EUROPEAN UNION

EU MISSIONS
ADAPTATION TO CLIMATE CHANGE

TRAINING PROGRAMME - How to carry out stakeholder and citizen engagement in practice

Session 8: Citizen Science

December, 10

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Today's agenda

Time	Session
13:30 - 13:35	Welcome & Agenda of the day - **Yara Shennan-Farpon**
13:35 - 13:38	Ice-breaker question - **Francois Jost**
13:38 - 13:40	Introduction Citizens science - **Marianne Wehbe**
13:40 - 13:55	Experience sharing: **Francois Jost**, from ECSA: What is citizen science and available resources
13:55 - 14:10	Experience sharing: **Luciana Favaro** from EUCLIPA: "Citizens' climate lab in Venice"
14:10 - 14:25	Experience sharing: **Anna Verones** from ECSA: Citizen Science in AGORA project
14:25 - 15:15	Questions & Practical exercise
15:15 - 15:25	Resources, tools and overview of available platforms - **Francois Jost**
15:25 - 15:30	Wrap-up and feedback in slido

Ice-breaker question

- **How familiar are you with ‘Citizen Science’ (CS)?**

  👏 → Very familiar with citizen science
  👍 → A bit familiar with citizen science
  🎉 → Getting started with citizen science
  😮 → Unfamiliar with citizen science

- **Has anyone of you participated in a ‘Citizen Science’ activity or project?**

  Please give a 👍 with the reaction button if you have
  Please summarize your activity/project in the chat

Citizen Science

Public participation in scientific research -> contributing to data collection, analysis, dissemination of research findings, in collaboration with scientists.

Key aspects:

- **Community involvement:** Engages communities in local and global scientific challenges, leading to more informed, empowered and active citizenry and stakeholders.
- **Contribution to science:** Provides valuable scientific data and insights.
- **Data collection:** Citizens help gather context relevant data.
- Enhances **public understanding** of science and increases **awareness of scientific issues.**
- Leverages technology (apps, platforms etc.) to facilitate data collection, communication.

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Experience sharing: Understanding citizen science

Dr. Francois Jost

European Citizen Science Association |
Project Officer AGORA and RE4GREEN projects
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Understanding citizen science

Dr. François Jost
Francois.jost@ecsa.ngo

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Content

- Defining Citizen Science (CS)
- CS trend around the world
- Describing CS projects
- Benefits and key challenges
- Researchers' ethical considerations

Dr. François Jost

Francois.jost@ecsa.ngo

ecsa European Citizen Science Association

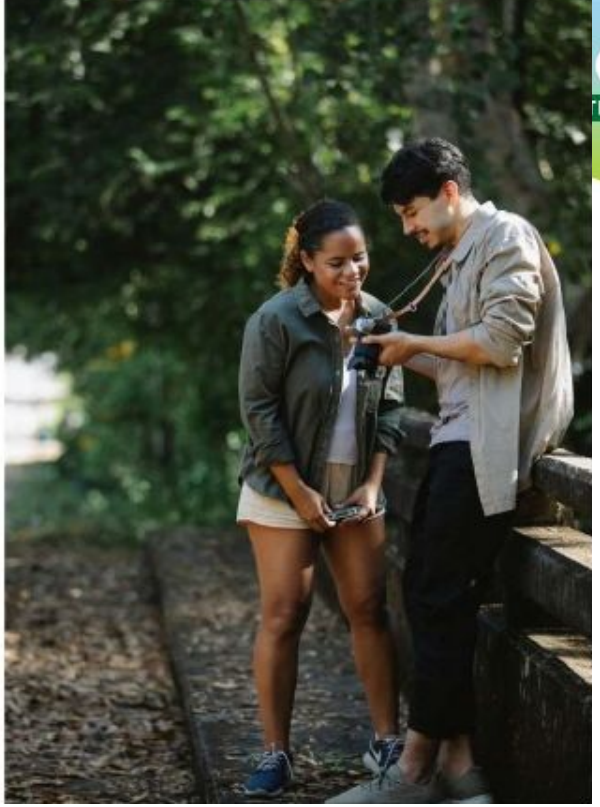
A first Definition

Citizen science is the **term** that is used to describe a wide range of activities, in which people from **all walks of life participate** in a **scientific project** in a **meaningful way.**

It is a collaborative approach to scientific research.

Including:

- identifying research questions
- collecting and analysing data
- Solving complex problems



APPLICATION FAQ DISSEMINATION MATERIAL OUR TELESCOPES TEAM CONTACT US TWITTER FACEBOOK TERMS OF USE

RECENT POSTS

Astronomy

ASTEROID HUNTERS

- Asteroid Hunters puts at the disposal of the citizenship a tool to collaborate in the protection of the Earth against the impact of asteroids.
- How to participate: Only a mobile phone is required, to download the app Android or iOS, or even from the computer's browser.
- Needed equipment: Internet

