



CitiMeasure – Using citizen measurements to create smart, sustainable, and inclusive cities

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Acronyms

| BZK | Ministry of the Interior and Kingdom Relations of Netherlands |
|-----|---|
| CS | Citizen Science |
| D | Deliverable |
| EU | European Union |
| WG | Working Group |



1 Executive Summary

The final presentation comes in the form of a PDF file that can be used to present the project to other interested actors and provide a blueprint for replication to support reforms. It covers (1) citizen science and CitiMeasure, (2) the beginnings of the project, including the identified challenges formation of working groups, and their vision and mission, (3) best practices from other citizen science initiatives, (4) the instrument development, (5) the co-creation process, (6) the pilot stages, selection, and execution, (7) the final CitiMeasure outputs, (8) the training material provided, (9) highlights of selected events the CitiMeasure team participated in, (10) the communication and dissemination strategy employed, (11) the lessons learnt, and (12) a list of all deliverables.

2 Introduction

2.1 ABOUT CITIMEASURE

Citizen measurement, or citizen science, initiatives contribute to a sustainable transition in European cities. By using an array of tools and instruments, citizens can play a role in the measurement and monitoring of indicators on air quality, temperature, soil moisture, biodiversity, or risk management, among many other environmental areas. Citizen measurement initiatives also can foster communications and interactions among stakeholders and contribute to the democratisation of science and policy. The CitiMeasure project (2021-2023) aimed to bring together the experiences and expertise of European cities, organisations and networks in implementing citizen science initiatives (in the form of guidelines, toolbox, web-platform, Apps, etc.). The project built upon the lessons learned from the Dutch City Deal WGs, a network of stakeholders working on the broader area of smart cities, including citizen measurement initiatives. The City Deals are an instrument of the Dutch Ministry of Interior Affairs and Kingdom Relations. One of these is the City Deal 'A smart city'. CitiMeasure builds upon these experiences and has used those to develop and pilot three 'instruments', namely:

- 1. <u>Guidelines on Behaviour & Policy Change</u>
- 2. <u>Guidelines on Competencies for Digital Inclusion</u>
- 3. <u>CitiAIR</u>, a comparability tool for participatory air quality monitoring initiatives in Europe

A fourth working group, Strategy and Oversight, focused on providing strategic direction and ensuring cohesion of activities across the three Instrument Sub-Groups and the project in general. CitiMeasure also raised awareness of the importance of citizen measurement initiatives and capitalised on the results and tools of similar citizen science projects by creating an online European Knowledge Centre with a repository of good practices.

2.2 PURPOSE OF THIS REPORT

This report aims to describe and explain the final presentation of the project.

2.3 STRUCTURE OF THIS REPORT

The following chapter briefly outlines the contents of the final presentation.



3 Final presentation

3.1 CITIZEN SCIENCE AND CITIMEASURE

Readers are provided with a short introduction on citizen science (CS). CS is defined as a spectrum of participatory processes with the aim of studying an issue (often natural phenomena) using scientific methods and often involving collaboration between citizens, scientists, the private sector and (increasingly) decision-makers.



Figure 1: Graphic explaining CS

An overview of the CitiMeasure project (origins, duration, funding, objectives, outputs) is given.

3.2 **BEGINNINGS**

No project exists in a vacuum, and CitiMeasure is no exception. This section focuses on how CitiMeasure came about: it talks about the landscape review conducted at the beginning, desk studies, stakeholder mappings, and the identification of best practices across Europe. The section then takes us from the common CS challenges identified by the team to the formation of working groups (WGs) established to tackle the three most prevalent challenges of (1) comparability and interoperability, (2) behaviour and policy change, and (3) digital inclusion. Visions and objectives of the WGs are described, which helps the reader understand the final outputs (see section 3.6).



164 identified initiatives at different geographic scales





3.3 BEST PRACTICES

Before developing the instruments, best practices from citizen science initiatives across Europe – with relevance to the WG themes and geographic diversity – were identified. These are CurieuzeNeuzen, Marine LitterWatch, the Brenta-Bacchiglione Citizens Observatory, and D-NOSES.



