CitiObs - ENHANCING CITIZEN OBSERVATORIES FOR HEALHTY, SUSTAINABLE, RESILIENT, AND INCLUSIVE CITIES

DELIVERABLE 3.1

NEEDS ASSESSMENT OF FRONTRUNNER AND ALLIANCE CASES (2/2)

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ACKNOWLEDGEMENT

Co-funded by the European Union

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DOCUMENT DESCRIPTION

Delivery date:	30.06.2025		
Type*:	R- Document, report	**Dissemination Level**:**	PU - Public
Contributing WP:	WP3		
Lead Partner Organisation:	Eurocities		
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Abstract:	CitiObs has developed and applied a self-assessment tool to understand priorities and learning needs of participant Frontrunner and Alliance cases. This deliverable presents the methodology and final results of this needs assessment exercise.		

VERSION LOG

Version	Date	Partner	Content and changes
0.1	07.04.2025	EUROC	Updated Outline
0.2	30.05.2025	NILU	Updating content and formatting
0.3	16.06.2025	IHE, Draxis	Deliverable review
0.4	27.06.2025	NILU	Final editing and formatting
1.0	30.06.2025	NILU	Submission

CITIOBS

CitiObs is a four-year project funded under Horizon Europe by the European Commission. CitiObs will consolidate and apply tools and practice-based knowledge for co-creating data, knowledge and local action via Citizen Observatories (COs): these tools will enhance existing and new citizen observatories to engage people from a diverse range of communities, add value to environmental observations in the urban context, increase and validate citizen observations of the urban environment as part of the existing in-situ Earth Observation systems, co-create inclusive local actions for sustainability and ensure that CO data contributes to research and policy development towards the objectives of the European Green Deal. To ensure broad use, the CitiObs tools and approaches will be developed in co-creation with COs in 5 Frontrunner cities, finetuned with 30 Implementer cities and showcased to 50 Fellow cities.

CitiObs will support citizen observatories in distinct cities to create/enhance/or scale up inclusive and diverse citizen observatories, fostering in particular an active role of citizens in the observation of the urban environment using low-cost sensor technologies and wearables, with a particular focus on air quality and related environmental measures. CitiObs will formalise, valorise and legitimise the role of citizen observations.

The CitiObs methodology of using a large-scale demonstration, co-design and coaching approaches with CO stakeholders (citizens, scientists, policy/decision makers) in 5+30+50 cities in Europe explicitly builds on the Responsible Research & Innovation (RRI) dimensions as founding principles. Ethics consideration will be addressed consistently across all Work Packages.

- WP1. Social dimensions of Citizen Observatories for transition governance
- WP2. Tools, Technologies, and Data Services for Citizen Observatories
- WP3. Co-creation of data and actions for healthy, sustainable and resilient cities with Citizen Observatories
- WP4. Impact creation, Communication, Dissemination and Exploitation
- WP5. Project management
- WP6. Ethics

EXECUTIVE SUMMARY

This deliverable presents the results of the CitiObs Needs Assessment process for the Alliance Cases (ACs) - 30 Citizen Observatories (COs) selected through an open call to participate in the demonstration phase of the project. Building upon the work conducted with the five Frontrunner Cases (FRCs), this deliverable outlines the methodology, implementation, and key insights from a structured, multi-step approach to understanding the priorities, capacities, and challenges of the ACs.

The Needs Assessment process followed three main steps. First, the application form collected baseline information on each CO's environmental focus, use of sensors, stakeholder engagement, and citizen participation. Second, a Self-Assessment Tool—developed specifically for CitiObs and inspired by the Leiden University Competencies Framework—was used to capture more nuanced reflections on CO needs across five thematic areas. Third, an Onboarding Meeting using Miro Board enabled COs to share challenges, interests, and expectations while initiating peer-to-peer learning dynamics.

The findings revealed both diversity and convergence in CO needs. Common technical challenges included sensor deployment and data interpretation, while many COs also expressed strong interest in stakeholder engagement, data impact, and the integration of citizen-generated data into policymaking.

The combination of qualitative and quantitative data allowed CitiObs to cluster the ACs into five thematic groups, identifying shared needs and facilitating peer learning. To support these clusters, Cluster Chairs have been appointed to accompany the journey of each group and ensure that cross-cutting opportunities are identified.

These insights will also guide the finalisation of the CitiObs capacity-building programme, with training sessions scheduled for June, September, and October 2025, and in-person study visits currently under development. This deliverable represents a significant step toward scaling the impact of CitiObs tools and approaches, while ensuring that engagement remains grounded in the real needs of the participating COs.

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ACRONYMS

Acronym	Full name
AC	Alliance Cases
CO	Citizen Observatory
D	Deliverable
FRC	Frontrunner Cases
WP	Work Package

GLOSSARY

Term	Explanation
Alliance Cases (ACs)	To ensure broad use, the CitiObs tools and approaches will be developed in co-creation with Citizen Observatories (COs) in 5 Frontrunner cases, finetuned with 30 Alliance CO cases and showcased to 50 Fellow CO cases. Note that Alliance Cases were previously referred as Implementer Cities. This change was done in order to promote a more accurate description of CitiObs engagement with Citizen Observatories (not cities per se), and the nature of said engagement (not only implementing tools but collaborating with Citizen Observatories).
Citizen Observatories (COs)	COs are community-based environmental monitoring and information systems, typically at the community level or in a specific location, even if linked to a national or global environmental concern. COs involve citizens using modern mobile and web technologies and/or sensors to collect and share data, which enhance Earth observation systems and official data sources by filling in gaps and adding detail. Often using dedicated IT infrastructure, COs support the flow of data and information between citizens, scientists and decision-makers, and typically have a distinct focus on influencing decision-making, policy change and/or environmental governance outcomes.
Engagement Strategy	A strategic approach to connect with stakeholders by utilizing tailored communication methods to ensure active participation in Citizen Observatories.
Fellow Cases	To ensure broad use, the CitiObs tools and approaches will be developed in co-creation with Citizen Observatories (COs) in 5 Frontrunner cases, finetuned with 30 Alliance CO cases and showcased to 50 Fellow CO cases. Note that Fellow Cases were previously referred as Fellow Cities. This change was done in order

	to promote a more accurate description of CitiObs engagement with Citizen Observatories (not cities per se).
Frontrunner Cases (FRCs)	To ensure broad use, the CitiObs tools and approaches will be developed in co-creation with Citizen Observatories (COs) in 5 Frontrunner cases, finetuned with 30 Alliance CO cases and showcased to 50 Fellow CO cases. Note that Frontrunner Cases were previously referred as Frontrunner Cities. This change was done in order to promote a more accurate description of CitiObs engagement with Citizen Observatories (not cities per se).
MICS Tool	The MICS tool (Measuring the Impact of Citizen Science) is designed to assess the impact of citizen science projects across various domains such as science, environment, economy, governance, and society. It offers a structured approach to evaluate project impacts from inception through realization, and over time. The tool allows users to compare projects within the same discipline, generate impact summaries for stakeholders, and observe changes in impact over time. For more detailed information, you can visit the MICS website.
Needs Analysis	A methodical process to identify and assess the requirements of stakeholders in COs, aiming to match these needs with effective solutions during the design of a Capacity Building Programme.

