



European Commission

# Citizen Observatories

## A voice for citizens in environmental monitoring

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A policy brief based on the experiences from  
Citizen Observatories.



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## **Disclaimer**

The information, views and recommendations set out in this publication are those of LandSense, GroundTruth 2.0 , GROW, SCENT and WeObserve consortia and do not reflect the views of the European Commission. These projects have received funding from the European Union's Horizon 2020 (H2020) Research and Innovation programme under Grant Agreements: LandSense 689812; GroundTruth 2.0 689744; GROW 690199; SCENT 688930; WeObserve 776740

# Executive Summary

Even though citizen science has a long tradition, it has only recently experienced an increasing trend fostered by the age of big data and new developments in Information and Communication Technology (ICT). Such advances have led to the establishment of Citizen Observatories (COs), in which citizen-powered science addresses key issues in the monitoring of our dynamic environment.

While the European Union is supporting this endeavour within the FP7 and Horizon 2020 programmes, there are still obstacles that need to be tackled in order to pave the way for citizens to have an active role and voice in environmental decision-making.

One of the main obstacles for the successful implementation of citizen science and COs in the policy agenda is the readiness level of policy and decision makers in terms of awareness, acceptability, and sustainability.

Our policy brief addresses this issue, providing dedicated recommendations that highlight the need for citizen participation in environmental policy-making; stress the fact that citizen science initiatives should be actively supported; outline the need to reduce the gap between bottom-up and top-down approaches and directly address the concerns of policy makers on citizen science.



# Citizen Observatories

## – a “voice” for citizens

The involvement of citizens in environmental monitoring has a long tradition (e.g., bird watching, storm hunters), providing non-scientists with the possibility to actively contribute to scientific research as well as to environmental policy-making.



This integration of citizens in environmental monitoring not only advances scientific research, but also promotes environmental stewardship within individual participants and society. Citizen science contributes to awareness-raising, increases scientific literacy, and generates new knowledge, by simultaneously enabling new forms of research and hence changing the way environmental policy-making and monitoring are implemented. More and more, the term citizen science is entering both the policy agenda of municipalities, the European Commission, and more globally, the United Nations.

Yet, engaging citizens actively in scientific and environmental monitoring initiatives remains a challenging task. Often, citizens are not aware of existing citizen science opportunities or/and how to contribute to them.

Citizen science is a key aspect of the EC's policy agenda but often citizens themselves don't know how to get involved and contribute.

More recently, citizen science is being facilitated and accelerated through advancements in ICT, with Citizen Observatories (COs) tackling various thematic areas, providing the technological means for citizens to have a “voice” in the decision-making process.

Mobile internet and smartphone apps coupled with the tech savviness of the youth, are enabling the uptake of novel ways to engage and empower citizens in environmental science and stimulate participatory decision-making.

With the value of COs increasing over the past few years, recent transformations in the policy and decision making process are evident and should continue moving forward. A first step has been the inclusion of citizen science among the five strategic orientations of the new Work Programme 2018-2020 of “Science with and for Society” (SwafS) within the Horizon 2020 framework. Furthermore, citizen science is also increasingly seen as an integral part of the Responsible Research and Innovation (RRI) and Open Science initiatives.



## CityOases - A real example of COs in action



Implemented via the LandSense Citizen Observatory, this mobile application promotes participants to express their perception of greenspaces and open spaces within urban environments. Participants can interactively contribute and get feedback on questions such as, Where is the coolest place to hang out on a hot summer day? How can you find the nearest greenspace or playground that is safe and well equipped?

The app is centred on finding and evaluating 'City Oases' – the ideal places to hang out in an urban environment. Users are encouraged to evaluate predetermined points or alternatively any other location they would like to share with their fellow citizens – in the app and on social media.

At the heart of the engagement is the recording of the subjective perception of the places and the relevant activities that can be conducted at those places. The locations are additionally documented by user-contributed photos. Furthermore, participants answer questions related to the suitability of a broad range of possible activities and “well-being” factors (e.g. cool spaces in summer).

### **Ambition:**

As part of the STEP 2025 plan, the City of Vienna has significant interest in further developing and improving urban greenspaces and must consider the distribution, diversity and quality of green and open areas. The data and findings from CityOases can help steer the STEP 2025 plan, improve the database of open urban spaces and help citizens and visitors further enjoy Vienna! The app is currently being piloted in Vienna, Austria in close collaboration with Municipal Department 18 (Urban Development and Planning) Furthermore, CityOases is part of the 2019 Austrian Citizen Science Award.

[Link to download](#)

# Why are COs important for policy and decision making?

COs have vast potential to impact policy decisions and governance not only at the international or national levels, but also at the regional and local levels, promoting truly responsive governance. In fact, active citizen engagement is more likely in areas where issues are directly affecting their environment or neighborhood.





## A citizen-centric solution to environmental monitoring which can influence policy making

COs provide the possibility to perform impact assessment for existing environmental policies through ground-level observations by those most directly affected. In exchange, citizen scientists provide policy makers with a cost-effective way to rapidly identify, monitor, and address emerging environmental issues.

COs provide a natural conduit for awareness-raising among both citizens and policy makers, as well as a natural input to effective decision support systems.

All in all, this citizen-centric approach to science has the potential to create a step change in environmental monitoring and policy-making.