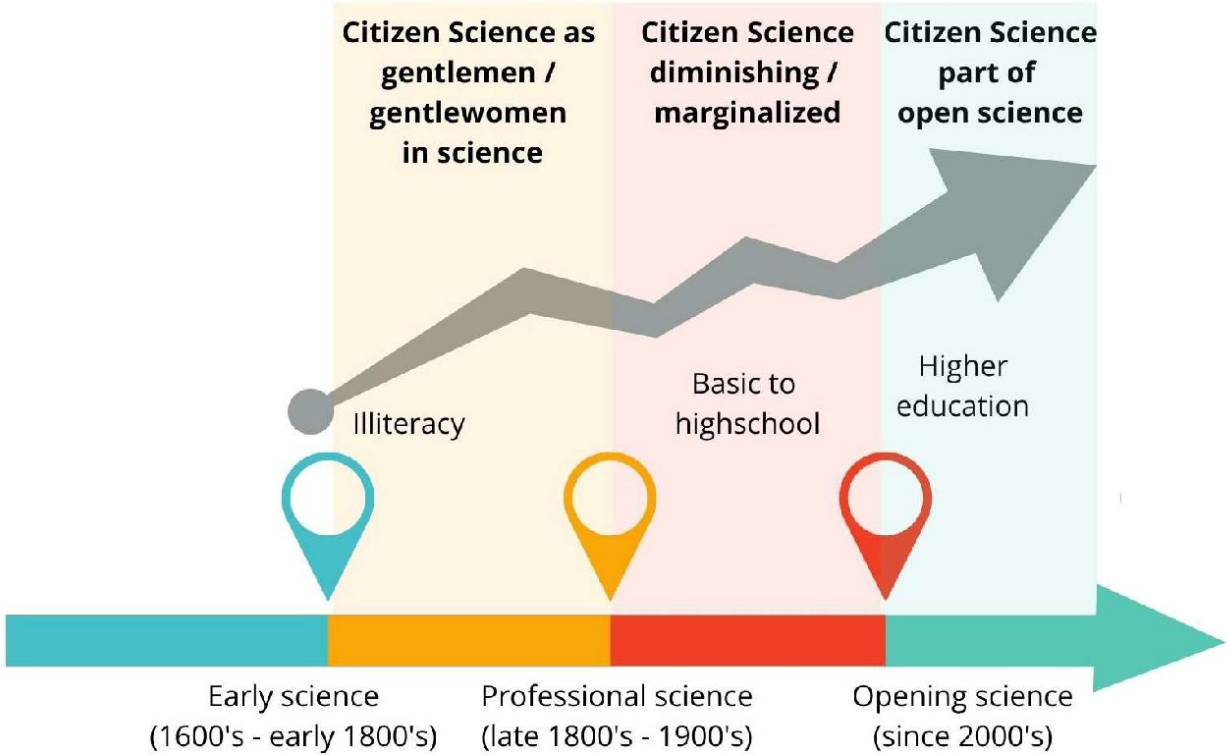
https://eu-citizen.science/project/120#

ASTEROID HUNTERS

- The **user sees** in their mobile a **sequence of images** of the sky and
- They **mark those objects suspected** of being asteroids (they move on the fixed background of stars).
- The detections are first **filtered by the users themselves** – through a voting system.
- Finally a **team of professional astronomers verify** the true nature of the objects detected.

- Thus, **engaging the public** in asteroid detection, enhancing scientific data collection and raising awareness of space science

Citizen Science and Science



Adapted frm Muki Haklay, Extreme Citizen Science group
Department of Geography, UCL
Twitter: @mhaklay / @ucl_exciteso

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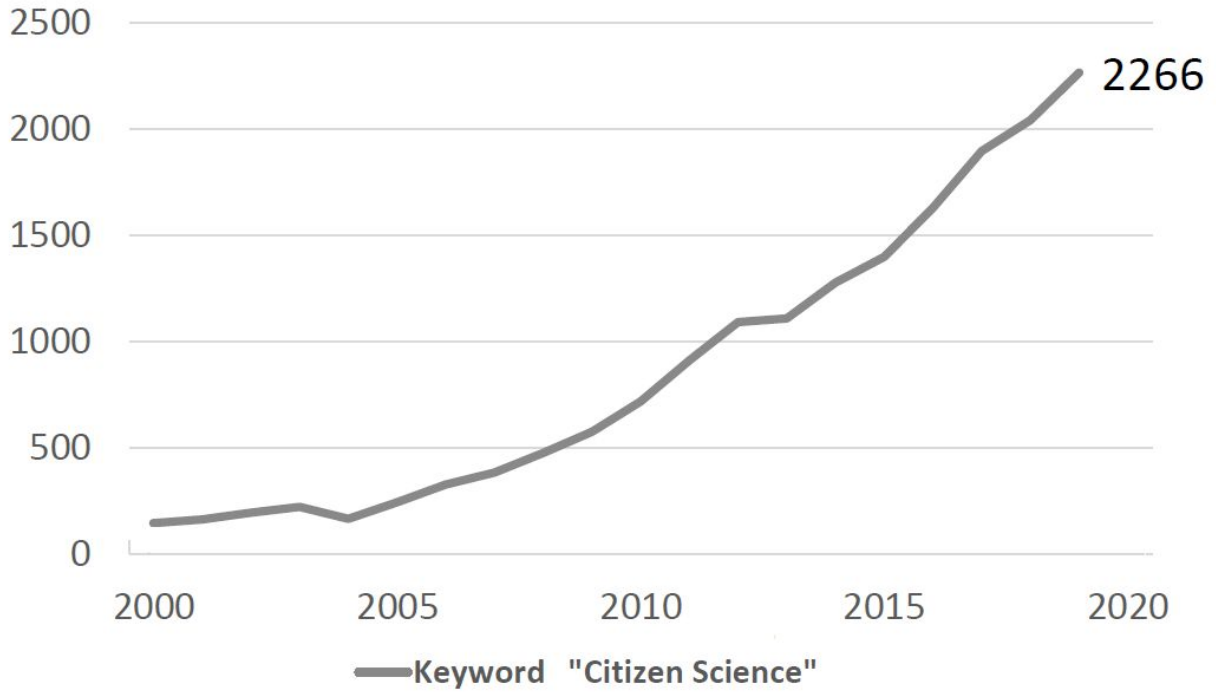
Citizen science in Research

Key word search on SCOPUS shows:

