multiple research partners.

Research institutions	58.7%
Policy institutions	38.7%
Non-profit organisations	34.0%
Educational organisations	19.3%
Companies	16.0%
Cultural organisations	12.0%
Communication partners	4.0%

Figuur 23
Percentage of citizen science projects collaborating with a type of partner (n=150)

Additionally, many initiators partner up with policy agencies (39%) or non-profit organisations (34%). These types of partners are well-positioned to contribute to the societal impact of the project by incorporating research results into policy or using them for advocacy efforts. Only six projects (4%) involve an external communication partner, such as a media platform, news brand, communication agency, or science communicator.

2 types of partner
29.3%

1 type of partner
42.0%

3 types of partner
8.0%

4 types of partner
9.0%

no partner
7.3%

5 types of partner **2.7%**
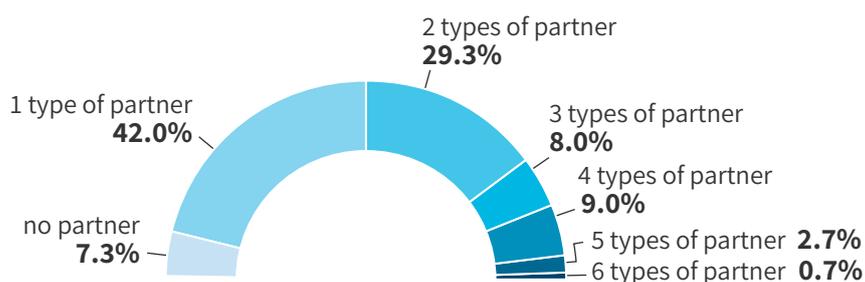
6 types of partner **0.7%**

Figure 24
Percentage of citizen science projects by number of partner types (n=150)

It is noticeable that communication partners are rarely involved in consortia. This is surprising, given the significant importance of communication for a citizen science project. This role is probably often fulfilled by the educational partner, the internal communications department of the initiator or the project leader themselves. It is also possible that communication partners are engaged through subcontracting and therefore not recognized as formal partners. To support initiators, we have developed a guide to help create and implement a communication plan.

- Sanne Strouven, Advisor communication

Not every project engages with the same number of partner types. In 7% of projects, the initiating organisation works alone[10]. In 40% of projects, there is one additional type of partner involved, usually research partners (44%) or policy agencies (25%).

10. Or we found no information about possible partners.

⚡ **The most common partners are research institutions, policy agencies, and non-profits.**
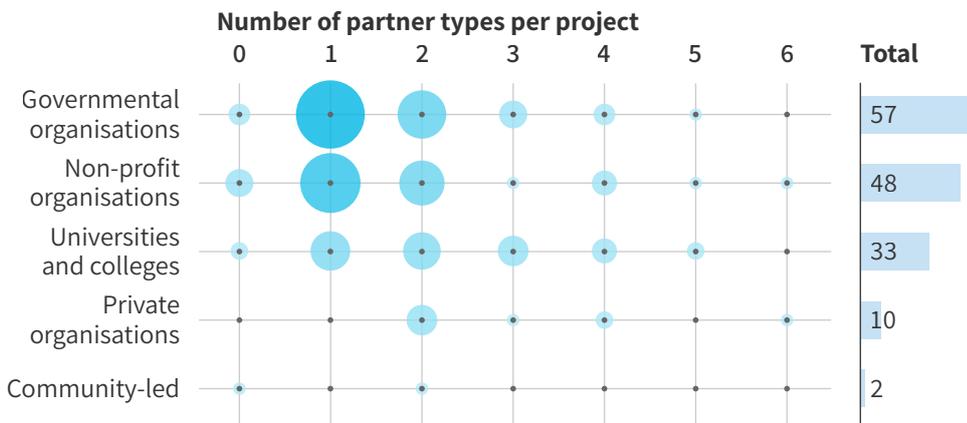
Figure 25
Number of partner types per citizen science project, divided by type of initiator (n=150)

Projects with only one type of partner or none often have only one source of funding (see below). This may indicate limited financial resources. Half of the projects collaborate with at least two types of partners. Universities, colleges, and private organisations more frequently collaborate with two or more types of partners compared to government and non-profit organisations.