1. INTRODUCTION

1.1 Background

This deliverable reports on CitiObs activities during the second phase of the project's engagement strategy—focusing on the 30 selected **Alliance Cases (ACs)**. Building on the foundation laid during the Inception Phase with the Frontrunner Cases (FRCs), this phase expands the reach of CitiObs methodologies, tools, and mutual learning approaches by engaging with a wider and more diverse group of COs across Europe. The focus during this period has been on scaling up the Needs Assessment process, testing new tools, and refining engagement methods to ensure that the project remains adaptable and responsive. By applying and adjusting insights and practices developed in the earlier phase, CitiObs was able to create a structured and participatory process that supports the co-creation of local knowledge and targeted capacity-building activities in the Demonstration Phase.

1.2 Purpose of this report

Deliverable D3.1 is part of the work undertaken under **Task 3.2** "*Citizen Observatories in Alliance Cases: applying CitiObs approaches based on materials & peer learning*" and presents the consolidated Needs Assessment process carried out with the ACs. This report documents the full methodology and results of a three-step approach: the open application process, the development and deployment of a self-assessment tool tailored to the realities of COs, and the onboarding workshops designed to validate and deepen the insights gathered. Together, these activities form the foundation for clustering the ACs, twinning them with relevant FRCs, and shaping the CitiObs capacity-building programme. This deliverable represents a key milestone in Month 24 of the project.

1.3 Structure of this report

This report is structured as follows:

- **2. METHODOLOGICAL FRAMEWORK** – Describes the overall approach used to engage with ACs, including lessons learned from the Frontrunner phase and the rationale for designing a new multi-step process for needs assessment.
- **3. RESULTS: NEEDS ASSESSMENT IN THE ALLIANCE CASES** – Presents the analysis of each step: (1) the open call and application form, (2) the self-assessment tool development and deployment, and (3) the onboarding activities with participatory exchanges. This section includes quantitative and qualitative results, leading to the clustering of the ACs.
- **4. CONCLUSION: CURRENT STATUS AND** NEXT STEPS – Summarizes key outcomes and outlines the future direction, including the implementation of capacity-building sessions, in-person study visits, and ongoing engagement through cluster chairs and peer learning opportunities.

2. METHODOLOGICAL FRAMEWORK

Deliverable D3.9 laid the foundation for CitiObs' work with FRCs by developing and applying a participatory needs assessment methodology focused on mutual learning and co-design. Through a structured engagement process – comprising stakeholder mapping, onboarding workshops, and prioritization sessions – the project identified and prioritized the social and technical needs of COs in Athens, Barcelona, Dublin, Kristiansand, and Rotterdam. This approach allowed CitiObs to align its toolkits and methodologies with the specific challenges faced by each CO, such as data validation, stakeholder collaboration, and long-term sustainability. The findings from D3.9 informed the design of a scalable Self-Assessment Tool and laid the groundwork for targeted capacity-building activities.

These efforts now continue in D3.1 with a focus on ACs, building on the insights, tools, and lessons learned from the FRC phase. To scale up the needs assessment process to 30 ACs, CitiObs drew on the lessons learned from working closely with the FRCs and recognized the need for a more streamlined and scalable approach.

Initially, the team explored adopting the **MICS tool for impact assessment** and self-evaluation. We engaged directly with the developers of MICS, participated in a dedicated training session with Earthwatch (the project behind the creation of the MICS tool), and conducted an internal pilot to simulate its use with COs. However, this trial revealed significant limitations: the tool was highly time-consuming and not well-suited to the operational realities of COs. As a result, CitiObs decided to develop a dedicated Self-Assessment Tool from scratch - designed to be intuitive, lightweight, and tailored specifically to the needs, contexts, and capacities of COs across Europe.

To streamline the needs assessment process for our engagement with ACs, CitiObs adopted a three-step approach, beginning with the **application process**. As part of the application form to become an AC, we included targeted questions designed to capture key information about each CO’s context, focus, and level of engagement. These questions covered aspects such as the CO’s description, geographical location, environmental challenges addressed, use (or interest in using) sensors, types of data collected, number of engaged citizens, and stakeholder composition. By gathering this essential baseline information, we were able to gain a clearer understanding of each CO’s current status and challenges, ensuring the selection of ACs that align with CitiObs’ objectives and can benefit most from the project’s tools and support.

As a second step, we developed a **tailored self-assessment tool** to support ACs in identifying their priorities and areas for growth. This tool is informed by the structure and principles of the Leiden Competencies Framework, which offers a comprehensive lens for evaluating capabilities across different domains. Building on this foundation, our self-assessment matrix was designed to be practical, easy to use, and closely aligned with the CitiObs toolkits and technical resources. Its adaptability allows it to be applied across diverse CO contexts, while its straightforward format enables COs to complete it independently, minimizing the need for hands-on facilitation. The tool is being refined through iterative feedback from our partners to ensure its relevance and usabilityat scale.

The final step involved direct engagement with the selected ACs through an **Onboarding Meeting**. This session featured a participatory exercise using the Miro Board platform, designed to foster open dialogue and peer exchange. The goal was to initiate

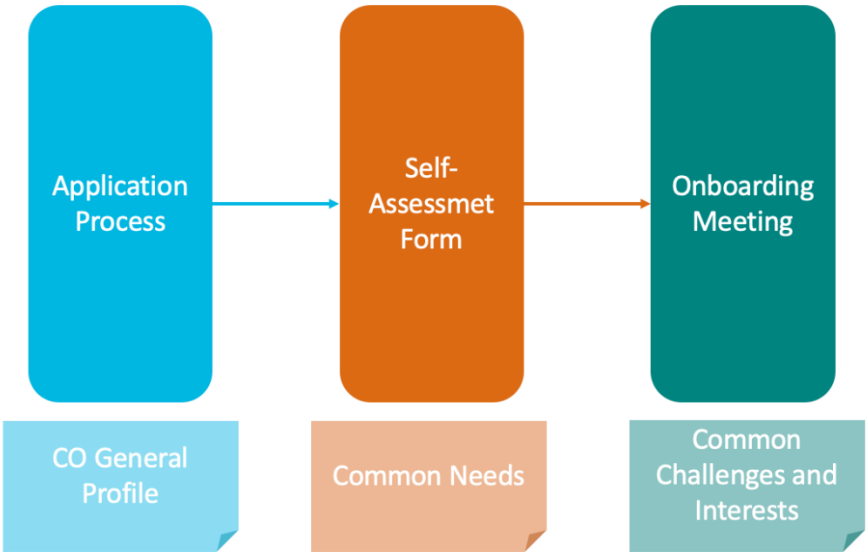


Figure 1. Needs Assessment Process

By combining insights from the application forms, self-assessment tool, and onboarding meetings, we were able to group the ACs into five thematic clusters based on shared challenges, interests, and strong potential for peer learning. This clustering approach also provided a more refined and structured understanding of the diverse needs across COs. In CitiObs, the needs assessment is not a one-off task but a continuous process built through multiple layers of engagement. The next phase will focus on validating these findings with the ACs and co-designing a capacity-building

programme that is both responsive to the specific needs of each cluster and capable of addressing cross-cutting challenges and opportunities for collaboration.