Important increase of CS publications since 2000



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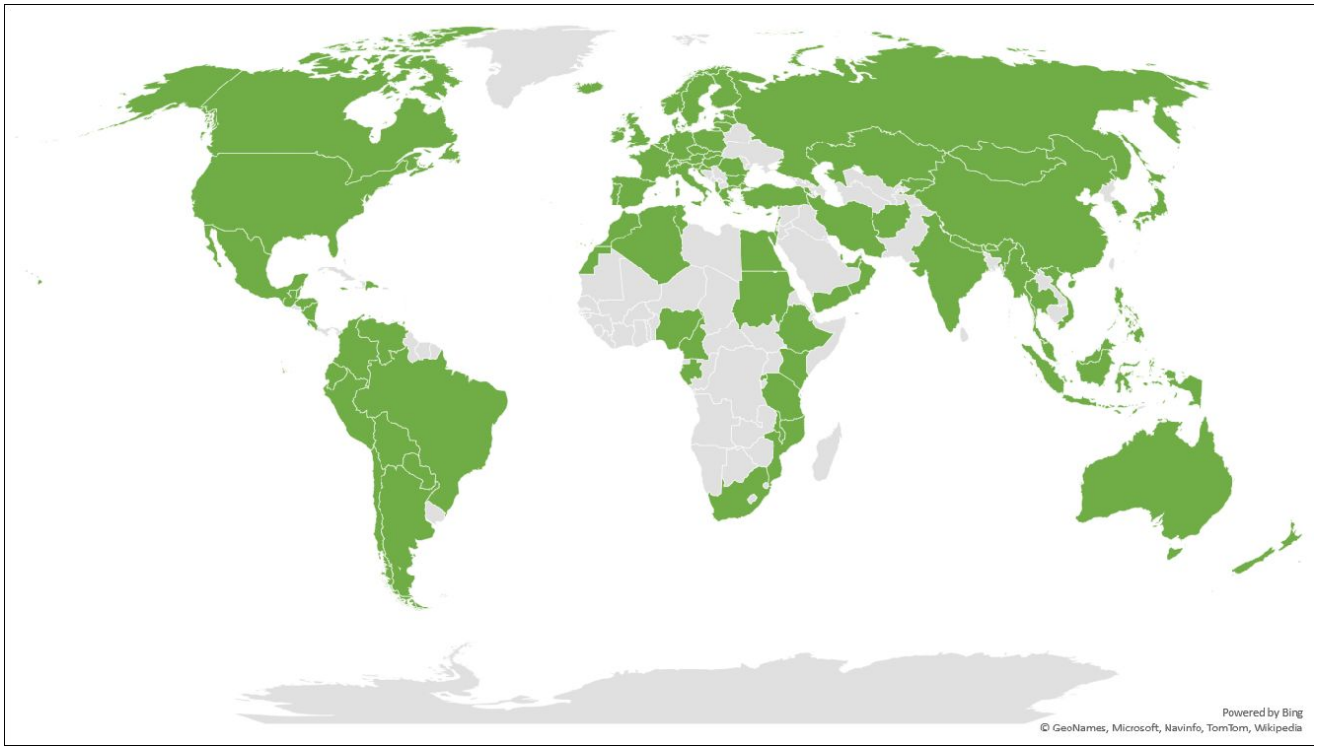
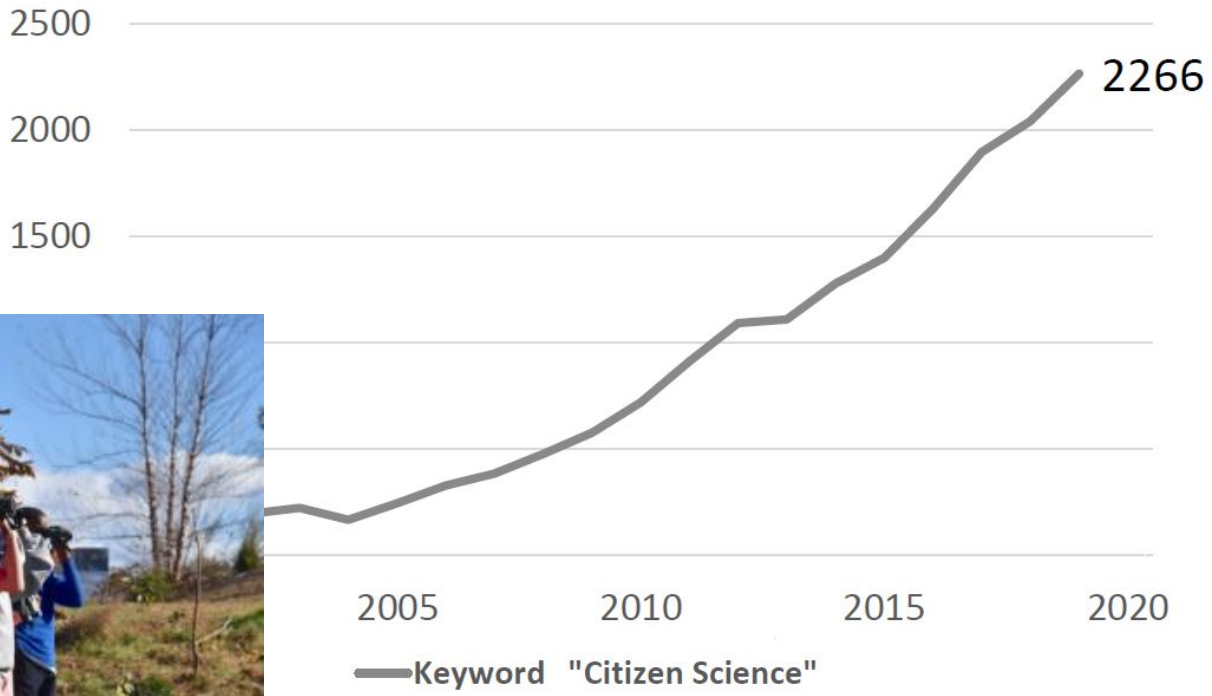
Citizen Science as a global phenomenon

- **449** CS activities
- Related to **196** projects
- Located in **97**countries



But why this sudden trend?



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Factors contributing to increased CS projects (Europe-based)

Societal trends:

- Education and qualifications
- Longevity and healthy ageing
- Leisure time
- Emergence of Open Science

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Factors contributing to increased CS projects (Europe-based)

Technological trends:

- Internet access (broadband)
- Mobile devices & Smartphones
- Collaborative Web
- Sensors and location information
- DIY electronics (incl. 3D printers)

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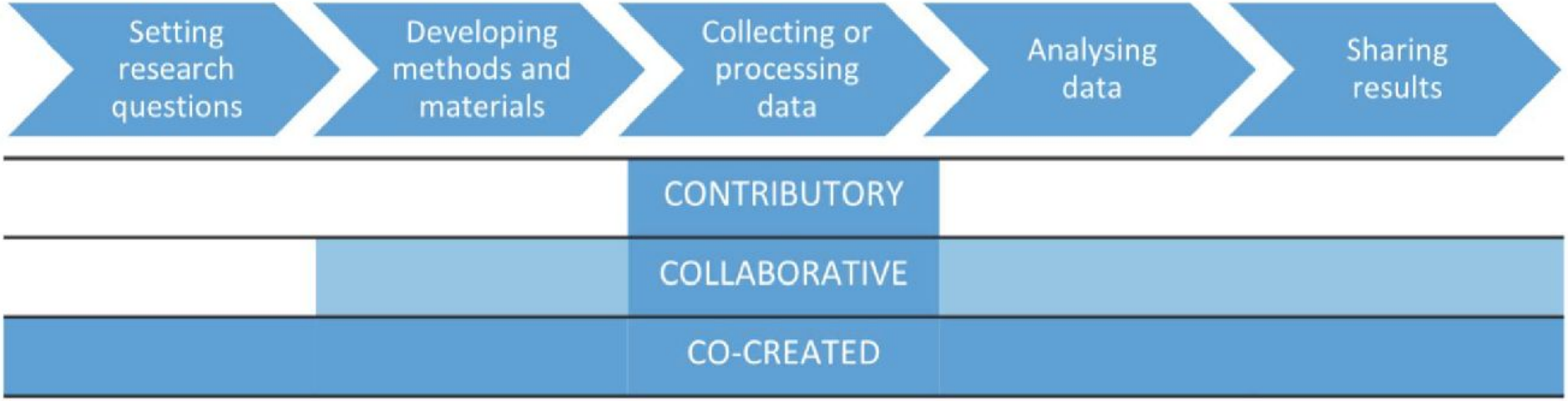
Describing CS projects

Levels of citizen engagement

Where to involve Citizens in **projects?**

Stages of the scientific process

Stages of the scientific process that involve citizens in different types of citizen science projects



Depending on the type of project

SOURCE: Bonney, R., Cooper, C. B., Dickinson, J., Kelling, S., Phillips, T., Rosenberg, K. V. and Shirk, J. (2009). Citizen science: A developing tool for expanding science knowledge and scientific literacy. BioScience, 59(11). 977–84. DOI:10.1525/bio.2009.59.11.9

AS ILLUSTRATED IN: Sarah West and Rachel Pateman (2017). How could citizen science support the Sustainable Development Goals? Policy brief. Stockholm Environment Institute.