Figure 3: Example slide of best practices

3.4 INSTRUMENT DEVELOPMENT

Here, the different instrument development phases are explained: (a) defining information-gathering procedures; (b) sharing documents, ideas, case studies, and best practices; (c) analysing and documenting; (d) developing the instrument; and (e) selecting the pilot projects.



Figure 4: The instrument development stages

3.5 CO-CREATION PROCESS

To achieve the best possible results for the three instruments, a co-creation process was initiated for each WG. This section presents the different stages of this process, as well as the preliminary result (see *D1.6: Prototypes of the three instruments*).





Figure 5: The WG co-creation process

3.6 PILOT STAGES

The pilot projects were brought to life to test the three WG instruments in practice. Section 3.6 explains the four stages of the piloting process: (1) planning, (2) piloting, (3) feedback, and (4) refinement. Next, the criteria applied to the selection of pilot project applicants are explained (feasibility of idea, timeline alignment, availability of resources). A graphic on how the CitiMeasure team ended up with nine different applications is provided. Another graphic focuses on the resources supplied by CitiMeasure and on the expectations towards pilots.







All four pilot projects (Barcelona, Roeselare, Prague, and CitiAIR) are presented using icons to indicate whether comparability (green), behaviour and policy change (blue), or digital inclusion (red) were tested.



Figure 7: Example slide of pilot project

3.7 OUTPUTS

The WGs managed to create three high-quality outputs in a short period of time. These are the (1) CitiAIR comparability tool for participatory air quality monitoring initiatives in Europe; (2) the Guidelines on Behaviour & Policy Change; and (3) the Guidelines on Competencies for Digital Inclusion. The three outputs, including links to the respective platforms, are included in the final presentation. A graphic illustrates the different stakeholders and actors the instruments were created for (Figure 9).



Figure 8: Example slide of the Guidelines on Behaviour & Policy Change





Figure 9: Target groups of the three instruments

3.8 TRAINING MATERIAL

To facilitate the implementation of the three outputs, the CitiMeasure team created additional training material for project initiators and decision-makers. This material ranges from instructions on how to use the CitiAIR tool to role plays for behaviour change to needs assessment workshops for maximising (digital) inclusion.



Figure 10: Training material slide with examples of different tools

3.9 SELECTED EVENTS

This section presents some of the events the CitiMeasure team participated in. These include (a) the Eurocities Environment Forum 2022, (b) the European Week of Regions and Cities, (c) the CitiMeasure webinar about the results of the pilot projects, and (d) the final CitiMeasure event.





Figure 11: Example slide of selected events

3.10 COMMUNICATION STRATEGY

Everything related to CitiMeasure was disseminated via dedicated social media channels on LinkedIn and Twitter (see *D3.4: Press and media activities*). The communication strategy included the publication of website articles (on citimeasure.eu and eurocities.eu), interviews, and policy briefs.

| Communication Strategy | A Real Barry Barr | Cit |
|------------------------|--|------------|
| Articles | How to initiate the function of the function o | |
| Interviews | proteins white any incident transaction and togetacliantian at the transaction tart the Charge (Central th | cributed v |
| Policy Briefs | How to make citizen science | tsid |
| | | 51 |

Figure 12: Example slide of communication strategy

3.11 LESSONS LEARNT

Continuously throughout the project, the CitiMeasure team reviewed and revised the different phases. This has been broadly summarised into six lessons learnt:



- 1. It is okay to change vision and adjust to change
- 2. Reflect on how to oversee the instrument WGs
- 3. Organise at least one meeting in person
- 4. Encourage more cross-working group cooperation
- 5. Think twice about resources needed for the pilot phase
- 6. Consider availabilities, including holidays



Figure 13: Visual representation of lessons learnt

3.12 DELIVERABLES

In this section, all deliverables are listed and linked (if already uploaded to website at the time of writing).



