Roadmap for the uptake of the Citizen Observatory knowledge base

Gerid Hager (IIASA), 18 June 2021

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WeObserve

H2020 CSA, 2017-2021

VISION

Citizen Observatories are an integral component of managing environmental challenges and empowering resilient communities

MISSION

To move citizen science into the mainstream by building a sustainable ecosystem of Citizen Observatories and related activities

WeObserve “sister” projects

VIEW

scent

Citizen-driven land cover use monitoring for efficient flood management

VIEW

GROW OBSERVATORY

Soil and food cultivation management

VIEW

groundtruth2.0

Environmental knowledge discovery of human sensed data

A new approach to citizen observatories

VIEW

LandSense

A Citizen Observatory and Innovation Marketplace for Land Use and Land Cover Monitoring

Earth observation through Satellite imagery for urban landscape dynamics, agricultural land use and forest and habitat monitoring

Horizon 2020

Citizen Observatory for flood risk management in the Brenta-Bacchiglione river basin in Italy

Alto Adriatico Water Authority

FP7 - WeSenseIt

Key Challenges

AWARENESS
Generating awareness to build and sustain a critical mass to support citizen science

What are COs and how can I participate? What is the use and why should we support it?

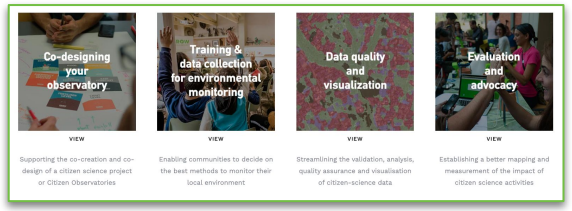
ACCEPTABILITY
Showcasing the added value of citizen-driven science to decision and policy makers

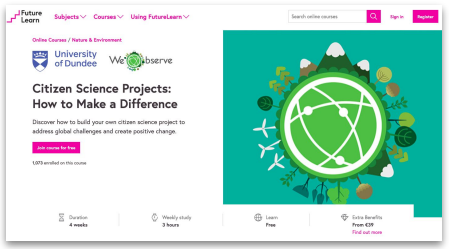
What value can we gain and does it help us to tackle problems? Can we trust the data? Are the methods suitable and ethical and do they comply with regulation?

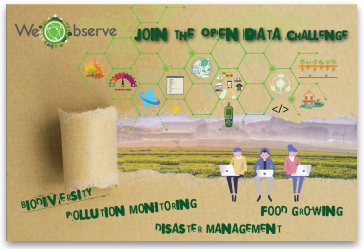
SUSTAINABILITY
Creating an ecosystem that can support and scale-up citizen science to various sectors

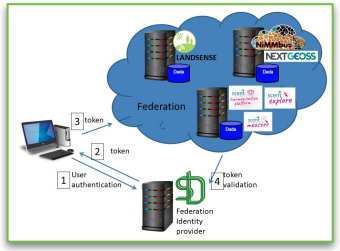
How can a CO be sustained? What is required for tech maintenance, community building, transition governance and ongoing funding?

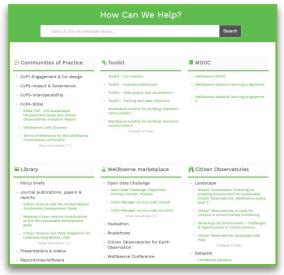
WeObserve activities

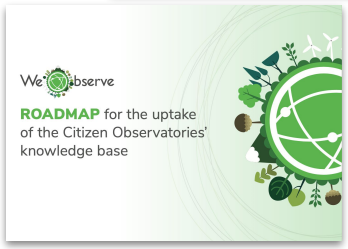












4 Communities of Practice

Citizen Observatory Landscape

Topical workshops, Roadshow events and WeObserve conference

WeObserve Toolkit

WeObserve MOOC (Online course)

3 Challenges at INSPIRE hackathon

Interoperability experiment

Open Data Challenge

WeObserve Cookbook

WeObserve Publications

WeObserve Roadmap

WeObserve Knowledge base

ROADMAP for the uptake of the Citizen Observatories' knowledge base

Outline the dynamic landscape of Citizen Observatories and provide actionable pathways for research and innovation to further advance their capabilities and impacts in the future.