Citizen science projects involve many different elements. In addition to scientific expertise, communication, citizen participation, data management, and policy impact are all essential components. We see that it is not always easy to find partners with complementary skills.

> Scientists often have a strong network of academic colleagues, while citizen initiatives may struggle to navigate the maze of research institutions. That's why at Scivil, we focus strongly on matchmaking, including through networking events, a partner database, and tailored coaching.
>
> *- Annelies Duerinckx, Head of Scivil*

9. Funders

Own resources — 61.7%
Regional funding — 43.2%
Local funding — 13.6%
Federal funding — 12.3%
International funding — 12.3%
Private sponsorship — 9.9%
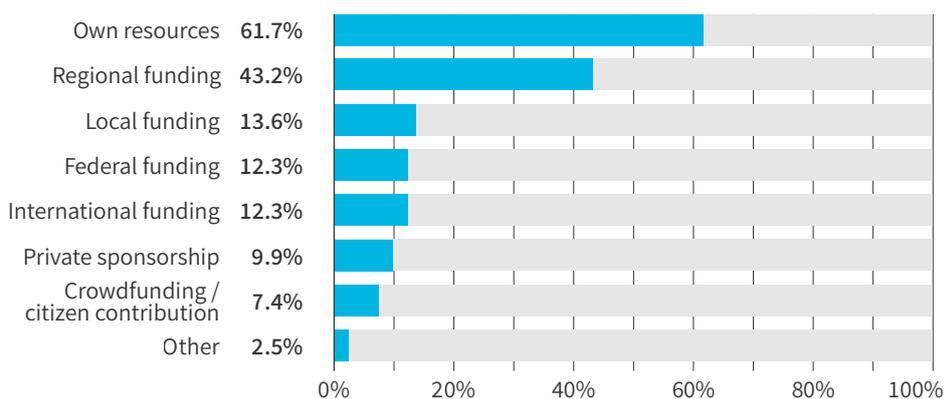Crowdfunding / citizen contribution — 7.4%
Other — 2.5%

Figure 26
Sources of funding (survey sample, n=81)

Two-thirds of citizen science projects use their own resources. Nearly half rely on regional project funding (from Flanders, Brussels or Wallonia). Whether the initiator is a non-profit organisation, government body, or academic institution[11], own resources and regional subsidies are the most common sources of funding. Projects rarely rely solely on sponsorship or crowdfunding, and these are never used as the only source of funding.

11. We highlight these categories because they account for more than 90% of the survey sample, with 29, 25 and 21 projects respectively.

1 funding source **60.5%**
2 sources **25.9%**
3 sources **6.2%**
4 sources **4.9%**
5 sources **2.5%**

Figure 27
Number of funding sources per project (survey sample, n=81)

More than half of the projects rely on only one funding source. This is the case for projects from non-profit organisations, government bodies, and academic institutions. In half of these cases, the sole funding source is internal resources, while a quarter of the surveyed projects depend exclusively on regional funding.

⚡ **A majority of projects rely on only one type of funding source.**

There appears to be a positive correlation between the number of funding sources and the number of types of partners. Projects with one funding source often have at most one type of partner, whereas projects with three or more funding sources all collaborate with at least two types of partners. Most projects with two funding sources also work with at least two types of partners.
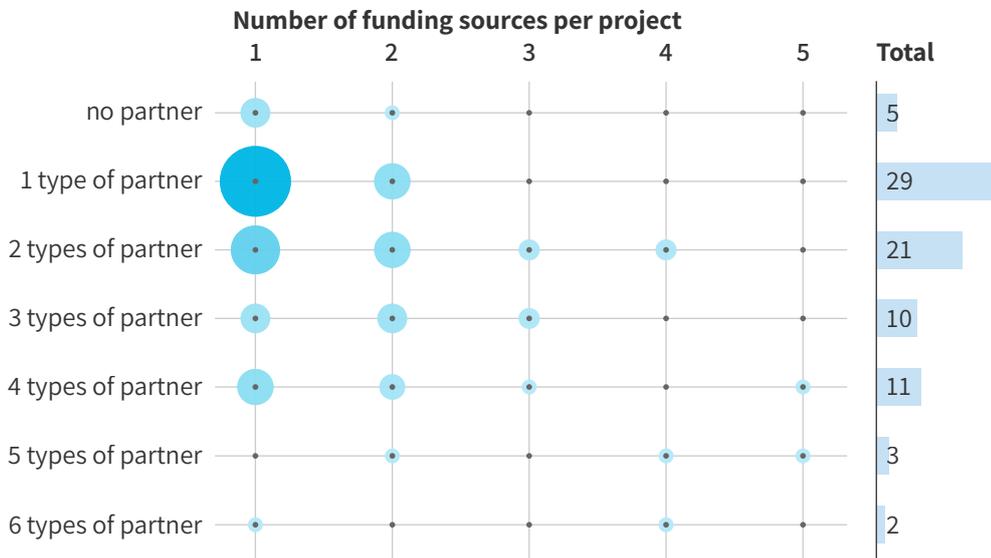