Annex 1 – Final presentation



Using citizen measurements to create smart, sustainable, and inclusive cities

CitiMeasure

Using citizen measurements to create smart, sustainable and inclusive cities

FINAL PRESENTATION



Funded by the European Union

The project has received funding from the European Union's Technical Support Instrument (TSI) programme under grant agreement 101046124





Citizen Science and CitiMeasure



Scientists

Private

sector

Technology

What is Citizen Science? Citizens Citizen Science entails a spectrum of participatory processes with the aim of studying an issue (often natural phenomena) using scientific methods and often involves **Decision**collaboration between citizens, makers scientists, the private sector and (increasingly) decision-makers.



Promoting citizen science to create smart, sustainable, and inclusive cities



June 2021 to May 2023



Originated from the Dutch City Deal, funded by DG REFORM



3+1 working groups, 40+ cities and organisations, +70 individual members



- 1. CitiAIR: Comparability Tool on Participatory Air Quality Initiatives
- 2. Guidelines on Behaviour & Policy Change
- 3. Guidelines on Competencies for Digital Inclusion



Using citizen measurements to create smart, sustainable, and inclusive cities







Dutch City Deal

CitiMeasure has built upon the lessons learnt from the Dutch City Deal WGs, a network of stakeholders working on the broader area of smart cities, including citizen measurement initiatives.

The City Deals are an instrument of the Dutch Ministry of Interior Affairs and Kingdom Relations (BZK).







Beginnings



Groundwork





Landscape review of EU citizen science initiatives

| Previous landscape reviews | Year | Project/thematic scope | Number of answers |
|----------------------------------|------|---|----------------------|
| Hecker et al | 2016 | Broad scope | 174 |
| JRC | 2018 | Environment related topics, especially focused on biodiversity | 503 |
| WeObserve | 2020 | Citizen observatories/environ ment related topics | Circa. 20 |

The landscape review of CitiMeasure (2021) followed a targeted approach to identify **citizen science initiatives** relevant to the **implementation of the CitiMeasure** project and the design of the **three instruments**



164 identified initiatives at different geographic scales



Identified Challenges in Citizen Science





Creation of Working Groups





Compara-

bility



Vision WG1

"Facilitate information sharing across different cities and organisations involved in air quality monitoring by creating an inventory of air quality monitoring activities and approaches.

This interactive tool will inform citizen science initiatives and city officials on what sensors to use to ensure the comparability with existing observations."



Behaviour

& Policy



Vision WG2

"Work towards increased understanding of the changes in behaviour of different stakeholder groups, as well as decision- and policy-making processes.

This includes changes in trust, participation behaviour, new culture of collaboration, sharing responsibilities, as well as established decision- and policy-making processes."



Digital

Inclusion



Vision WG3

"Work towards advancing the understanding of the issue of 'competencies' for digital inclusion.

This includes both unpacking competencies required by citizens to participate in citizen science initiatives, as well as those of policy-makers, decision-makers and municipal employees to engage citizens in such initiatives."



Strategy &

Oversight



Vision WG4

"Oversee the development of the instruments, implementation of the pilots and creation of the Knowledge Centre by identifying linkages between the instruments being developed, sharing good practices and new information, ensuring connections with external stakeholders, and being advocates for citizen science and CitiMeasure."







Best Practices



Selection Criteria



Objective: Use storytelling to help promote understanding and acceptance of citizen science

Curieuze Neuzen

Topic: Air quality (NO2) monitoring
Location: Antwerp/Flanders
Duration: Two measurement campaigns in 2016 and 2018

Initiator(s): University of Antwerp, De Standaard and the Flemish Environment Agency, and supported by three research organisations (VITO, HIVA and Kariboo)

Stakeholders: Citizens, research organisations, local authorities (Flemish Environment Agency), the media (De Standaard)

Comparability



Marine Litter Watch

Topic: Marine litter monitoring
Location: Beaches and other stretches of coast within and outside urban areas in Europe
Duration: 2014 – Present
Initiator(s): European Environment Agency

(EEA)

Stakeholders: EEA, NGOs, business and industry, coastal communities (e.g., local sports club, scouts), schools, universities, expert communities, public authorities