WeObserve Roadmap

- Scoped collaboratively with **EC policy officers**
- Based on **WeObserve results and outputs** across activities
- Presented and discussed with the **WeObserve EAB**
- Feedback provided by **WeObserve CoP members** during the final CoP Forum
- Joint publication of the **WeObserve consortium**

WeObserve Roadmap - Content

- **Citizen Observatory landscape** overview (past, present and future)
- **Research and innovation roadmap**: four focus areas, 11 pathways and 35 actions, short-term (2021-2023) and medium-term (2021-2027) time horizon
- **Recommendations** to future funders of Citizen Observatories

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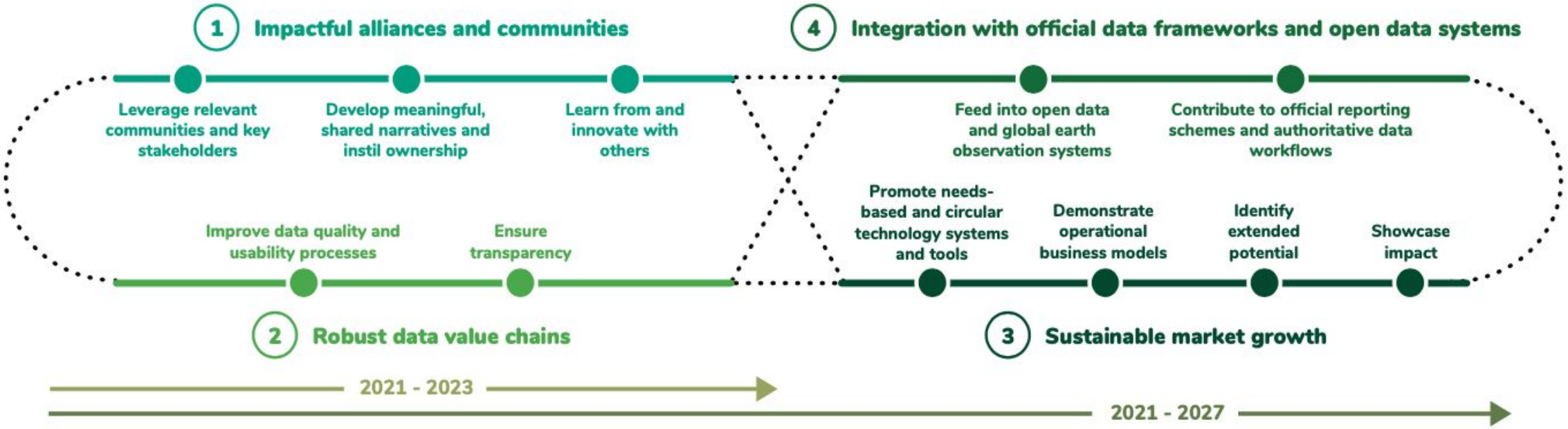
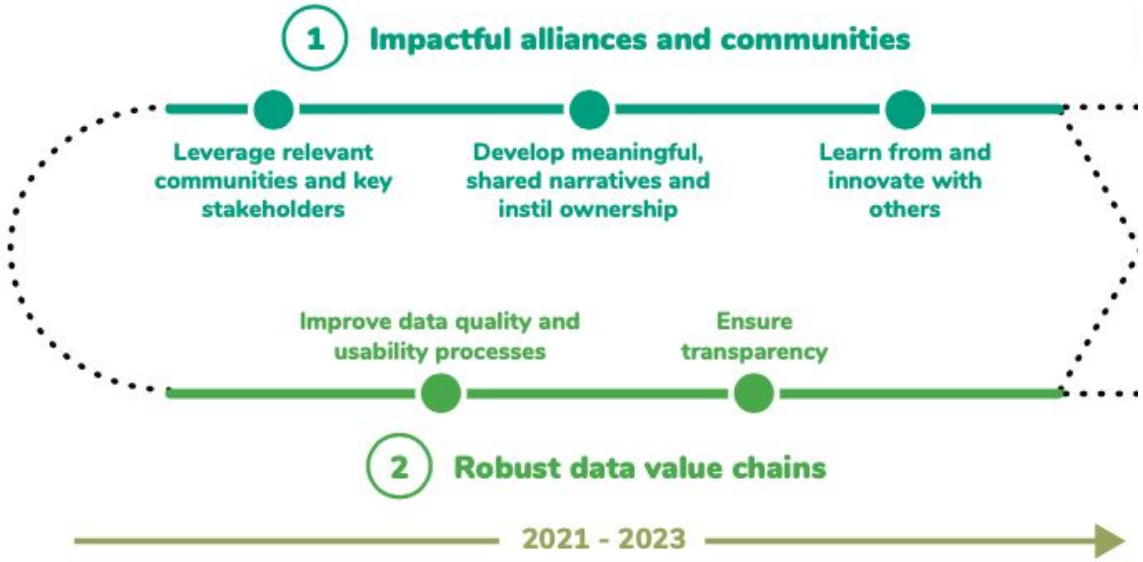
Focus areas