3. RESULTS: NEEDS ASSESSMENT IN THE ALLIANCE CASES

3.1 Alliance Cases Application Form

The open call for ACs was strategically designed not only to select engaged and motivated COs, but also to serve as the first layer of our needs assessment process. The application form was carefully crafted to gather essential baseline information about each CO's context, focus, and operational maturity. Key questions included a description of the CO, its location, and links to any website or social media channels, providing an initial understanding of their visibility and communication style. Applicants were also asked to specify the main urban environmental challenge they are addressing, which helped us map thematic priorities across cases.

Questions about sensor use, types of data collected, and openness to adopting new monitoring technologies offered insight into their technical readiness. Additionally, we inquired about the number of engaged citizens and the types of stakeholders involved, which allowed us to gauge the scope of participation and potential for collaborative action. Together, these questions enabled us to select ACs aligned with CitiObs objectives while beginning to shape a more targeted support strategy tailored to their specific needs.

From the open call, CitiObs selected 30 ACs representing a diverse range of contexts and environmental priorities. These COs are based in 13 different countries across Europe, reflecting the geographic and thematic breadth of the project. While many COs address multiple issues, 20 of them are primarily focused on urban challenges related to air quality. Additionally, 6 COs are working with noise pollution, 6 with urban heat, and 6 with water quality. This distribution highlights both the prominence of air quality as a shared concern and the importance of supporting a wider range of environmental monitoring efforts within urban settings.

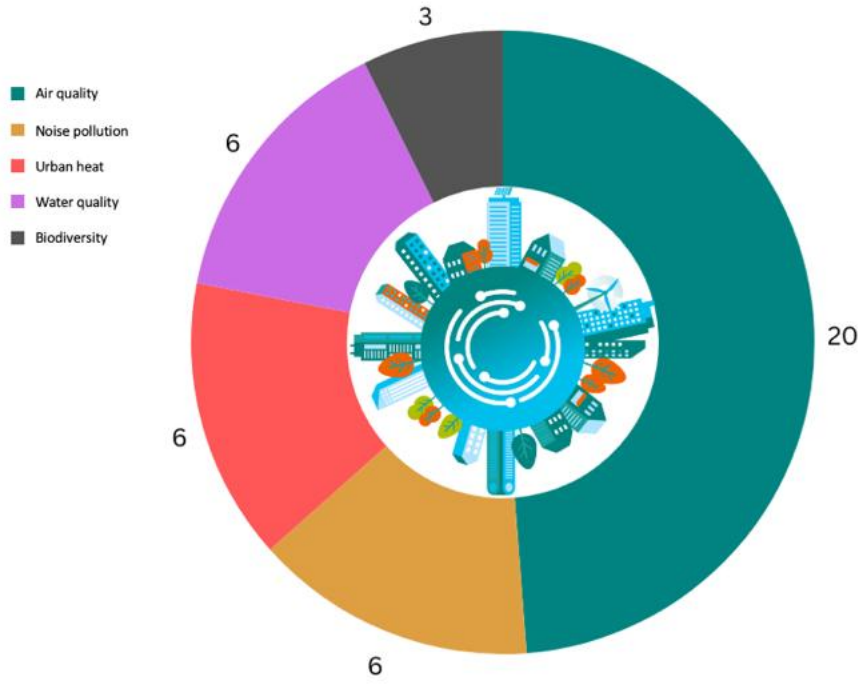


Figure 2. ACs Environmental Urban Challenges

The application form responses related to the types of sensors used provide a valuable snapshot of the current technical landscape across participating COs. The results show a strong presence of particulate matter (PM) and temperature sensors, with notable use of humidity, noise, VOC, CO_2, and water quality sensors as well. This diversity gives us greater clarity on the monitoring practices in place and highlights varying levels of technical maturity. It also points to a growing interest in expanding sensor capabilities, particularly in areas like water quality and air composition. These insights are crucial for shaping our capacity-building activities and technical support, ensuring that COs receive guidance tailored to their existing infrastructure while exploring new sensing possibilities that align with their goals and local challenges.

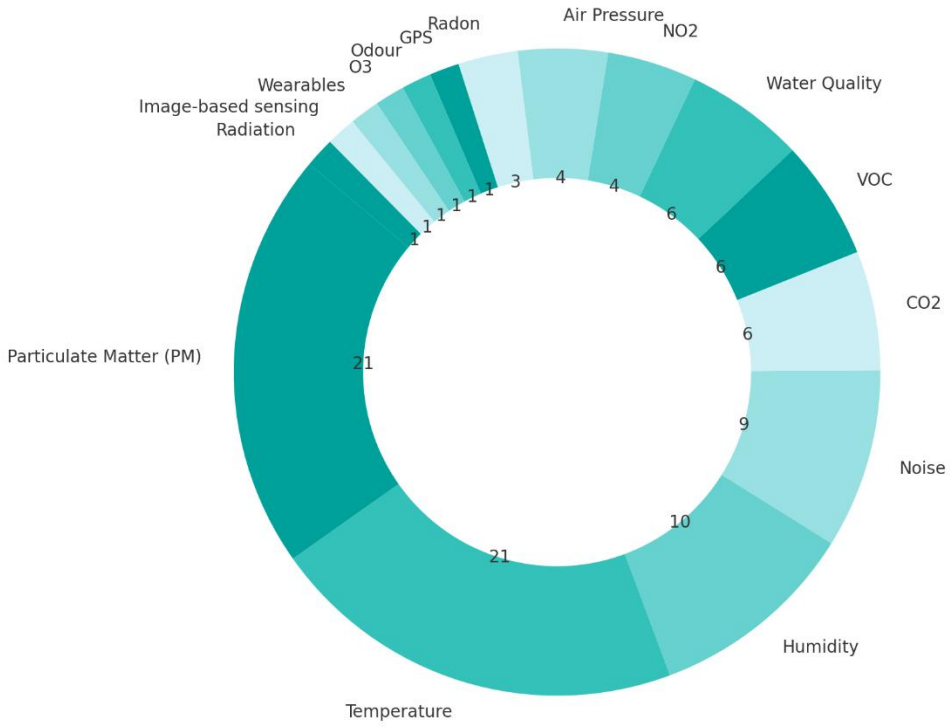


Figure 3. Sensor Types

The data on community size and stakeholder engagement was also drawn from the application form responses, offering valuable insights into the community of each CO. The range of citizen participation varies widely, with some COs involving small, focused groups of under 10 individuals, while others engage hundreds or even thousands. This variation reflects different stages of development, outreach strategies, and thematic scopes.