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Goals of Project Managers

Data

- Increase in spatial data
- Increase in temporal data
- Providing high quality data
- Cost-effectiveness in data collection

Products

- Knowledge product development

Network building

- for different purposes, e.g., social interaction

Problem solving

- Improving freshwater quality

Citizen Change

- Raising awareness
- Engaging citizens in research and problem solving

Capdevila, S. L. A., Kokimova, A., Sinha Ray, S., Avellán, T., Ki
J., and Kirschke, S. (2020). Success factors for citizen science
projects in water quality monitoring.

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Goals of citizens

Learning

- About nature in general
- About water quality, specifically in local contexts
- About science/ scientific methods

Problem solving

- Improving current environmental conditions
- Responding to a specific local problem

Social interaction/ community involvement

Receiving tokens of appreciation

- Monetary incentives
- Acknowledgement in scientific work

Capdevila, S. L. A., Kokimova, A., Sinha Ray, S., Avellán, T., K
J., and Kirschke, S. (2020). Success factors for citizen scienc
projects in water quality monitoring.

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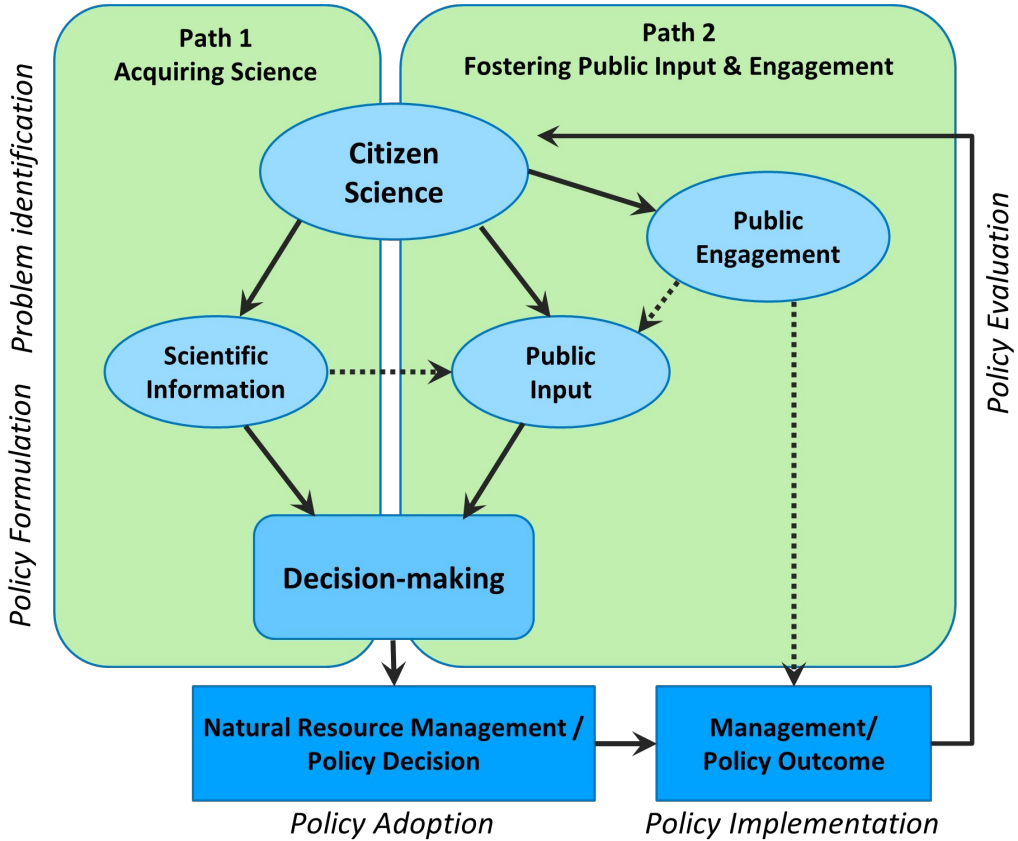
Benefits of CS

building synergies between local authorities and other stakeholders

Frits Ahlefeldt, Hiking.org

ecsa European Citizen Science Association

Building synergies using CS



CS can take 2 pathways **to inform different stakeholders** on Climate Adaptation:

- Volunteers can **generate scientific information** e.g., for environmental managers, local govs. and other decision-makers.
- Volunteers can **provide input into decisions, learn & share information** within their communities, **and motivate others** to get involved in climate adaptation.

Source: DC McKinley et al., 2017

e.g., Climate justice

Efforts **focused on available data** e.g., green spaces in the city (m2/inhabitant) **may reinforce negative effects** on vulnerable population.

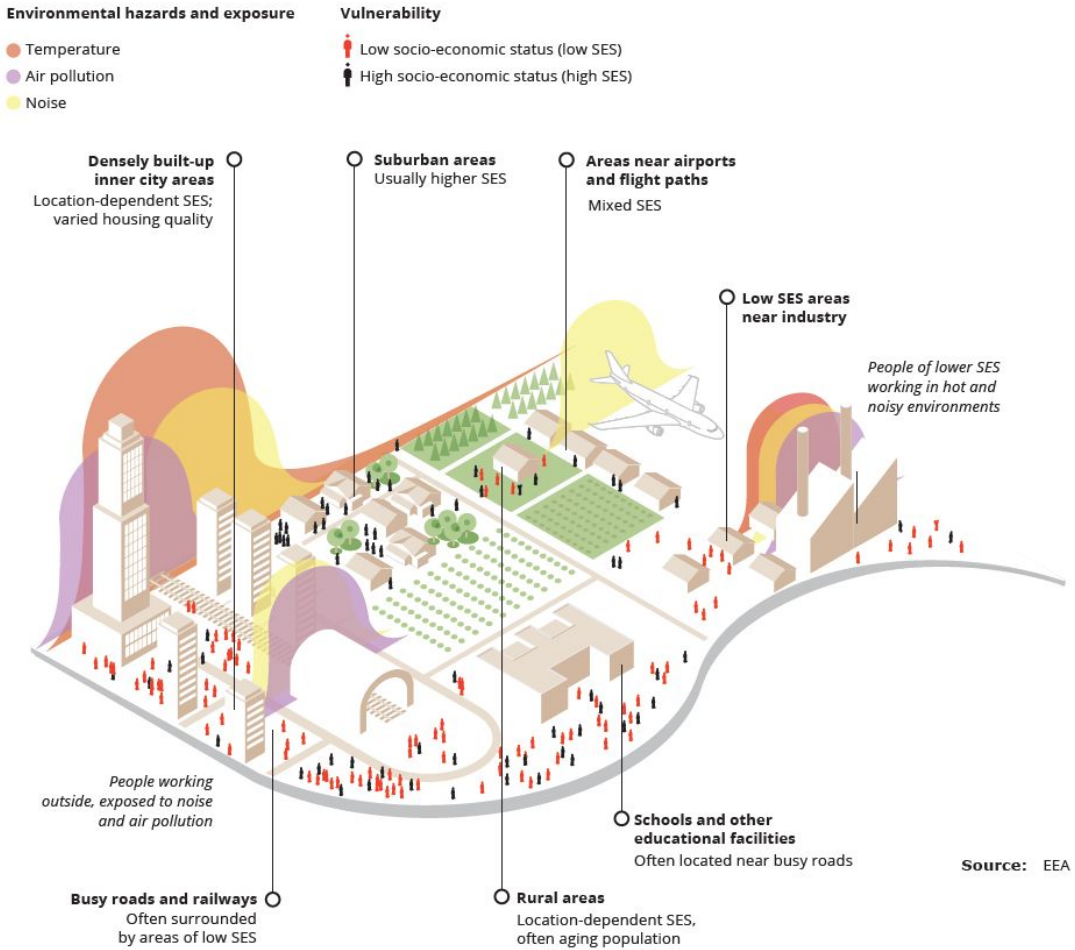
e.g., **projects that** focus on **improving already existing green areas** and their benefits.