- Area 1: Impactful alliances and communities
- Area 2: Robust data value chains
- Area 3: Sustainable market growth
- Area 4: Integration with official data frameworks and open data systems

Area 1: Impactful alliances and communities (2021-2023)

- **Leverage relevant communities and key stakeholders**
  - Engage with **active, place-based communities**, community organisations and citizen-driven initiatives (gatekeepers and community champions); **decision makers, policy and government agencies**; Develop operational relationships with the **media and business/industry**



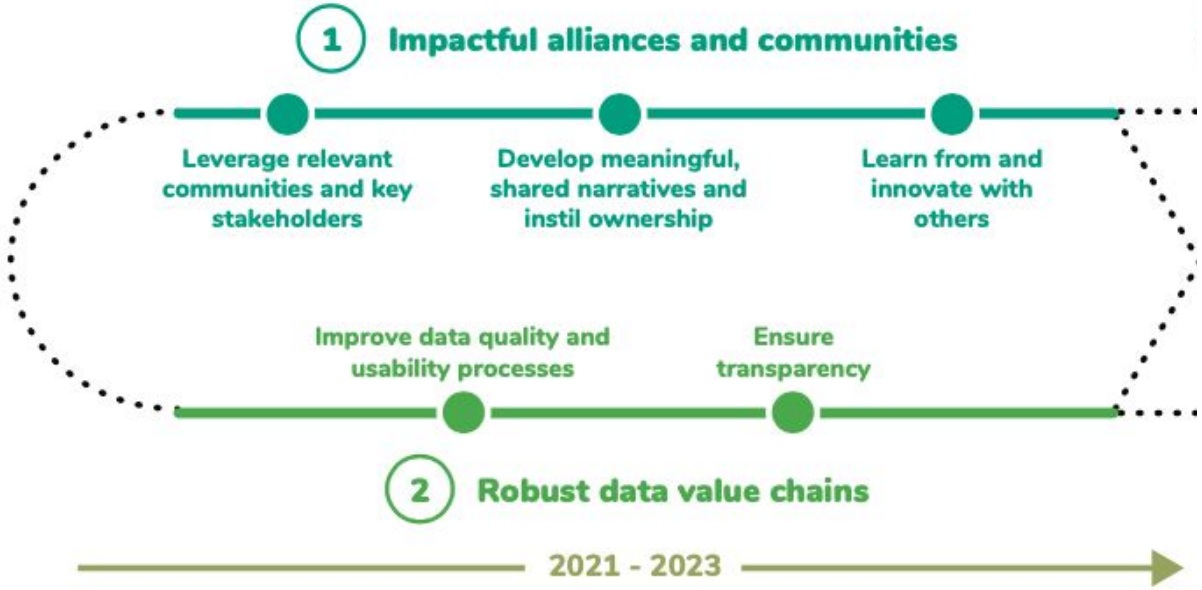
- **Develop meaningful, shared narratives and instil ownership**
  - Tap into **media expertise and R&D** for audience development and innovative participation models; Ensure strong and **suitable communication and facilitation across stakeholders**; Employ **co-design approaches** to democratise processes and foster ownership and buy-in; Acknowledge and **reward voluntary participation**
- **Learn from and innovate with others**
  - Ensure **transdisciplinary anchoring** and responsible research practice; join/start groups for **knowledge and experience exchange** on relevant topics