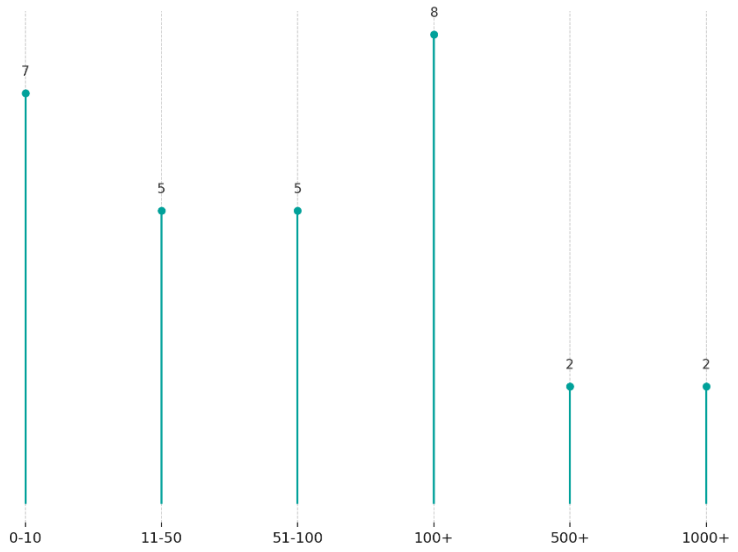


Figure 4. Community Size

In terms of stakeholders, the most frequently involved actors are schools and the education sector, followed by NGOs and government authorities. There is also notable, though less frequent, engagement with academia, community groups, and the private sector. These findings help us better understand both the scale and nature of civic and institutional engagement, which is essential for tailoring peer learning, partnership-building, and communication strategies across clusters with different capacities and needs.

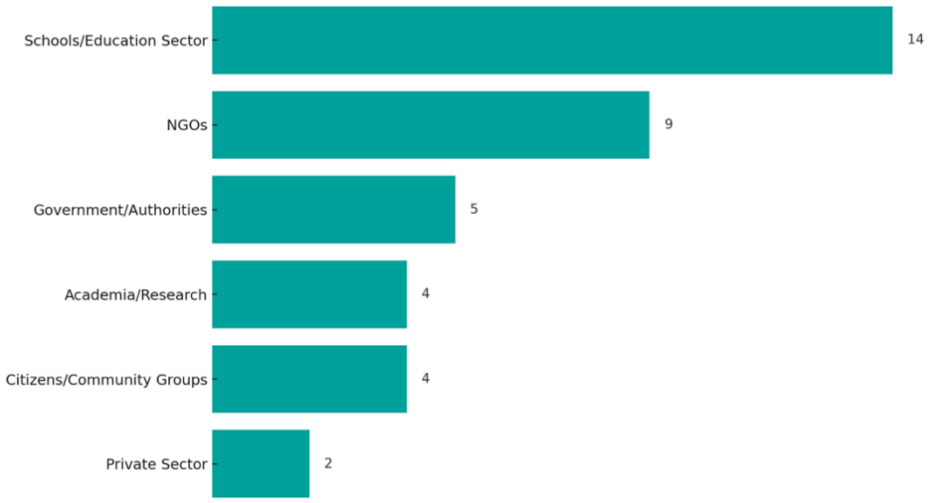


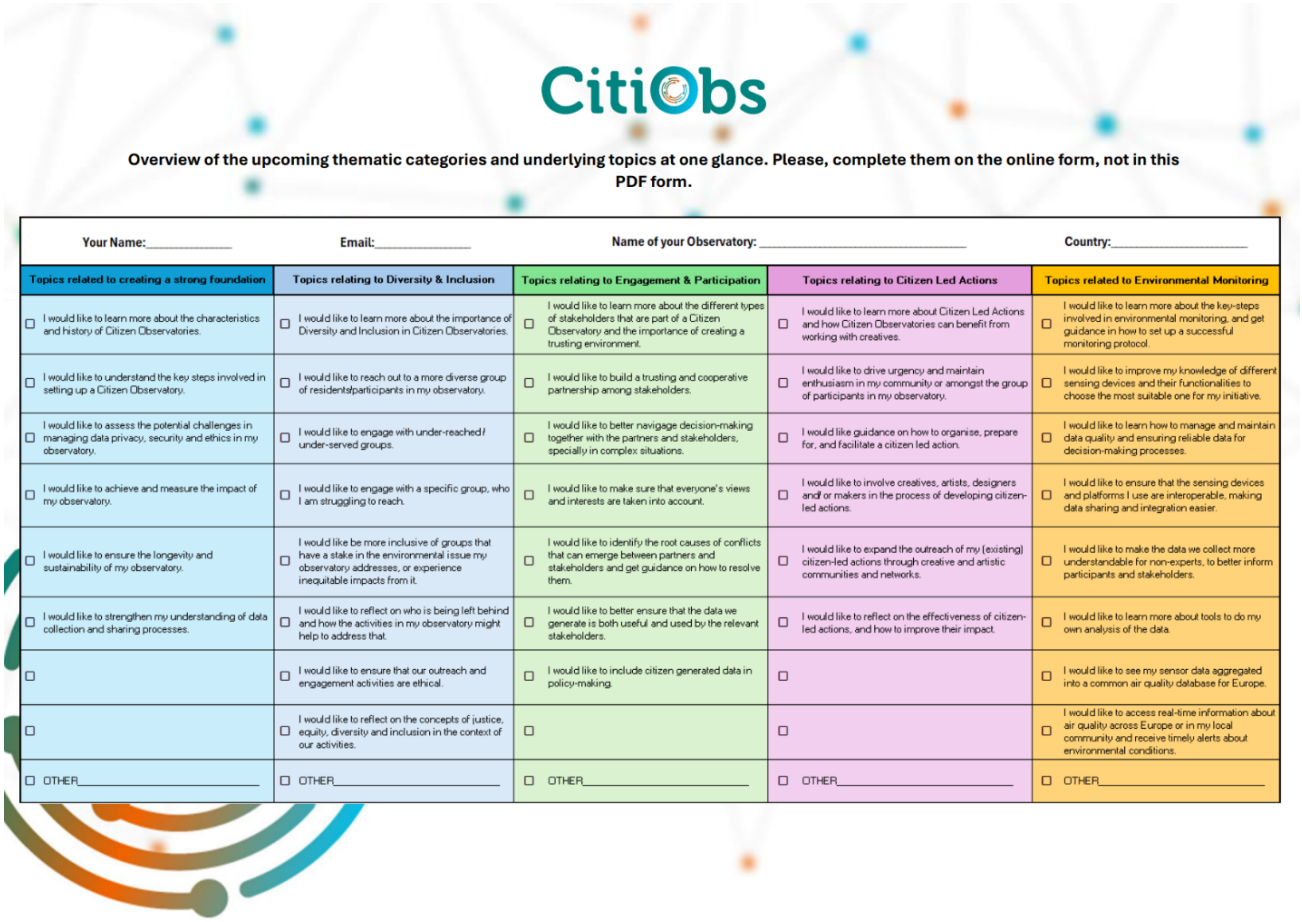
Figure 5. Stakeholders Involved

The insights gathered through the application form provide a strong starting point for understanding the context, capacities, and needs of the ACs. They offer a preliminary but valuable picture of each CO's technical setup, community reach, and stakeholder ecosystem. However, to deepen this understanding and ensure accuracy, the next step involves triangulating these findings with data from the self-assessment tool. This layered approach allows us to cross-validate information, uncover potential gaps or inconsistencies, and build a more nuanced profile of each CO.