Figure 28
Number of funding sources per project, broken down by number of partner types (survey sample, n=81)

Government organisations never have more than two types of funding sources, unlike non-profit organisations and academic institutions, which sometimes combine three to five types of funding.
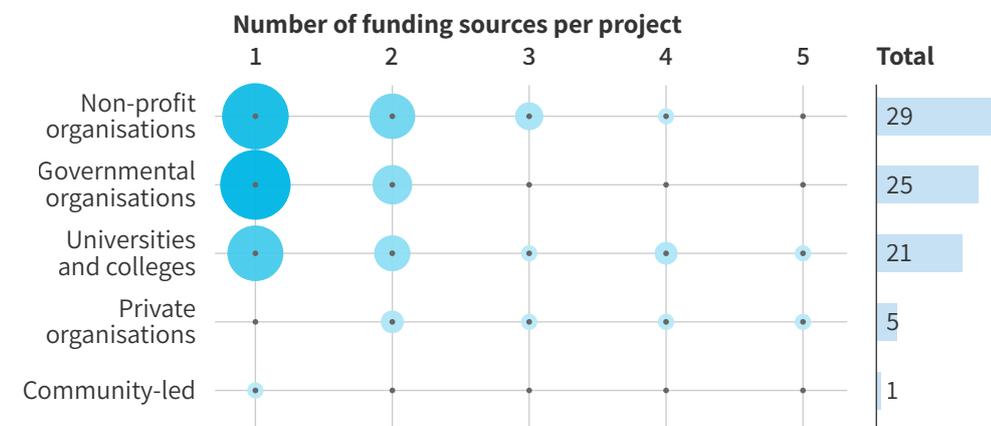

Figure 29
Number of funding sources per project, split by type of initiator of the project (survey sample, n=81)

" The most frequently asked question at Scivil is about finding a suitable funding source. Academic project funding is often not aligned with the needs of citizen science. While the European Commission strongly supports citizen science, European project funding is highly competitive. For smaller projects outside the academic sphere, there are even fewer options. Commercial collaborations are becoming more common but never serve as the primary or sole source of funding.

Moreover, continuing a citizen science project also requires funding. The setup, optimisation, and community building typically take two to three years, which is the duration of a typical project grant. Therefore, Scivil advocates for more sustainable funding models that are accessible to stakeholders both within and outside the academic world.

- Annelies Duerinckx, Head of Scivil

Conclusions and recommendations

Citizen science in Belgium is thriving. Citizens can engage in a variety of topics ranging from natural sciences, history, and social sciences to biomedical sciences, literature, and even the arts. They have access to a diverse range of platforms including schools, libraries, museums, archives, cities and municipalities, universities and colleges, regional and federal research institutions, non-profit organisations, and grassroots citizen initiatives. They can choose from large-scale national campaigns run by extensive consortia, to small hyper-local citizen initiatives led by small teams, and everything in between. They can participate in projects that have been running for decades or in new initiatives that have sprung up rapidly in the last ten years. Participants can observe, transcribe, interpret, undertake measurements with AI-trained sensors, or simply count using pen and paper. They can also design research questions, formulate recommendations, and disseminate results. We can be proud of the tradition, the widespread richness, the knack for innovation and the strong commitment that characterise Belgian citizen science.