Area 1: Research and innovation potential

- **Leverage relevant communities and key stakeholders**
  - Role and dynamics of COs in relation to place-based communities and initiatives; role of gatekeepers and community champions
  - CO value propositions for policy stakeholders, key pain and gain points and barriers, co-development of COs as policy instrument
  - Novel relationships with media and business partners for increased societal impact
- **Develop meaningful, shared narratives and instil ownership**
  - Success stories and suitable media approaches; media strategy guidelines
  - Capacity building of CO facilitators (design thinking, service design, stakeholder engagement)
  - Co-design applicability, opportunities and limitations; effects on policy acceptance, social innovation and transformation processes and collective decision-making
  - Recognition and reward models, relation to functioning and success of COs
- **Learn from and innovate with others**
  - Contribution of COs to transdisciplinary and responsible science innovation; Excellence through exchange

Area 2: Robust data value chains (2021-2023)

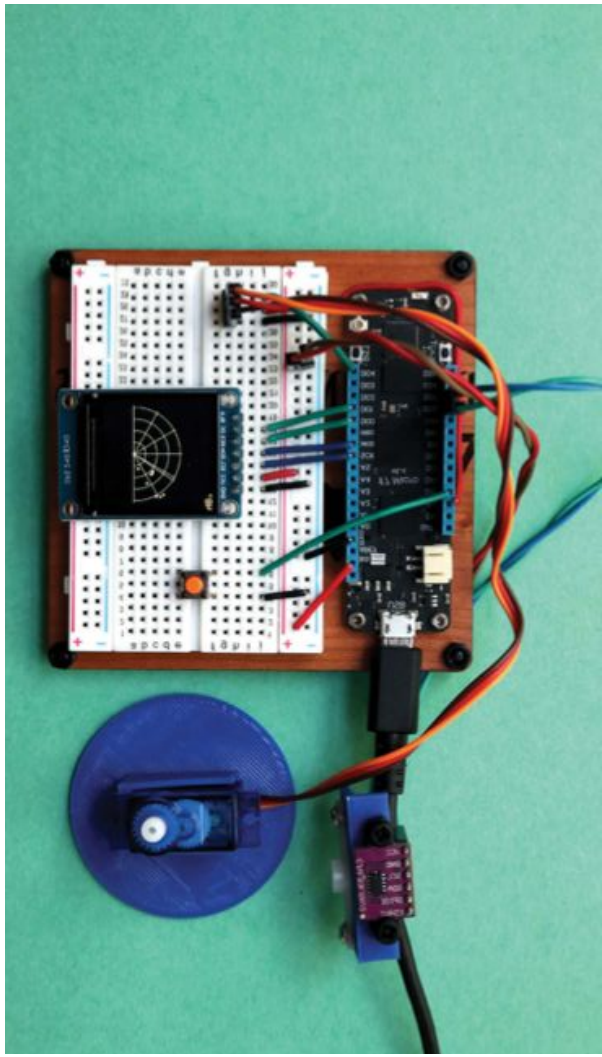
- **Improve data quality and usability processes**
  - Improving **semantics and tools for data collection, annotation and review**, incl. description and definition of purpose and value of gathered data across stakeholders
  - Uptake of **existing data standards** and improved **data quality documentation**
  - Providing **high-quality training** to participants and data providers



- **Ensure transparency**
  - Establishing **transparent data policy models** balancing data ownership, privacy and data protection requirements with the mandate for open access data and transparent data governance
  - Deploying a **transparent and integrated ethics framework**