- **Leaving aside** population **sectors with larger adaptation needs**.

CS can help **fine tuning these**:

- **Providing more just adaptation** adjusted to very **local needs** and **specific target population**.

Figure 2 **Exposure of vulnerable groups to air pollution, noise and extreme temperatures**



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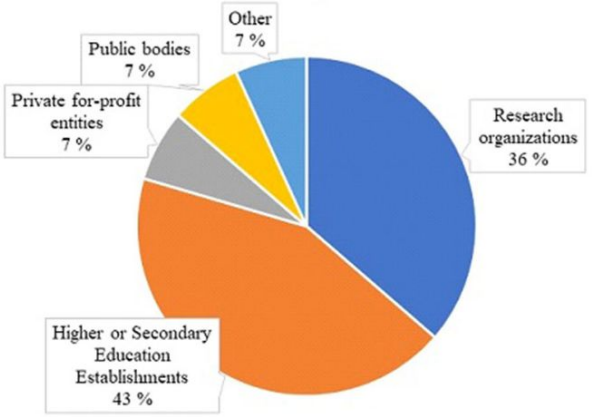
Citizen Science for SDGs in European cities

> 100 cities use CS in EU-funded projects to address various SDGs: strong focus on SDG11 (Sustainable Cities and Communities) & SDG13 (Climate Action)

- Common **risks:** e.g., misalignment between community-contributed data and official data standards.
- **Opportunities:** potential for **inclusive** community **participation** -> CS-generated data can **fill** spatial, temporal and/or socio-demographic **gaps in official datasets** + providing a deeper **understanding** of these datasets
- CS can thus play important **role** identifying, understanding, and tackling climate **adaptation challenges** at a local level.
- City planners and policymakers should consider **incorporating CS** frameworks into their **development strategies**, ensuring that these **align with** local sustainability/**adaptation goals** and urban planning processes



Source: Liu et al., 2023

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Challenges of Citizen Science

- **Data quality control**: Ensuring **accurate and reliable** data collection by volunteers.
- Addressing bias in **data** collection and **representation** of (env./econ./social) conditions.
- Providing adequate **training** and capacity building. **Ensuring** they have the **necessary skills and knowledge** to **contribute meaningfully** to the project.
- Participant **engagement and retention**: Sustaining motivation and involvement of citizen scientists over time.

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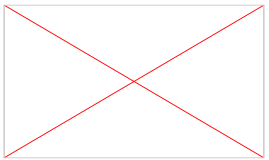
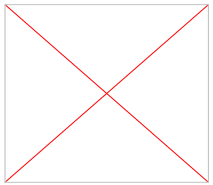
Ethical considerations toward citizen scientists

Project managers have a responsibility to:





- Treat citizen scientists as **partners**
- Ensure **representation and inclusivity**
- **Provide training** for citizen scientists
- Ethical open **data management**
- **Acknowledge contributions**

Co-creators of knowledge, not mere resources, **treat them fairly**

- Be aware of **power dynamics**
- **Inclusive language** is crucial for effective communication
- **Reduce bias** by **ensuring representation** across demographic groups

Involve CSs in **effective guidelines**, **user-friendly training materials** and workshops, a **channel of communication** for Q&As ➡ **Reduces data quality issues**.

Provide **fair rewards to CSs** e.g.:
- Authorship,
- Recognition,
- Education, or
- Financial compensation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under GA No 101006430


Thank
you!

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Experience sharing: Citizens' climate lab in Venice (including Q&A) - EUCLIPA

Luciana Favaro

PhD in Educational Linguistics

Ambasciatrice del Patto Europeo per il Clima

Presidente EuCliPa.IT

EUROPEAN CLIMATE PACT

EuCliPa.IT
Associazione Italiana del Patto per il Clima

A CITIZENS' CLIMATE LAB IN VENICE

LUCIANA FAVARO
European Climate Pact ambassador
EuCliPa.IT president

Dec, 10th 2024

#MyWorldOurPlanet #EUClimatePact
www.euclipa.it www.euclipa.it

EUCLIPA.IT

EUROPEAN CLIMATE PACT

Non-profit association set up by **thirty Italian ambassadors** of the European Climate Pact, also open to **citizens**.

EuCliPa is also proud to have been selected as **Partner of the EU Climate Pact.**

In addition to informing about how the climate crisis is here and now, the association's main focus is **creating the conditions for citizens to actively participate in local climate policies**.