However, there are risks. We can see that the explicit policy choice to support citizen science in Flanders has borne fruit over the last decade. This is likely contributing to the contrast between the offerings in Flanders and the French-speaking region, which cannot be attributed solely to methodological biases. However, in Flanders the challenge of securing project funding threatens to hinder the rise of new projects. The expansion of citizen science into scientific disciplines that have only recently begun to embrace this approach has been successfully initiated. At the same time, this movement remains fragile and dependent on the willingness of funders to address the specific needs and requirements of citizen science. Moreover, there are challenges in establishing structural funding beyond the start-up phase to ensure the sustainability of initiatives. Investments in emerging projects risk missing their valorisation potential. Thus, the sustainability of existing citizen science initiatives is a subtle yet crucial point of attention for policymakers.

There are also challenges and opportunities among the initiators. Much potential remains untapped in scientific disciplines that have only recently discovered citizen science as a valuable approach. There is also significant room for expansion into research phases beyond data collection. Schools have the potential to participate much more in citizen science projects than they currently do, and they often express a desire to be involved. Additionally, initiators could further leverage strategic partnerships to bring together the diverse expertise needed for a successful citizen science project. Scivil will therefore continue to contribute as a facilitator, advisor, promoter and matchmaker for citizen science in Flanders and Belgium.

Recommendations for policymakers

- Launch a new call for proposals for emerging citizen science projects that is open and accessible to initiators both within and outside the academic community.

- Ensure sufficient flexibility and openness in existing funding channels for project proposals with a citizen science approach.

- Develop and test new funding models to ensure the financial sustainability of ongoing citizen science projects beyond the start-up phase.

- Continue to actively support the broadening of citizen science content so that this approach becomes structurally embedded in social and biomedical sciences.

- Monitor the evolution of the number of citizen scientists in Flanders, for example, through the Science Barometer.

- Ensure that citizen science can also thrive in the French-speaking regions of Belgium.
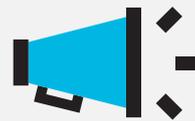
Recommendations for (potential) initiators

- Don't assume too quickly that citizen science isn't for you. Citizen science comes in many forms, shades and intensities. There is still a lot of untapped potential, especially in social and biomedical sciences. Citizen science doesn't have to be a large-scale endeavour; small projects are just as crucial in the Belgian citizen science landscape. Moreover, as this Citizen Science Scan shows, you don't have to be an academic to start a project: government institutions, non-profits, and grassroots citizen initiatives can also get involved. Evaluate your own (organisational) goals and determine if a citizen science approach could add value. Our success stories offer various projects as inspiration.

- Determine in which research phases a citizen science approach could be beneficial. While data collection and analysis are the most visible opportunities, citizens can also make valuable contributions in formulating research questions or recommendations, disseminating research results, or even being involved in every step of the research process through a well-designed co-creation trajectory. For inspiration, you can take a look at the amai! project, which engages citizens throughout the entire process.

- Explore whether schools could be a valuable partner. Often, all you need is one dedicated teacher or an enthusiastic principal to establish a fruitful collaboration. Our guide 'Citizen science in the classroom' (in Dutch), can help you get started.

- Make your project available in multiple languages to reach diverse population groups. Especially for projects at the city or neighbourhood level, providing multiple language options can help achieve more representative participation. While this requires financial resources, current AI applications in translation software can help reduce the costs associated with this step.

- Don't underestimate the importance of a strong communication strategy. Seek a partner if the budget allows, or organise it internally. Good preparation is half the battle. Our guide, 'Communication in Citizen Science', will help you get started.

- Forge partnerships outside your comfort zone and don't hesitate to seek help or advice. Citizen science requires various types of expertise, and you may not always find them within your own professional or personal network. Assess the competencies you have and identify which ones you need to supplement with external partners. Scivil is here to help you with this process.

About Scivil

Scivil builds bridges for better citizen science. As the Flemish knowledge centre for citizen science, Scivil is a catalyst and matchmaker, bringing together all the parties and tools required for strong citizen science projects. Scivil promotes, connects, supports and innovates citizen science.

Through citizen science, citizens, scientists and societal actors can collaborate on outstanding and effective scientific research. Moreover, citizens thus learn to think about science in a more nuanced and critical way, and also to experience its importance, both for society and for their personal lives.