3.2 Self-Assessment Form

To complement the information gathered through the application process, CitiObs developed a dedicated Needs Assessment Tool from scratch, drawing inspiration from the Leiden University Competencies Framework. This framework provided a structured lens for evaluating capabilities across diverse domains, which we adapted to the specific context of COs. The resulting tool was designed to be simple, scalable, and relevant across different levels of technical and organizational maturity. Its primary aim was to go beyond basic background information and capture a more nuanced understanding of the needs, challenges, and capacities of the 30 selected ACs. This also laid the groundwork for clustering, targeted support, and a responsive capacity-building programme.

CitiObs, we adapted the Leiden University Competencies Framework to the specific context of COs by shifting the focus from individual skills to collective capabilities across technical, social, and organizational dimensions. Using our own toolkits as reference – ranging from data collection and impact assessment to policy engagement and community-building – we developed an updated framework that aligns with the real-world functioning of COs. This adaptation allows us not only to assess needs more systematically, but also to identify which CitiObs tools and resources are most relevant and potentially transformative for each CO, guiding more strategic support and knowledge exchange. To enhance its comprehensiveness and ensure continuity with existing best practices, we also integrated the foundational capabilities from the WeObserve Cookbook. Methodologically, this decision was guided by two key considerations: first, many of the participating COs are already familiar with the WeObserve approach, and second, the WeObserve framework offers a robust foundation that captures essential capabilities for starting and sustaining a CO. By including these elements, we ensured that the CitiObs framework could serve both new and mature COs—supporting those in early development stages while also building on prior knowledge for more advanced initiatives. This integration ensures that the resulting CitiObs Cookbook is not a fragmented set of tools, but rather a coherent and user-friendly resource embedded within a broader ecosystem of practice, accessible through the CitiObs Knowledge Platform.



CitiObs

Overview of the upcoming thematic categories and underlying topics at one glance. Please, complete them on the online form, not in this PDF form.

Your Name:_____ Email:_____ Name of your Observatory: _____ Country:_____

Topics related to creating a strong foundation	Topics relating to Diversity & Inclusion	Topics relating to Engagement & Participation	Topics relating to Citizen Led Actions	Topics related to Environmental Monitoring
☐ I would like to learn more about the characteristics and history of Citizen Observatories.	☐ I would like to learn more about the importance of Diversity and Inclusion in Citizen Observatories.	☐ I would like to learn more about the different types of stakeholders that are part of a Citizen Observatory and the importance of creating a trusting environment.	☐ I would like to learn more about Citizen Led Actions and how Citizen Observatories can benefit from working with creatives.	☐ I would like to learn more about the key-steps involved in environmental monitoring, and get guidance in how to set up a successful monitoring protocol.
☐ I would like to understand the key steps involved in setting up a Citizen Observatory.	☐ I would like to reach out to a more diverse group of residents/participants in my observatory.	☐ I would like to build a trusting and cooperative partnership among stakeholders.	☐ I would like to drive urgency and maintain enthusiasm in my community or amongst the group of participants in my observatory.	☐ I would like to improve my knowledge of different sensing devices and their functionalities to choose the most suitable one for my initiative.
☐ I would like to assess the potential challenges in managing data privacy, security and ethics in my observatory.	☐ I would like to engage with under-reached/ under-served groups.	☐ I would like to better navigage decision-making together with the partners and stakeholders, specially in complex situations.	☐ I would like guidance on how to organise, prepare for, and facilitate a citizen led action.	☐ I would like to learn how to manage and maintain data quality and ensuring reliable data for decision-making processes.
☐ I would like to achieve and measure the impact of my observatory.	☐ I would like to engage with a specific group, who I am struggling to reach.	☐ I would like to make sure that everyone's views and interests are taken into account.	☐ I would like to involve creatives, artists, designers and/ or makers in the process of developing citizen-led actions.	☐ I would like to ensure that the sensing devices and platforms I use are interoperable, making data sharing and integration easier.
☐ I would like to ensure the longevity and sustainability of my observatory.	☐ I would like be more inclusive of groups that have a stake in the environmental issue my observatory addresses, or experience inequitable impacts from it.	☐ I would like to identify the root causes of conflicts that can emerge between partners and stakeholders and get guidance on how to resolve them.	☐ I would like to expand the outreach of my (existing) citizen-led actions through creative and artistic communities and networks.	☐ I would like to make the data we collect more understandable for non-experts, to better inform participants and stakeholders.
☐ I would like to strengthen my understanding of data collection and sharing processes.	☐ I would like to reflect on who is being left behind and how the activities in my observatory might help to address that.	☐ I would like to better ensure that the data we generate is both useful and used by the relevant stakeholders.	☐ I would like to reflect on the effectiveness of citizen-led actions, and how to improve their impact.	☐ I would like to learn more about tools to do my own analysis of the data.
☐	☐ I would like to ensure that our outreach and engagement activities are ethical.	☐ I would like to include citizen generated data in policy-making.	☐	☐ I would like to see my sensor data aggregated into a common air quality database for Europe.
☐	☐ I would like to reflect on the concepts of justice, equity, diversity and inclusion in the context of our activities.	☐	☐	☐ I would like to access real-time information about air quality across Europe or in my local community and receive timely alerts about environmental conditions.
☐ OTHER_____	☐ OTHER_____	☐ OTHER_____	☐ OTHER_____	☐ OTHER_____

Figure 6. Self-Assessment Tool. The Self-Assessment tool is available in Annex 1.

The CitiObs Self-Assessment Tool is structured as a simple, user-friendly checklist designed to help COs reflect on their capacities, challenges, and learning needs. It is organized around key thematic areas inspired by CitiObs toolkits: Creating a Strong Foundation, Diversity & Inclusion, Engagement & Participation, Citizen-Led Actions, and Environmental Monitoring. Within each area, respondents are invited to check off statements that resonate with their current interests or gaps, for example, the need to improve outreach to underserved communities, enhance data quality, or foster more effective collaboration with stakeholders. This structure allows for flexibility while also producing comparable data across COs, helping CitiObs identify common needs and tailor support accordingly. The tool also includes open-ended fields for additional input, further encouraging reflection and capturing context-specific challenges.