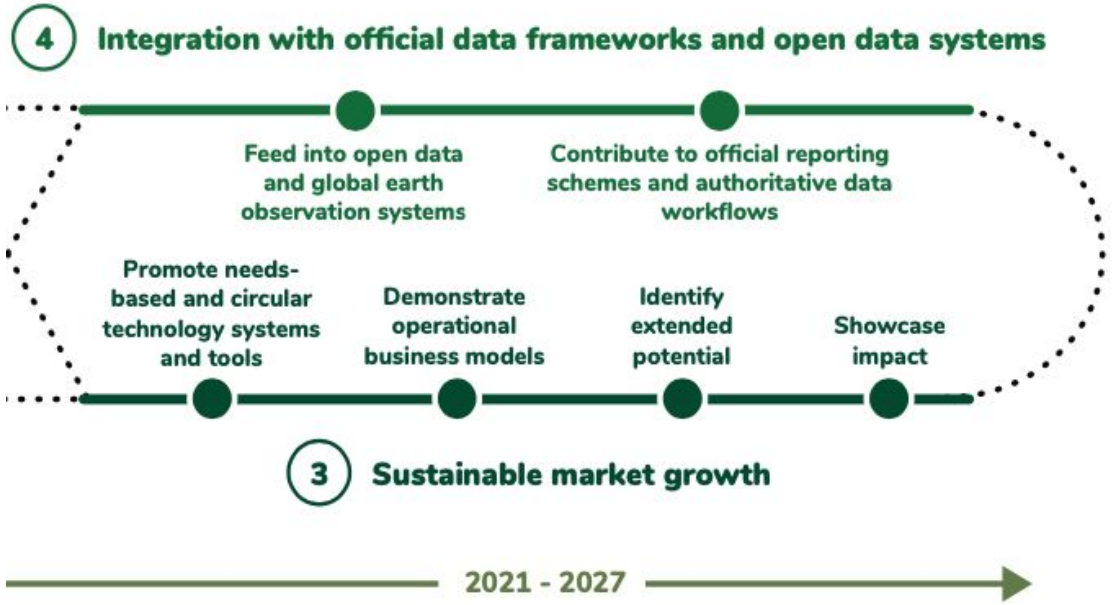
Area 2: Research and innovation potential

- **Improve data quality and usability processes**
  - Meaning of data quality, trust in and value from data for a wide range of stakeholders; Protocols and tools for data purpose and value scoping; Metadata requirements for project goals and values capture and documentation of data value contribution
  - Data quality toolbox and documentation mechanisms (data capture and/or validation); Adoption of relevant data standards; Usability of existing tools for data annotation, review and feedback; Usability of data via global networks
  - Link between training/engagement approaches and gains in data quality; Characteristics and affordances of suitable and effective protocols and data capture tools
- **Ensure transparency**
  - Clear and reusable data procedures (implementing FAIR principles, data ownership, licencing and data protection)
  - Tools, guidelines and use cases to address ethical questions on a project design, building on existing tools and communities (Open Data Institute, the EthicalGEO Initiative)



Area 3: Sustainable market growth (2021-2027)

- **Promote needs-based and circular technology systems and tools**
  - Addressing communities and local authorities with **existing data needs**, providing **enabling technologies/processes**; Advancing existing, **open access technologies** and tools; Zero emission/zero waste approaches, actively tackling **waste issues**