# The readiness level of policy makers – A challenge to COs

Citizen scientists represent valuable resource for gathering information on various environmental issues, with COs representing a low-cost solution for addressing existing gaps in environmental governance. However, one of the main challenges for the successful implementation of citizen science and COs within the policy agenda is the readiness level of decision makers in terms of awareness, acceptability, and sustainability. Being aware of citizen science initiatives, accepting their novel approach to science, and fostering funding opportunities for the long-term sustainability of COs are vital components to manage environmental challenges and empower resilient communities.



Policy makers need to trust CO data as “scientific” to ensure real impact.

Even though the European Commission is supporting citizen science under FP7 and H2020, many still think that results obtained via citizen-based observations are less reliable and do not meet the quality standards for informed decision-making and environmental governance. The fact is that public authorities are still reluctant to accept “scientific” data from citizen science experiments to complement authoritative data.





## **Recommendations**

**How citizens can play  
their part in environmental  
monitoring.**





## Environmental policy-making needs citizen participation.

Citizen participation in environmental decision-making and governance should be considered as a way to make the policy process more transparent and accepted. Hence, it increases the mutual trust between citizens, policy makers and public authorities. In fact, citizens need to be able to exercise their rights without the feeling of unreasonable resistance or ignorance on the part of authorities or others. Only then will society and science benefit from the huge potential of citizen-powered science and ideas.



Actively support citizen science initiatives.

Policy makers should not only accept citizen science initiatives, but also actively support such endeavours. That is, they should facilitate the engagement of citizens in science and innovation by, among other initiatives, fostering scientific education. For example, co-designing innovative and collaborative web platforms and mobile apps can appeal to a citizen's natural willingness to contribute to society and offer channels to have their voices heard.





## Reduce the gap between bottom-up and top-down approaches.

Much citizen science research in the EU and elsewhere is formulated within the context of the large funded work programmes (e.g. H2020), and consequently originates in a kind of top-down, prescribed fashion. Although this approach serves the important function of directly promoting and connecting citizen science to EU research and policy directions, the risk arises of not connecting with many existing citizen science initiatives that have arisen in a bottom-up fashion, which is at the very origins of citizen science.

Many such initiatives provide valuable indications of the true data needs of European citizens, which could be fruitfully exploited by the research programmes sponsored by the Commission.

EU policymakers should seek ways to identify and reach out to existing initiatives and incorporate them into the formulation of citizen science research directions, closing the gap and converging to a more holistic policy toward citizen science in the EU.



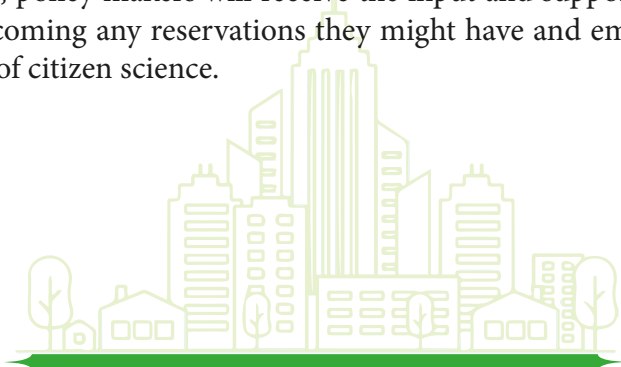


Directly address the concerns of policy makers on citizen science.

Policy-makers are understandably concerned about a number of aspects of citizen science, such as data quality, the potential for introducing bias, and even intentional introduction of inaccuracies (for example, as a result of incentivization).

These concerns can and should be proactively and directly addressed: by presenting the evidence put forward by reputable scientists on the trustworthiness of citizen science data; by placing citizen science within the perspective of overall scientific research methodology, where all data collection is accompanied by measures for risk reduction and quality assurance; and by promoting and disseminating the many studies of responsible citizen science ethics (such as the Ten Principles of Citizen Science published by the European Citizen Science Association).

This way, policy makers will receive the input and support they need for overcoming any reservations they might have and embracing the benefits of citizen science.





# About Citizen Observatory Project Group

Led by the LandSense Citizen Observatory, this innovative project group aims at demonstrating the societal and economic benefits of involving citizens in environmental decision making and cooperative planning. The project group, a cluster of the H2020 citizen observatories (GroundTruth 2.0, GROW, LandSense, SCENT, WeObserve) is essential for supporting Europe's leading role in integrating citizen science and building resilient communities. Together, these projects empower and enable citizens to become the 'eyes' of the policy makers and to complement existing environmental monitoring systems.

Each project has built on previous research and existing, well-tested components related to Earth Observation (EO) data and natural resource management to establish COs that deliver state-of-the-art tools and services to gather citizen-based data. The respective domains of interest are diverse. For example, LandSense focuses on connecting citizens with EO data to address urban, agricultural, and forest monitoring issues across various pilots within the EU. SCENT incorporates information retrieved from citizens in flood monitoring, while GROW highlights the collection of information on soil resources. The thematic focus of Ground Truth 2.0 is on flora and fauna, as well as water availability and water quality, for land and natural resource management. WeObserve addresses three key challenges that COs face: awareness, acceptability and sustainability, and aims to improve the coordination between existing COs and related regional, European and international activities.

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# Common Dissemination Booster





**LandSense**

A Citizen Observatory and Innovation Marketplace  
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Environmental knowledge discovery of human sensed data



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