To interpret the results of the Self-Assessment Tool, we analyzed how many ACs expressed interest in each of the topics presented across the five thematic areas. By aggregating these responses, we gained valuable insights into which aspects of the CitiObs toolkits resonate most with COs and where the demand for guidance and capacity-building is highest. This analysis not only reveals common areas of interest but also helps us understand emerging themes and specific gaps where additional support may be needed.

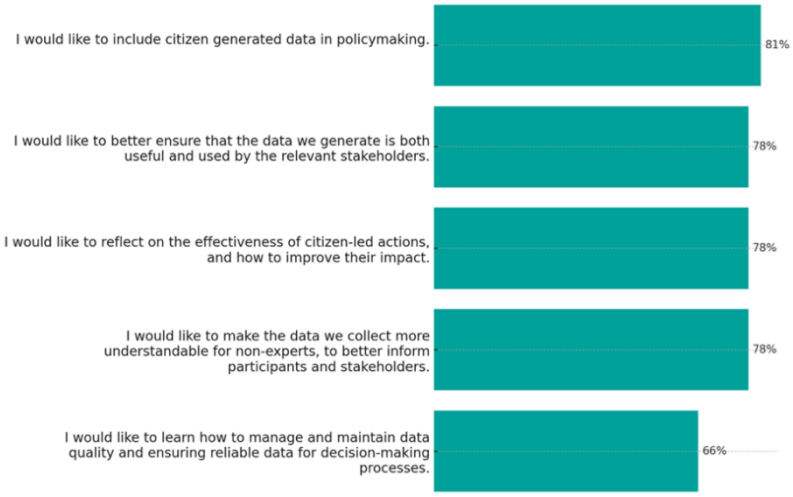


Figure 7. Most Recurring Responses

The most frequently selected topic was the ambition to include citizen-generated data in policymaking, with over 81% of COs indicating interest. This reflects a strong collective desire to bridge the gap between citizen science and formal decision-making processes. Following closely, 78% of respondents expressed the need to ensure that the data they generate is both useful and used by relevant stakeholders, as well as to reflect on the effectiveness of citizen-led actions and improve their impact. Also among the top responses was the aim to make collected data more understandable for non-experts, which emphasizes the importance of accessibility and communication. Rounding out the top five, 65% of COs showed interest in learning how to manage and maintain data quality, reinforcing the need for technical capacity-building. These results highlight that many COs are focused on data collection and also concerned with how their data can be made actionable, impactful, and inclusive.

The combination of insights from the application form and the self-assessment tool has been essential in building a comprehensive understanding of ACs' focus areas, technical readiness, community engagement, and capacity-building needs. Together, these two steps have allowed

us to map out both individual and collective priorities across COs. The final step in this needs assessment process is the engagement through the Onboarding Meeting, where we bring COs together for a participatory exchange.

3.3. Onboarding Activities

To validate the insights gathered through the application form and the self-assessment tool—and to gain deeper, more contextualised understanding of each CO's priorities, we designed a participatory activity as part of the Onboarding Meeting. This activity was hosted on a Miro Board and served as a space for ACs to reflect collectively on their main challenges and motivations for joining CitiObs. In addition to identifying common interests, we also invited participants to consider what they could learn from one another, fostering an early sense of peer learning and mutual support. By encouraging open discussion and exchange, the session helped surface cross-cutting themes, shared needs, and practical concerns that may not have been fully captured in earlier steps. This interactive format also marked the beginning of a collaborative dynamic among the ACs, setting the tone for ongoing learning and engagement throughout the project.

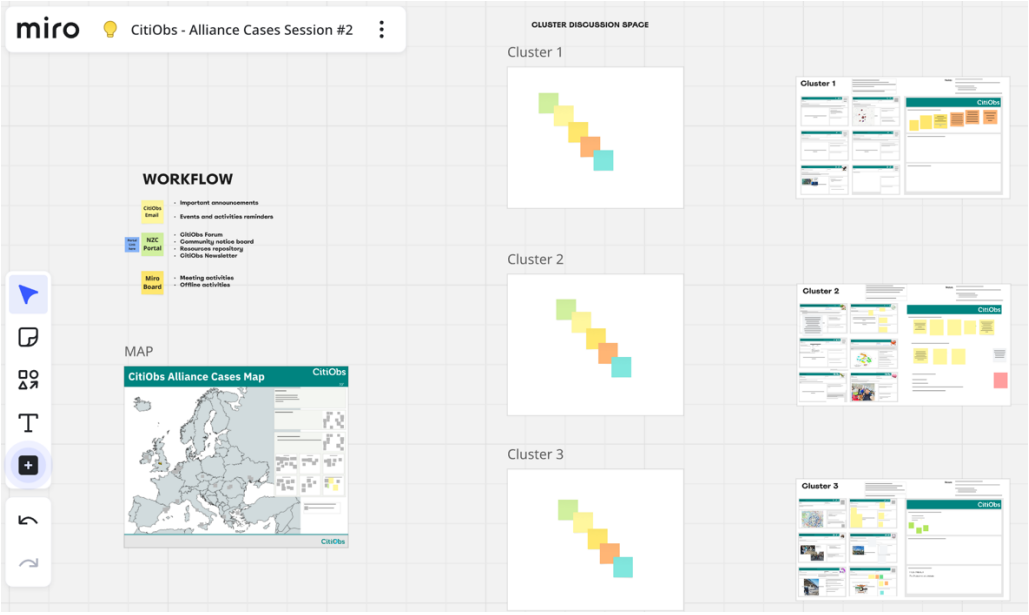


Figure 8. ACs Miro Workspace

This onboarding activity also provided valuable insights into how the ACs would like to engage throughout the project. Through their contributions, it became clear that many COs are particularly interested in peer learning, ongoing knowledge exchange, and being part of a supportive

community. Several participants emphasized the importance of having a shared space to network, communicate, and access resources. In response to this, and to ensure continuity and accessibility, we decided to collaborate with the NetZeroCities project and host the CitiObs community within their online portal. This platform offers a robust and user-friendly environment for interaction and collective learning, reinforcing our commitment to supporting ACs not only with tools and guidance, but also by fostering meaningful connections across the network. The Frontrunner and Alliance cases were invited to the CitiObs private forum on 2 April 2025.

In complement of the forum, we also created a mailing list composed of the Frontrunner and Alliance cases, the CitiObs Frontrunner contact points (now also cluster contact points), the WP leaders, the toolkit leaders and the CitiObs management team. The mailing list serves as a fast communication channel between the project and the cases.

Together, the online forum and the mailing list form a complementary communication ecosystem that supports the active participation of the Frontrunner and Alliance cases. While the CitiObs forum, hosted within the NetZeroCities platform, fosters community building, peer learning, and collaborative exchange in a structured and accessible environment, the mailing list ensures swift and direct communication for timely updates, coordination, and support. By combining these two channels, the project is able to address both the need for ongoing, inclusive engagement and the practical requirement for efficient information flow—ultimately strengthening the connection between the cases and the broader CitiObs network.