Scivil wants citizens, scientists and societal actors to solve scientific issues and societal problems together more often, thus optimally matching the knowledge acquired to all stakeholders.

Scivil helps you with:

- **Workshops and lectures** on citizen science tailored to your organisation;
- **Personalised advice** on future and ongoing citizen science projects;
- **Networking events** to connect citizen science actors;
- **Guides and manuals** on partial aspects of citizen science;
- **An innovative** citizen science **approach** as a partner in your project.

Scivil
Citizen Science
Vlaanderen

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Appendices

Appendix 1: Adaptions to PPSR Core

PPSR Core (Public Participation in Scientific Research) is a global, transdisciplinary data and metadata standard for public participation in scientific research. It allows data to be used consistently across various platforms and projects. PPSR Core served as the foundation for the Citizen Science Scan.

The following features were adopted exactly as specified:

- Project Title
- Contact
- Brief Description of Project
- Start and End Date

These features can be used and integrated with other databases in further analyses by third parties.

For the following features, the response categories were adjusted:

- Status of the Project
- Project Science Type
- Organisation Type
- Funding Source
- Project Language
- Scientific Process Involved
- Number of Participants

The categories were adjusted for practical feasibility, interpretative difficulties, and the Belgian context.

The following features were omitted:

- Project Duration
- Project UN Regions

These features were omitted due to their low relevance for the Belgian context or because the information was very difficult to obtain.

The following feature was added:

- Collaboration with Schools

This feature was added due to its high relevance for the Belgian citizen science landscape.

Appendix 2: Calculation of the number of unique participations

To calculate the number of unique participations for the 81 projects surveyed, we use the minimum and maximum values from the variable 'Number of participants' for each project. This is done for every response category except the '5,000+' category. For this highest category, we were able to obtain the exact number of participants for six out of the sixteen projects. For the remaining ten projects, we use a minimum value of 5,000 and a maximum value of 20,000. The exact numbers for the six projects varied widely, ranging from 8,000 to 50,000 and even up to 300,000 participants. The maximum value of 20,000 for the remaining 10 projects may be an underestimation, but since the numbers in this category have a significant impact on the total figure, a conservative estimate was chosen.

Number of participants	Number of projects	Minimum number of participations	Maximum number of participations
1-20	7	7	140
21-100	18	378	1,800
101-500	17	1,717	8,500
501-1,000	11	5,511	11,000
1,001-5,000	12	12,012	60,000
5,000+ (exact number not known)	10	50,000	200,000
5,000+ (exact number known)	6	743,666	743,666
Total	**81**	**813,291**	**1,025,106**

Appendix 3: Overview of the analysed projects

- airQmap
- amai!
- Analyse van de personeelsdossiers van koloniale ambtenaren
- Analytische inventarisatie van de boekhoudkundige registers en bewijsstukken van het kasteel van Mirwart (15de-18de eeuw)
- Atlantis-Geomag
- B@seball
- BeBirds
- Becquet in Rwanda & Burundi
- BE-MUSIC
- beschreven. - Aerts (15)
- Beware & Note
- B-magic: The Magic Lantern and its Cultural Impact as a Visual Mass Medium in Belgium (1830-1940)
- Bodemleven
- Bodemvalonderzoek
- Bomen zijn cool!
- Bruss'Help telling
- Buitenlesdagchallenge
- Burgerwetenschap naar toegankelijkheid en gebruik van parken bij oudere volwassenen
- Buurtnatuur.be (open street map België)
- Citizen Science Food (werktitel - naam onder constructie)
- CO_2 in de klas
- CoastSnap Belgium
- CoDE-x
- COMPAIR
- CRESCO Citizen Rescuers for Collections
- Databank van gedetineerden van de Saint-Léonard-gevangenis in Luik
- De energiewijzer van ABLLOvzw
- De flora van Kenia (03)
- De Meetnetten
- De Oorzaak
- De planten van de Democratische Republiek Congo (02)
- De Strandwerkgroep België
- Demogen
- Dieren onder de wielen (DODW)
- DigHimapper
- Digitale ontsluiting van de arresten van het Hof van assisen Oost-Vlaanderen (1811-1830)
- Digitale ontsluiting van de erfenisaangiften in Oost-Vlaanderen
- Digitale ontsluiting van de erfenisaangiften van het gerechtelijk arrondissement Turnhout
- Digitale ontsluiting vonnissen criminele rechtbank Scheldedepartement (Oost-Vlaanderen)
- Digitalisering van de registers van de beraadslagingen van de gemeenteraden en de schepencolleges (1800-1976)
- Digitalisering van het archief van de vzw 'Archives photographiques namuroises'
- DoeDat
- Dwaallichten
- Eikapsels tellen
- ELI-S
- Espèces invasives en Wallonia
- European Ladybird
- European stag beetle monitoring network
- ExpAir
- Fietsbarometer
- FlowerPower De Tuin
- Fuik- en schepnetonderzoek
- Gebruikersrapporten met de KMI smartphone-app
- Geheuven van Stuivenberg
- Gent on Files