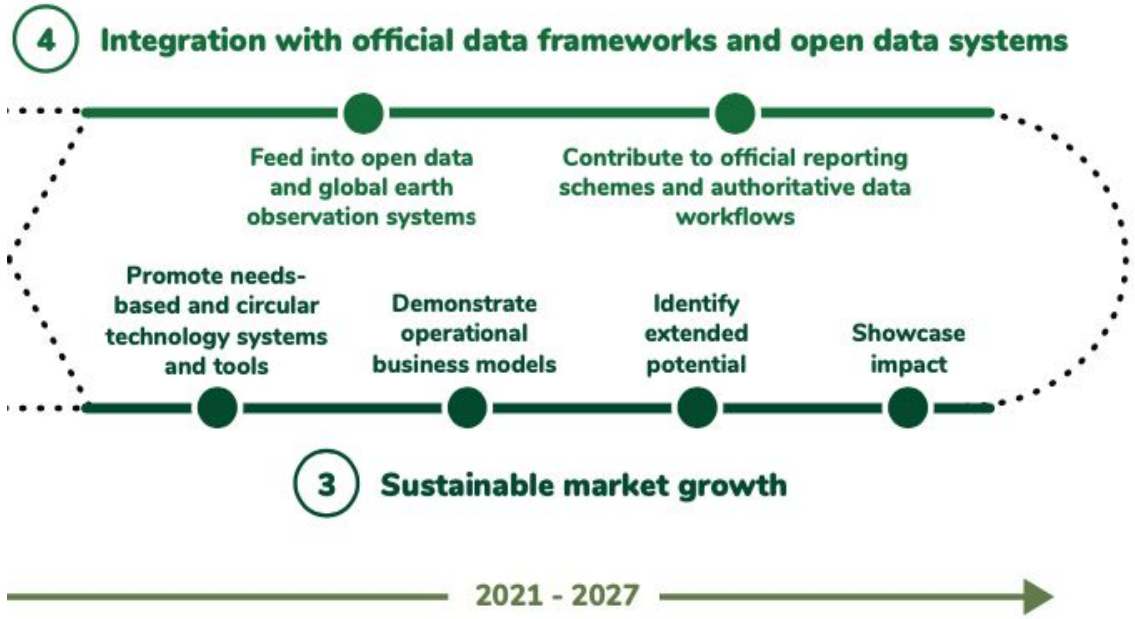
- **Demonstrate operational business models**
  - Explore **service-based business, other commercialisation or long-term sponsorship models** with business partners; Prepare implementation and **handover of CO business models**
- **Identify extended potential**
  - Embed CO ambitions within a **global change context**; Strengthen links to **COs outside Europe** as well as to global initiatives; Leverage use of **COs in new domains**
- **Showcase impact:** Publicise **CO costs and benefits**; Showcase **CO capabilities, success and impact stories**

Area 3: Research and innovation potential

- **Promote needs-based and circular technology systems and tools**
  - Stakeholder identification with unresolved information/data needs; Function of enabling tech
  - Tools adaptation (user research, improved data capture); Barriers for uptake of open-source tech
- **Demonstrate operational business models**
  - Potential function and role of SMEs in COs; Market potential of CO data, services and tools for different audiences (incl large service providers (e.g., Copernicus services); Spin-offs and follow-up support mechanism
- **Identify extended potential**
  - Global CO landscape (identification, coordination, mutual learning)
  - Novel domains for COs, e.g., covered by the SDGs; Tools to map CO contributions to official strategies (EU Green Deal or SDGs);
- **Showcase impact**
  - Cost-benefit models, tools to disclose CO costs and benefits; CO impact assessment for medium- and longer-term evidence;
  - Storytelling capabilities and expanded collaborations to demonstrate to other communities (GEO, open science…).

Area 4: Integration with official data frameworks and open data systems (2021-2027)

- **Feed into open data and global earth observation systems**
  - Integration with large **open data and open research infrastructures**; Share **interoperable resources and data** through **standardised platforms and services**; Improve **uptake of CO data in GEOSS** and the usability of **GEO services for COs and citizens**



- **R&I Potential**
  - Best-practices for single sign on systems; capacity building and services for open data platform integration; Operational barriers to open data sharing.
  - Federation of technical resources for sharing and hosting of services; Centralised and trusted infrastructure, authorisation and tools.
  - Value proposition of COs for the GEO community and vice versa; Value, service appeal and usability of GEO services for citizens and citizen scientists; Citizen science strategy for the GEO Engagement Priorities

Area 4: Integration with official data frameworks and open data systems (2021-2027)

- **Contribute to official reporting schemes and authoritative data workflows**
  - Enable the **uptake of CO data**; Align **data protocols**; Elevate **CO initiatives' capabilities**; Disseminate and support **best-practices**; Secure **investment and engagement**
- **R&I Potential**
  - Information needs and motivators of NSOs or UN custodian agencies; Pressures and incentive structures of public authorities and agencies to invest in Citizen Observatories long-term;
  - Alignment of data collection methods across different projects with international or global definitions; Balance between the quality requirements for scientific rigour/standardised monitoring and citizens' needs, skills and motivations; Suitable data quality criteria and assurance procedures across projects and initiatives;
  - Tested roadshow formats and similar communication approaches to share success stories amongst public authorities; Brokerage and match-making opportunities; Network of interested and invested authorities;