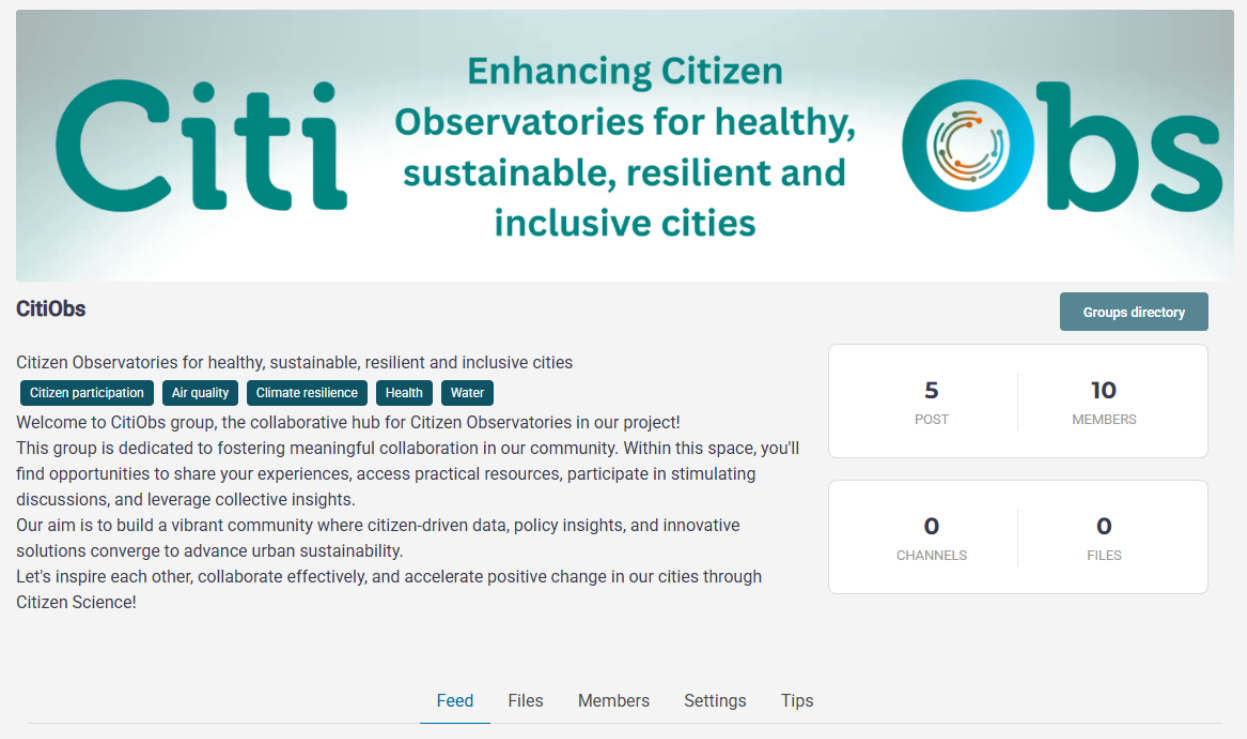


Figure 9. CitiObs Private group

Overall, this multi-step Needs Assessment process has given us a better understanding of the ACs priorities, capacities, and aspirations. By combining structured data with participatory engagement, we were able to capture both measurable indicators and more nuanced, qualitative insights. This knowledge is crucial to tailoring our support and capacity-building efforts, and for strategically grouping the ACs into clusters based on shared interests and challenges. These clusters will serve as the foundation for collaboration and peer exchange within the CitiObs network. Moreover, this clustering allows us to twin each group with relevant FRCs, enabling more targeted mentoring and shared learning experiences.

3.4. Results from the onboarding meeting on the need for mentoring sessions

As part of the MIRO board exercise during the onboarding workshop on 20 January 2025, the alliance cases discussed and further prioritized their mentoring needs. The topics mentioned in the MIRO board were then clustered into topics during the Partner Meeting in Oslo celebrated between 18 and 20 March 2025. The result was:

- **Technical Aspects of Sensor Use**

  - Sensor selection for different environments
  - Calibration and maintenance for long-term monitoring
  - Data validation and quality assurance
  - Interoperability, authentication, and ownership of data

- **Data Management & Sharing**
  - Use of open data platforms
  - CO data management frameworks (e.g. STA/STA+)
  - Privacy, GDPR, and legal considerations
  - Assimilation of data into CitiObs tools/systems

- **Citizen Engagement & Participation**
  - Motivations and behavior change strategies
  - Sustaining long-term stakeholder engagement
  - Participation dynamics and citizen-led action
  - Diversity and inclusion (LNOB principles)

- **Educational Activities**
  - Developing hands-on, local learning activities
  - Storytelling with environmental data

- **Policy Integration & Impact**
  - Translating data into actionable insights
  - Advocacy strategies and engagement with policymakers
  - Use of Decision Support Systems

- **Collaboration & Peer Learning**
  - Sharing experiences and best practices
  - Peer learning sessions and cross-border collaboration

Based on those topic groups, during the CitiObs partner meeting in Oslo, and the following on-line partner meeting we drafted a possible series of webinars, some very specific to a particular toolkit, and some where the combination of two or more toolkits is necessary. We also identified the main target audience, although we agreed that the invitation should be sent to all the Frontrunner and Alliance cases. We also agreed to record the webinars, so the cases that could not participate are still able to access them and so they are available for future reference. For privacy reasons, and to allow unfiltered discussions, in some cases, the hands-on-work sessions will not be recorded, and only the parts where the CitiObs partners speak will be made available online.

1.1.1 Webinar: "Getting Started with Sensors – From Selection to Deployment"

Related toolkit: *Environmental Monitoring Toolkit*
Audience: New or early-stage COs without sensor experience
Content:

- Choosing the right sensor for your context
- Open-source vs commercial sensors
- Calibration and maintenance tips
- Introduction to Smart Citizen Kit
- Hands-on: walk-through setup an environmental monitoring campaign

1.1.2 Webinar: "Participation Dynamics – Building and Sustaining Engagement"

Related toolkit: *Participation Dynamics Toolkit*
Audience: All COs interested in stakeholder and citizen engagement
Content:

- How to build long-term relationships with communities
- Practical use of the toolkit to plan engagement strategies
- Identifying motivators and sustaining participation
- Co-creation methods and feedback loops
- Case examples from Frontrunner or Alliance cases

1.1.3 Webinar: "Citizen-led Action – Turning Monitoring into Impact"

Related toolkit: *Citizen-led Action Toolkit*

Audience: COs ready to move from data collection to local action

Content:

- How to identify opportunities for citizen-led responses
- Mobilizing community efforts and resources
- Using the toolkit to plan and execute an action
- Use case from an AC interested in showcasing their process