Behaviour & Policy



Brenta-Bacchiglione Citizens Observatory

Topic: Flood risk management Location: The Brenta-Bacchiglione catchment, the Veneto Region, Northern Italy Duration: October 2012 - Present Initiator(s): WeSenselt project partners Stakeholders: Citizens and Civil Society groups, the regional and local civil protection agencies, municipalities, environmental agencies, irrigation authorities

Behaviour & Policy



D-NOSES

Topic: Odour pollution

Location: 7 European and 3 non-European case studies (in Africa and South America)

Duration: April 2018 – September 2021

Initiator(s): D-NOSES project partners, coordinated by Fundación Ibercivis

Stakeholders: Citizens, industries, local government, (odour and citizen science) experts

| Compara- | Digital |
|----------|-----------|
| bility | Inclusion |
| | Į. |







Instrument Development





Instrument Development



SHARE

ANALYSE DEVELOP

WG members provide documents and sources for the development of the instruments

WG members jointly analyse the shared documents and additional sources found

WG members codesign the structure of the instruments, and provide input for their content development





Co-Creation Process



What do we mean by co-creation?





Collaboration space developed to facilitate co-creation



Support by external experts with expertise on the topics of citizen science and air quality



Working sessions dedicated to reflect on formulations and conceptualisations



Opportunities for feedback after every co-creation session













Pilot Stages

Pilot Stages





Criteria for Pilot Selection

- 1. Feasibility of pilot idea and scope
- Alignment between timeline of planned activities of cities/initiatives and timeline of CitiMeasure pilot phase (May – December 2022)
- Availability of resources (mainly dedicated staff and time) both in the pilot project and Eurocities



EUROCITIES









Provide technical support with the testing of the instruments





Coordinate with the working groups and external experts to support the refinement of the instrument

Provide **guidance** throughout the

Translation, based on the pilot needs





PILOT PROJECTS

Collaborate for the co-creation and implementation of pilot plans

Provide **resources** (staff and time) for piloting the instruments



Provide **feedback** on piloting the instrument

Behaviour

& Policy

ST

The Barcelona Citizen Science Office

Digital Inclusion The pilot in Barcelona consisted of three steps:

- 1. Online needs assessment workshop to identify focus of (training) workshops
- 2. Workshop on Guidelines on Behaviour & Policy Change (in person)
- Workshop on Guidelines on (1) Behaviour & Policy Change and (2) Competencies for Digital Inclusion (in person)

Smartwaterland in Roeselare

The pilot in Roeselare selected specific **recommendations** from the BP guidelines:

- To strengthen the communication efforts of Smartwaterland by developing a communication plan to disseminate the activities and main outcomes of the project to the school and parents, and the public
- 2. To help develop robust monitoring and evaluation plans for the project to ensure long-term outcomes for the city and all stakeholders



Sensor2 School in Prague

The pilot in Prague used the **competencies framework** from the DI guidelines:

- Testing application of DI guidelines to assess the competencies required for, and acquired from, participation in the Sensor2School initiative
- 2. Pre- and post-survey design to determine learning effect from working with air quality monitoring sensors

Digital Inclusion

CitiAIR

Comparability

The CitiAIR pilot consisted of **three steps**:

- Polishing the online tool by testing it internally to make sure it fits the purpose for a wider audience
- 2. Adding initiatives to both improve the user experience and create a pool of initiatives attracting people to use the tool
- 3. Disseminating the tool as a unique online experience to share valuable information with the aim of improving the comparability of air quality initiatives

March 2022

Instrument development phase

Start

Abril 2022



D_{ecember} 20₂₂

> Monthly meeting

November 2022

> Co. creation with WGS

> > Feedback

^{Refinemen}

Feedback from pilots was gathered through (1) regular meetings and interactions between pilots and CitiMeasure team, and (2) dedicated sessions in which pilots shared their learnings with WGs

May 2022

Monthly pilot meeting

> Format and resources

June 2022

Co. Creation With WGs

Plan

Feedback

Refinem_{ent}

Pilot

Collected feedback from previous stage was used to **refine** and improve instruments, in collaboration with pilots and WGs

> o_{ctober} 2022

> > Monthly meeting

> > > Pilot Feedback

September

Co. creation with WGS

Pillot

Feedback

ef,

End of August 2022

> Monthly meeting

> > Pillot

Feedback

July 2022

Monthly meeting

Pillot

Feedback





Outputs

Cit Measure ... Share Compare Be seen CLICK!