CITIZEN ENGAGEMENT 2023: Local climate Lab

EUROPEAN CLIMATE PACT

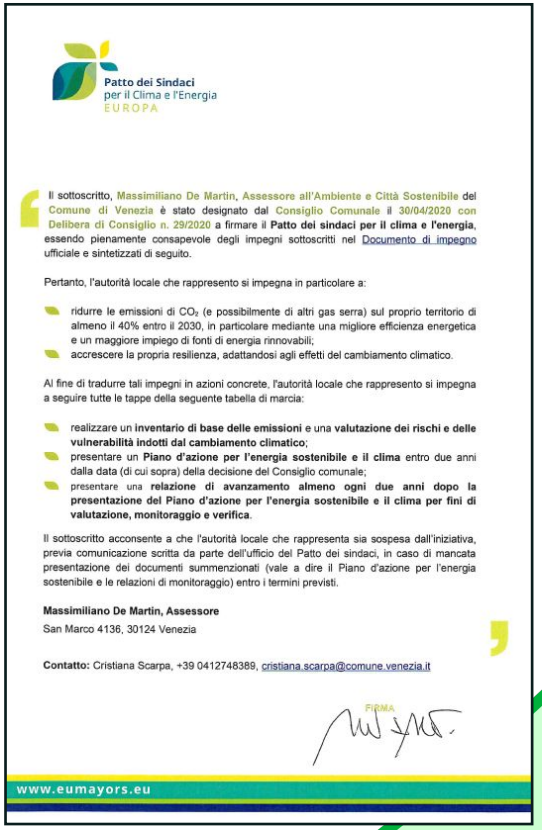
Covenant of Mayors for Climate & Energy

SECAP

Sustainable
Energy and
Climate
Action
Plan

CITIZEN ENGAGEMENT 2023: Local climate Lab

Citizens are not involved in local climate policies and are not aware of this commitment.



Patto dei Sindaci
per il Clima e l'Energia
EUROPA

Il sottoscritto, Massimiliano De Martin, Assessore all'Ambiente e Città Sostenibile del Comune di Venezia è stato designato dal Consiglio Comunale il 30/04/2020 con Delibera di Consiglio n. 29/2020 a firmare il **Patto dei sindaci per il clima e l'energia**, essendo pienamente consapevole degli impegni sottoscritti nel Documento di impegno ufficiale e sintetizzati di seguito.

Pertanto, l'autorità locale che rappresento si impegna in particolare a:

- ridurre le emissioni di CO_2 (e possibilmente di altri gas serra) sul proprio territorio di almeno il 40% entro il 2030, in particolare mediante una migliore efficienza energetica e un maggiore impiego di fonti di energia rinnovabili;
- accrescere la propria resilienza, adattandosi agli effetti del cambiamento climatico.

Al fine di tradurre tali impegni in azioni concrete, l'autorità locale che rappresento si impegna a seguire tutte le tappe della seguente tabella di marcia:

- realizzare un **inventario di base delle emissioni** e una **valutazione dei rischi e delle vulnerabilità indotti dal cambiamento climatico**;
- presentare un **Piano d'azione per l'energia sostenibile e il clima** entro due anni dalla data (di cui sopra) della decisione del Consiglio comunale;
- presentare una **relazione di avanzamento almeno ogni due anni dopo la presentazione del Piano d'azione per l'energia sostenibile e il clima per fini di valutazione, monitoraggio e verifica**.

Il sottoscritto acconsente a che l'autorità locale che rappresenta sia sospesa dall'iniziativa, previa comunicazione scritta da parte dell'ufficio del Patto dei sindaci, in caso di mancata presentazione dei documenti summenzionati (vale a dire il Piano d'azione per l'energia sostenibile e le relazioni di monitoraggio) entro i termini previsti.

Massimiliano De Martin, Assessore
San Marco 4136, 30124 Venezia

Contatto: Cristiana Scarpa, +39 0412748389, cristiana.scarpa@comune.venezia.it

FIRMA

www.eumayors.eu

EUROPEAN CLIMATE PACT

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Associazione Italiana del Patto per il Clima

CITIZEN ENGAGEMENT 2023: Local climate Lab

OUTPUT: A guide for other citizens.

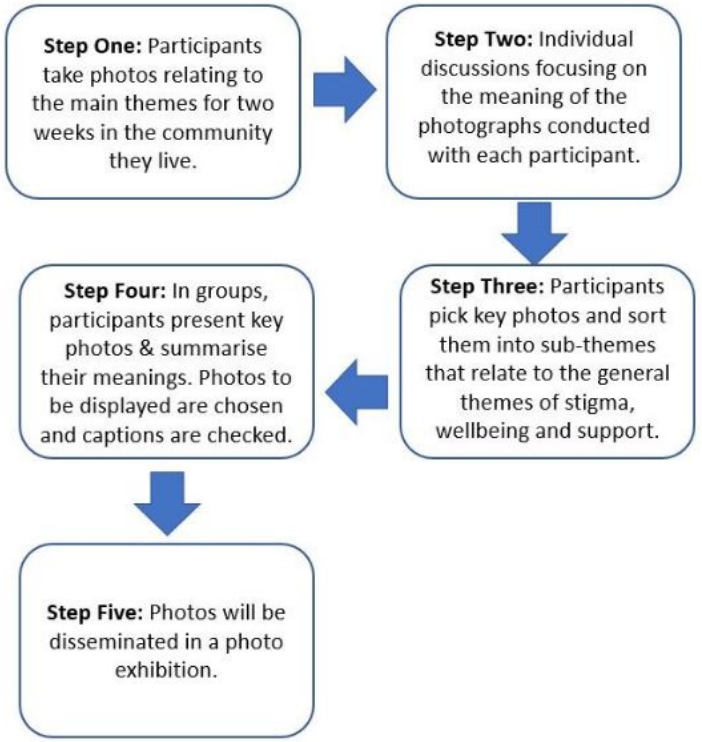
CITIZEN ENGAGEMENT 2022: PhotoVoice project

EUROPEAN CLIMATE PACT

"***ARE OUR CITIES HEADING TO NET ZERO?"***

Photovoice is a participatory method, defined by its creators Wang and Burris (199) as:

"a process by which people can identify, represent and enhance their community through a specific photographic technique".



CITIZEN ENGAGEMENT 2022: PhotoVoice project

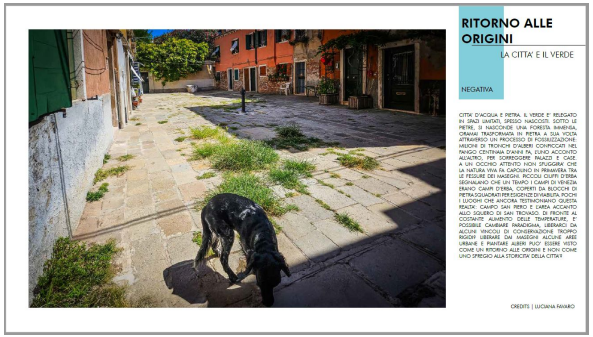
EUROPEAN CLIMATE PACT

Participants were guided to **observe, analyze and discuss** the climate problems of their city **with a proactive disposition**.

CITIZEN ENGAGEMENT 2022: PhotoVoice project

EUROPEAN CLIMATE PACT

NEGATIVE



POSITIVE

PROACTIVE

OUR WEBSITE

www.euclipa.it

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LET'S KEEP IN TOUCH

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QUESTIONS / COMMENTS?