- Getuigenissen
- Gezelles Brieven
- Groene oasen voor mens, klimaat en biodiversiteit
- Grote Schelpenteldag
- Hals perkament
- Het Grote Vogelweekend
- Het Rozenherbarium van Crépin (XIX)
- huismussentelweekend
- In de Bres voor water
- Increased Contextualisation of Humanist Intangible Cultural Heritage (ICHICH)
- Indexation des registres de population de la province de Namur
- Indexering van de registers van de burgerlijke stand van de gemeenten van de Duitstalige Gemeenschap
- Infectieradar
- InformMe! Hoe influencers jongeren (mis)informeren op social media
- Inventaris van de kabinetsarchieven van de gouverneurs van de provincie Luxemburg
- Inventarisatie van de archieven van het Soevereine Hof van Bouillon
- Inventarisatie van de collectie kaarten en plannen
- Kapelletjes in Vlaanderen
- Klimaattuiniers
- kolonietelling (gier)zwaluwen
- Les chercheurs d'air
- Leuven.cool
- LIKONA
- Limburgse werkgroep voor Lichenologie
- Luchtpijp
- LUNCH-BOX-MONITOR
- Maai Mei Niet
- Map a tree
- MapComplete
- MEDEA/vondsten.be

- Mijn Tuinlab
- Moment-GPS
- Mossen uit de collectie Van Heurck (02)
- My T Learning: live ondertiteling tijdens de Les
- MySpeech
- Nachtvlindervangst met lichtval
- Namen groot formaat Algemeen Herbarium
- NieuwswijsNeuzen
- Notarius
- Numérisation et indexation des archives photographiques namuroises (1865-2022)
- ObsIdentify: SnApp de natuur
- ODIS
- Onder de radar
- Onderzoek vleermuizen op zolders
- OpenStreetMap Belgium
- OUTLAW - Geef 120.000 gevangenen terug een naam
- PARDONS
- PING
- Plankton Imaging Lifewatch Belgium
- Plastic Pirates
- Project Spintmijt
- Punt- Transecttelling (PTT)
- Radio Meteor Zoo
- Registers burgerlijke stand, 1796-1970
- saving private orion
- School op de Teller
- SeaWatch-B
- Slapen als een doornroosje niet langer een sprookje
- Slimme signaalfunctie Smartschool
- Small world of words
- Smartwaterland
- socio-bee
- Soja in 1000 tuinen

- SoleWay
- SOS Antwerpen
- Spider spotter
- Spinicornis
- Stiemerlab
- STOEP
- Straatvinken
- Strengthening mental health and resilience through schools (SMARTS)
- SurveillanceMoustiques
- Tellingen Aangespoelde Vogels
- Telraam
- Telraam Talks
- TETTRIs
- Titan
- Together4Water
- Trektellen
- Tuin Testers

- Urbaan mezenproject in Gent, Dendermonde, Sint-Niklaas en Kruibeke en controlebos
- Val-u-Sun
- vespawatch
- Vlaams Darmflora Project
- Vlaanderen in de Weer (VLINDER)
- VOSS-project
- Waarnemingen.be
- Waarschuwingssysteem Invasieve Exoten
- WasteWatchers
- Wekelijkse Vlindertelling
- Wekelijkse Vogeltelling
- Westhoek Verbeeldt
- Wilder
- WOW-BE
- zichtbaar grondwater