Forbes

Jul 15, 2020, 12:22pm EDT | 4,889 views

Citizen Science Provides Useful Data For Sustainable Development Goals, International Study Shows

Jeff Kart Contributor
Sustainability

Lila Higgins photographs a European honey bee with her iPhone's camera at the Urban Nature Research ... [+] ASSOCIATED PRESS

Conditions that can support the implementation of the WeObserve Roadmap

Recommendations

Recommendations to funders

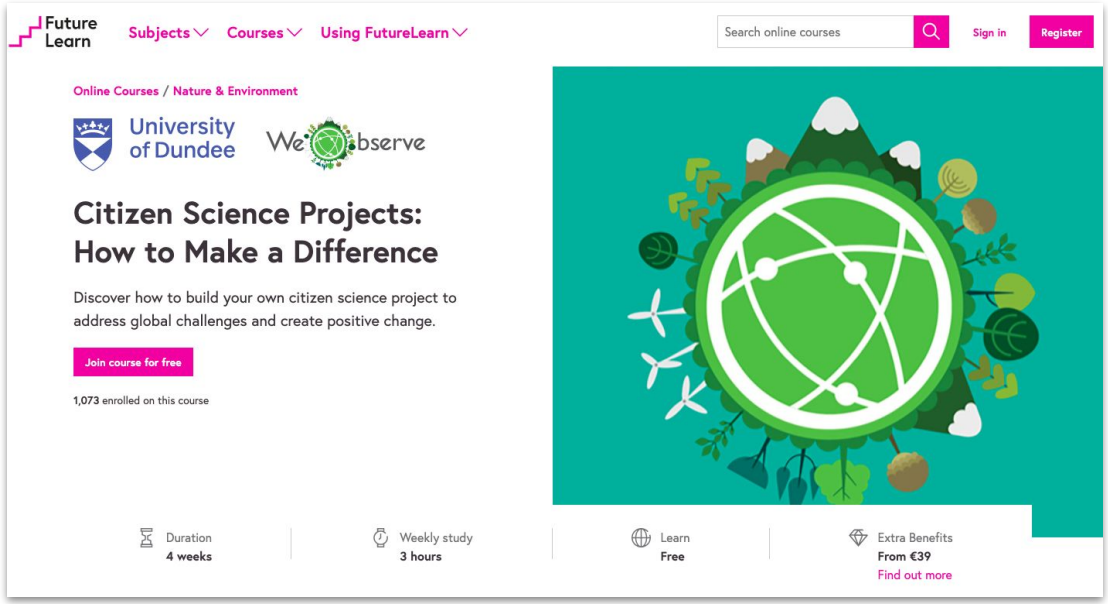
- **Offer innovative funding schemes and funding support functions –** that are flexible, involve cascading funds and employ agile evaluation approaches to allow for iteration, co-design and open outcomes, make follow-up or alternative sources of funding available to projects that meet specific targets.
- **Support diverse and ambitious communication and media plans –** prioritised over conventional communication and dissemination approaches
- **Strengthen cross-cutting meta-networks and fund dedicated coordination and support actions –** to drive excellence in the field and to continue to share and consolidate knowledge

Recommendations to funders

- **Build and support sustainable, open CO infrastructures and technologies –** to improve integration, interoperability, standardisation and reuse.
- **Mainstream Citizen Observatories across all areas of Horizon Europe –** to harness their full potential as cross-cutting, integrative mechanisms.
- **Enable the uptake of the Citizen Observatory concept outside Europe and in other domains –** to extend European leadership in participatory monitoring and governance.
- **Encourage the formulation of a European Policy Directive on the use of citizen-generated data –** to support the valorisation and uptake of Citizen Observatory and citizen science practices and data as an official data source.

ROADMAP for the uptake of the Citizen Observatories' knowledge base

WeObserve online course



WeObserve Cookbook

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WeObserve Zenodo

Thank you!

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