More info:
https://www.euclipa.it/osservatori-climatici-territoriali/

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Experience sharing: The AGORA project - An application of citizen science in the field of climate adaptation (including Q&A) - ECSA

Anna Verones

Project Officer

The AGORA project

An application of citizen science in the field of climate adaptation

Anna Verones, ECSA

MIP4Adapt
session #8
Citizen science
online, 11. June 2024

Funded by
the European Union

adaptation Agora

Project's information

AGORA supports the Mission of Adaptation to Climate Change by **actively involving communities and regions in climate actions.**

Engaging citizens in climate adaptation dialogues

Involvement

Target groups:

- People with disabilities and chronic illnesses
- Youth
- People with migration background
- Seniors
- Health care workers (mostly nursing staff)

Engaging citizens in climate adaptation dialogues

Involvement

AGORA is involving citizens through **focus group** discussions.

Dresden, 27.05.2024

Focus group with people with disabilities and chronic illnesses

Dresden, 30.05.2024

Focus group with youth (16-24 years old)

Engaging citizens in climate adaptation dialogues

Involvement

AGORA is involving citizens through **workshops** and **networking activities** with stakeholders.

Dresden, 16.11.2023

Inception workshop

Dresden, 04.02.2025

Co-creation workshop

Outcome and structure of the focus groups

Outcome

1

- Could you tell us about a memory from the last [climate-related event] you experienced?

Local climate vulnerability

2

[introduction of the gaps previously selected by the stakeholders]

- Is this issue relevant to you?

Gaps in the local climate adaptive capacity

3

- What ideas or actions can we propose to overcome this challenge?

•How would you actively engage/be engaged in this solution?

***Soft* climate adaptation solutions**

Selection of outcomes: (soft) climate adaptation solutions

Outcome

Participatory city design Through a digital app, citizens map potential relief areas from heatwaves, such as water sources or cooler spaces. Accessibility barriers are addressed by using multiple communication channels. The app also highlights areas needing intervention and fosters collective action for urban change.	**Educational campaign in schools** Integrating climate adaptation education into students' regular schedules, thereby avoiding the burden on their free time. The approach should prioritize practical activities and experiential learning over traditional classroom settings. Involving external experts and NGOs could provide an opportunity to enhance mutual learning and foster connections among social groups.
Communication strategies Positive and inclusive communication are essential when discussing climate adaptation. How can we communicate the need to adapt to climate change in a positive way, in order to not scare people away? How can we overcome communication barriers to accessibility?	**Financial resources for climate adaptation** Mobilizing funding is essential to promote the implementation of climate adaptation measures. Public funding should be more widely promoted and strengthened. But how?

Learnings and impressions:

Benefits

- **Better understanding** of climate issues.
- **Innovative, practical solutions** that address real, immediate needs.
- Learning opportunities, personal enjoyment, social connection
- Satisfaction from contributing to research and **influencing policies**.

Participation

- From passive witnesses of climate policies to **active contributors**.
- **Diversity, Equity, Inclusion, and Belonging** (DEIB):
  - Prioritizing bottom up flow of information over frontal presentation.
  - Genuine analysis of barriers and ways to overcome them.
  - Intimate group size
  - Some social groups are particularly “hard to reach”: build trust through intermediaries, change your communication, “go where the people are”

Learnings and impressions:

Feedback

Open access

- Keep all actors involved constantly **informed about the process**.
- The more they know, the more they'll be willing to engage.
- Where possible, results are published in an open access format.

Impact

Acknowledgment

- Participants want to have an impact: **Value every input!** Make them feel taken seriously.

- Opening up the stage for a larger audience enhances a **higher representation of society at large**.

Democratisation

Ethics

- **Be mindful of whom is involved and how data is used.**

Thanks!

Contact details:
anna.verones@ecsa.ngo

Coordinated by

QUESTIONS / COMMENTS?

More info:

https://adaptationagora.eu/newsevents/
https://www.ecsa.ngo/
https://climate-pact.europa.eu/index_en

PRACTICAL EXERCISE

Source: Freepik picture

The role you will have to adopt for the activity will be decided randomly. The different roles (characters / actors) are represented by the colour of the post-it.

Please use the corresponding post-it to represent your character and answer what you think would be their perspective on the following questions, and place your answer in the step you think is related to it.

Sticky note parking lot - ROLES

- Local Government Official
- Community Health Worker
- Climate Scientist
- Local Restaurant Owner
- Citizen scientist
- Others (specify in the post-it)

Access the MIRO exercise via the provided Link

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Available platforms, resources and tools

Dr. Francois Jost

European Citizen Science Association |
Project Officer AGORA and RE4GREEN projects
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Available platforms, resources, and tools

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About ECSA

We are a non-profit organization, legally established in 2014, that supports and advocates for **public participation in science.**

We have over 200 members in 21 EU countries, as well as Australia, Ecuador, Nigeria, Norway, Serbia, Switzerland, the UK and the USA.

GOALS:

- Empower Citizen Scientists
- Provide tools and training
- Connect the CS Community
- Advocate for citizen science

ecsa European Citizen Science Association

EUROPEAN CITIZEN SCIENCE ASSOCIATION

Ten principles of citizen science

Citizen science is a flexible concept which can be adapted and applied within diverse situations and disciplines. The statements below were developed by the *'Sharing best practice and building capacity'* working group of the **European Citizen Science Association**, led by the Natural History Museum London with input from many members of the Association, to set out some of the key principles which as a community we believe underlie good practice in citizen science.

1. **Citizen science projects actively involve citizens in scientific endeavour that generates new knowledge or understanding. Citizens may act as contributors, collaborators, or as project leader and have a meaningful role in the project.**
2. **Citizen science projects have a genuine science outcome.** For example, answering a research question or informing conservation action, management decisions or environmental policy.
3. **Both the professional scientists and the citizen scientists benefit from taking part.** Benefits may include the publication of research outputs, learning opportunities, personal enjoyment, social benefits, satisfaction through contributing to scientific evidence e.g. to address local, national and international issues, and through that, the potential to influence policy.
4. **Citizen scientists may, if they wish, participate in multiple stages of the scientific process.** This may include developing the research question, designing the method, gathering and analysing data, and communicating the results.
5. **Citizen scientists receive feedback from the project.** For example, how their data are being used and what the research, policy or societal outcomes are.
6. **Citizen science is considered a research approach like any other, with limitations and biases that should be considered and controlled for.** However unlike traditional research approaches, citizen science provides opportunity for greater public engagement and democratisation of science.
7. **Citizen science project data and meta-data are made publicly available and where possible, results are published in an open access format.** Data sharing may occur during or after the project, unless there are security or privacy concerns that prevent this.
8. **Citizen scientists are acknowledged in project results and publications.**
9. **Citizen science programmes are evaluated for their scientific output, data quality, participant experience and wider societal or policy impact.**
10. **The leaders of citizen science projects take into consideration legal and ethical issues surrounding copyright, intellectual property, data sharing agreements, confidentiality, attribution, and the environmental impact of any activities.**