1.1.4 Webinar: "Leave No One Behind – Inclusion in Citizen Science"

Related toolkit: *Leave No One Behind Toolkit*

Audience: All ACs, especially those working in diverse communities

Content:

- Why inclusion matters in COs
- Tools and methods to ensure representation and equity
- Hands-on with reflection and workshop templates
- How to adapt tools to your local context

1.1.5 Webinar: "Data to Policy – Making Citizen Data Count"

Related toolkit: *Environmental Monitoring + Citizen-led Action Toolkits*

Audience: COs aiming to influence local policy

Content:

- Linking CGD with decision-making
- Preparing data for policymaker use (quality, format, narrative)
- Introduction to Decision Support Systems
- Case demo: how one CO successfully engaged policymakers

1.1.6 Webinar: "Telling the Story – Communicating Your Impact"

Related toolkit: *Participation Dynamics + Citizen-led Action*

Audience: All COs

Content:

- Basics of storytelling with data
- Visualisation tools and narrative framing
- Communicating with non-technical audiences (residents, media, policymakers)
- Practical exercise: turning your data into a compelling message

1.1.7 Webinar: "Data Management, Privacy and Ethics in COs"

Related toolkit: *Environmental Monitoring Toolkit*

Audience: COs managing large datasets or involving sensitive information

Content:

- GDPR compliance and legal considerations
- Data ownership and sharing principles
- Introduction to open platforms and APIs
- Tools for quality assurance and validation
- Practical exercise: Analyzing your data using the CitiObs tools for communities

The first webinars have already been held and the recordings have been made available on the CitiObs YouTube channel and linked on the website under CitiObs Results.

4. CONCLUSION: CURRENT STATUS AND NEXT STEPS

The Needs Assessment process carried out in CitiObs has proven to be a critical step in shaping meaningful collaboration with COs across Europe. Through a combination of structured tools and participatory engagement, we were able to identify shared priorities, surface local challenges, and better understand the diversity of CO contexts. The multi-phase approach – beginning with application forms, advancing through a purpose-built self-assessment tool, and culminating in onboarding activities – offered complementary layers of insight that were essential for clustering ACs and defining next steps. This process laid the foundation for targeted capacity-building and peer-learning opportunities, while fostering early community-building among COs.

Now that the ACs have been grouped into thematic clusters based on shared challenges and interests, we are well-positioned to move forward with a more focused and efficient collaboration process. To support this, CitiObs has appointed colleagues from the consortium who will serve as primary facilitators and contact points for each group (or “Cluster Chairs”). Their role will be to accompany each cluster’s journey, help identify emerging needs, and spot opportunities for cross-cluster collaboration. With the needs assessment phase now complete, we are also finalising the structure of the CitiObs capacity-building programme, which will include targeted training sessions scheduled for June, September, and October 2025.

In parallel, we are beginning to explore opportunities for in-person study visits, offering a chance for more immersive peer learning and hands-on exchanges between COs. The CitiObs Forum offers a platform for offline peer learning, where participants can continue exchanging experiences, resources, and technical advice beyond the formal training sessions. Together, these activities aim to foster a strong, interconnected community of practice, ensuring that all Alliance and Frontrunner cases are supported in deepening their capacities, sharing knowledge, and translating citizen-generated data into meaningful local action and policy impact.

ANNEX 1. SELF ASSESSMENT TOOL

Overview of the upcoming thematic categories and underlying topics at one glance. Please, complete them on the online form, not in this PDF form.

Your Name:_____ **Email:**_____ **Name of your Observatory:** _____ **Country:**_____

Topics related to creating a strong foundation	Topics relating to Diversity & Inclusion	Topics relating to Engagement & Participation	Topics relating to Citizen Led Actions	Topics related to Environmental Monitoring
☐ I would like to learn more about the characteristics and history of Citizen Observatories.	☐ I would like to learn more about the importance of Diversity and Inclusion in Citizen Observatories.	☐ I would like to learn more about the different types of stakeholders that are part of a Citizen Observatory and the importance of creating a trusting environment.	☐ I would like to learn more about Citizen Led Actions and how Citizen Observatories can benefit from working with creatives.	☐ I would like to learn more about the key-steps involved in environmental monitoring, and get guidance in how to set up a successful monitoring protocol.
☐ I would like to understand the key steps involved in setting up a Citizen Observatory.	☐ I would like to reach out to a more diverse group of residents/participants in my observatory.	☐ I would like to build a trusting and cooperative partnership among stakeholders.	☐ I would like to drive urgency and maintain enthusiasm in my community or amongst the group of participants in my observatory.	☐ I would like to improve my knowledge of different sensing devices and their functionalities to choose the most suitable one for my initiative.
☐ I would like to assess the potential challenges in managing data privacy, security and ethics in my observatory.	☐ I would like to engage with under-reached/ under-served groups.	☐ I would like to better navigage decision-making together with the partners and stakeholders, specially in complex situations.	☐ I would like guidance on how to organise, prepare for, and facilitate a citizen led action.	☐ I would like to learn how to manage and maintain data quality and ensuring reliable data for decision-making processes.
☐ I would like to achieve and measure the impact of my observatory.	☐ I would like to engage with a specific group, who I am struggling to reach.	☐ I would like to make sure that everyone's views and interests are taken into account.	☐ I would like to involve creatives, artists, designers and/ or makers in the process of developing citizen-led actions.	☐ I would like to ensure that the sensing devices and platforms I use are interoperable, making data sharing and integration easier.
☐ I would like to ensure the longevity and sustainability of my observatory.	☐ I would like be more inclusive of groups that have a stake in the environmental issue my observatory addresses, or experience inequitable impacts from it.	☐ I would like to identify the root causes of conflicts that can emerge between partners and stakeholders and get guidance on how to resolve them.	☐ I would like to expand the outreach of my (existing) citizen-led actions through creative and artistic communities and networks.	☐ I would like to make the data we collect more understandable for non-experts, to better inform participants and stakeholders.
☐ I would like to strengthen my understanding of data collection and sharing processes.	☐ I would like to reflect on who is being left behind and how the activities in my observatory might help to address that.	☐ I would like to better ensure that the data we generate is both useful and used by the relevant stakeholders.	☐ I would like to reflect on the effectiveness of citizen-led actions, and how to improve their impact.	☐ I would like to learn more about tools to do my own analysis of the data.
☐	☐ I would like to ensure that our outreach and engagement activities are ethical.	☐ I would like to include citizen generated data in policy-making.	☐	☐ I would like to see my sensor data aggregated into a common air quality database for Europe.
☐	☐ I would like to reflect on the concepts of justice, equity, diversity and inclusion in the context of our activities.	☐	☐	☐ I would like to access real-time information about air quality across Europe or in my local community and receive timely alerts about environmental conditions.
☐ OTHER_____	☐ OTHER_____	☐ OTHER_____	☐ OTHER_____	☐ OTHER_____