September 2015, London

ecsa | European Citizen Science Association

Version 1, April 2020

ECSA's characteristics of citizen science

Introduction

Citizen science is a common name for a wide range of activities and practices. It is possible to understand it by considering the characteristics of those activities and practices, which are described in this document. These are found in different scientific disciplines – from the natural sciences to the social sciences and the humanities – and within each discipline, the interpretation of citizen science can be slightly different. Yet despite these differences, citizen science is an emerging area of research and practice, with evolving standards on which different stakeholders are developing methodologies, theories and techniques. It is, therefore, useful to establish some level of shared understanding, across disciplines and practices, as to what to expect from an activity or a project that is set out to be a citizen science one.

There is little doubt that a project with an open call to a wide range of volunteers to take part in either data collection or data analysis of a clearly defined research hypothesis will be recognised as citizen science. However, this is only one type within a large set of activities, practices and forms of participation, resulting in diverging views about what is – and isn't – citizen science. Because of these differences in disciplinary and cultural contexts, attempting to define a universal set of rules for exclusion or inclusion is difficult, and might even limit the advancement of the field.

Instead, this document attempts to represent a wide range of opinions in an inclusive way, to allow for different types of projects and programmes, where context-specific criteria can be set. The characteristics outlined below are based on views expressed by researchers, practitioners, public officials and the wider public. Our aim is to identify the characteristics that should be considered when setting such criteria (e.g. a funding scheme), and we call upon readers to determine which subset of these characteristics is relevant to their own specific context and aims.

These characteristics build on (and refer to) the ECSA 10 principles of citizen science[1] ("the 10 principles") as a summary of best practice – and projects are expected to engage meaningfully with them. Where it is especially pertinent, we refer to them in the characteristics below.

The rest of the document covers the characteristics of citizen science under five sections: (1) core concepts; (2) disciplinary aspects; (3) leadership and participation; (4) financial aspects; and (5) data and knowledge. Further explanation and background are provided in the 'ECSA's characteristics of citizen science: explanation notes' document. Note that we use the terms 'scientific research' and 'research' interchangeably – and we explain these terms from the perspective of citizen science practices.

ECSA ten principles of citizen science

Involvement

Outcome

Benefits

Participation

Feedback

Democratisation

Open access

Acknowledgment

Impact

Ethics

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Share, initiate and learn citizen science in Europe

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ECS platform

For sharing knowledge, tools, training and resources for CS – **by the community, for the community**.

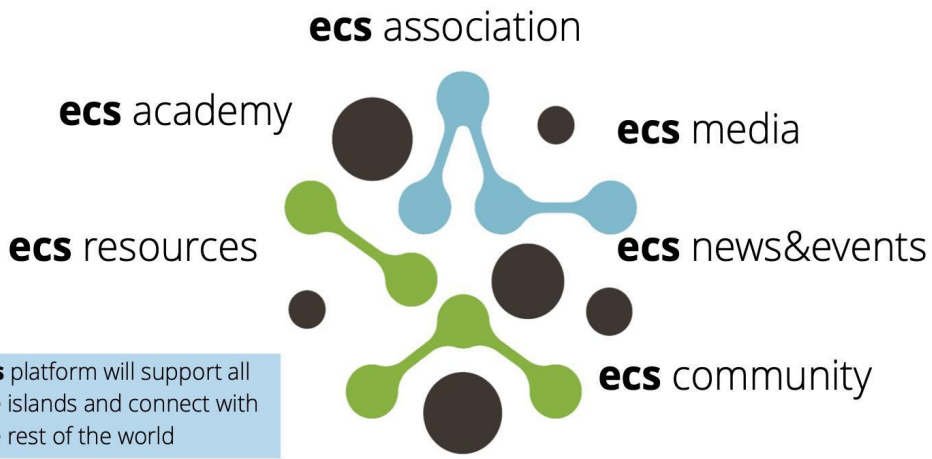
- **Search for keywords**
- **Direct links** to projects, resources, training

eu-citizen.science Search Blog Events Moocs Forum FAQ About

- **Search for users**

ECS has received funding from the European Union's Horizon Europe Framework Programme for Research and Innovation under grant agreement No. 101058509.

The **ecs** archipelago



On the **ECS platform, sailors** (CS practitioners, citizen scientists, general public, researchers, educators, policy makers, funding bodies, decision makers, the press, etc.) **will find the map** of the archipelago:

Access to all available resources and **opportunities to connect** with the community.

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ECS Platform Vision :

To **serve as a Knowledge Hub** and to become the **European reference point for CS** in aid of its mainstreaming.

what can you find here?

332
Projects
That are engaging the public in research via citizen science activities.

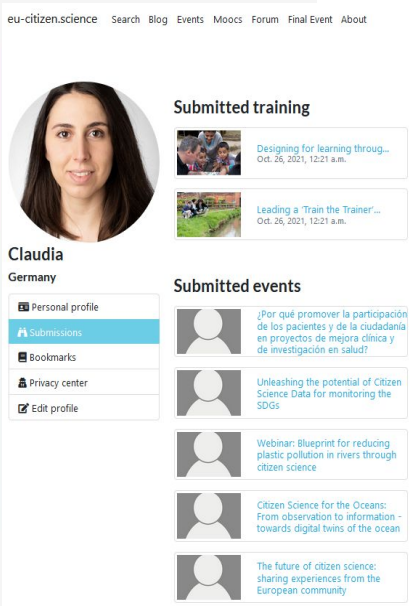
241
Resources
Useful for planning and running citizen science projects.

75
Training Resources
About the practice of citizen science.

324
Organisations
Involved in citizen science projects and research.

28
Platforms
To get an overview of further developments in citizen science.

Personal area



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Additional Resources

European Citizen Science Platform

10 Principles of CS

Characteristics of CS

CS Toolkits & roadmaps:

- CS roadmap and benefits for local governments
- CS Toolkit: principles, benefits, challenges
- CS Starter Kit: Training Materials
- CS Navigator

Additional adaptation EU-projects working with CS:

- ScienceUs
- EU Sparks for Climate
- AGORA


Thank
you!

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Satisfaction survey

Join at slido.com #2994 650

(December, 10) or anytime at this link

Next Training programme session

Find **Session 8 recording** in the following YouTube Link

Next session in January, 30, on How to create your engagement strategy

See you next year!

Happy holidays