Comparability **Outputs**

Behaviour & Policy

F

Guidelines on Behaviour & Policy Change

A set of recommendations for cities and the citizen science community



EURO CITIES

This project has received funding from the European Union's Technical Suppoinstrument (TSU programme under graagreement 101046124.

CLICK!



Outputs











Training Material





Training Material









Selected Events



1 Eurocities Environment Forum 2022





Topic: Behaviour change for the transition to climate neutrality

Grenoble, 6-8 April 2022



Introduction of the work of CitiMeasure to multiple working groups



Presentation of CitiMeasure instruments led by cities of Barcelona, Ghent, Warsaw and Murcia



2 European Week of Regions and Cities





Biggest annual Brusselsbased event dedicated to cohesion policy bringing together regions and cities from all over Europe



90-minute CitiMeasure workshop on "Achieving green and just transition with citizen science" (12 October 2023)



Cooperation with European Citizen Science Association



83 registrants



3 Webinar about Pilot Results



Successful demonstration of guidelines in practice



27 participants



First-hand experience of the three pilot projects



4 Final CitiMeasure Event









101 registrants, 57 participants



Panel discussion about the future of citizen science



Positive feedback on the three final instruments



Linking the results to livingin.eu to sustain impact





Communication Strategy



Articles

Interviews





Jasmien Wellens, Project Leader Innovation and Digitalisation at the Strategic Unit of the City of Roeselare, is telling us how this project has become a pilot for CitiMeasure and how it has helped them take Smartwaterland to the next level.

How do you work with students?

We teach the students using an educational package that helps them put together the pluviometer and understand what it does and how to use it. Then they bring it home and start gathering data about rainfalls etc.

The data will be helpful to the city for its predictions, but it can also be used by the students in classes like statistics or geography.



5 steps to promote citizen science



00





Example of Guidelines Campaign (LinkedIn)



CitiMeasure consumers 280 followers 1mo - Edited - 🚱

Making #citizenscience more inclusive with our Guidelines on Competencies for Digital Inclusion. 🎎

🚮 Join us on 4 May for the launch.

Register here: https://lnkd.in/emFwZ525

Eurocities European Commission SEI - Stockholm Environment Institute University of York RDM Rotterdam Sven Schade Sarah West Peter van Waart



CitiMeasure control 280 followers 1mo · Edited · 🚱

Want to engage more people in shaping your city?

Then don't forget to sign up for the launch of our #citizenscience (1) Guidelines on Behaviour & Policy Change and (2) Guidelines on Competencies for Digital Inclusion.

Together with our speakers, we will explore the untapped potential of citizen science initiatives. 🖓

1 4 May, 15:00-16:30

Register here: https://lnkd.in/emFwZ52S

Eurocities European Commission SEI — Stockholm Environment Institute University of York RDM Rotterdam Sven Schade Sarah West Peter van Waart

CitiMeasure presents the session



Launch of the CitiMeasure **Behaviour & Policy and Digital Inclusion e-guidelines**



the Joint Gatearch Center





Online

6 May, 2023



Example of CitiAIR Campaign (Twitter)





Lessons Learnt





55





Deliverables

Deliverables



WP1: Instrument development and pilots

D1.1 Landscape review D1.2 Four case studies D1.3 Stakeholder mapping D1.4 Vision and objectives D1.5 Draft implementation plan D1.6 Prototypes D1.7 Pilot guidelines D1.8 Pilot plans D1.9 Final reports D1.10 Pilot case studies D1.11 Final implementation plan D1.12 Final instruments

WP2: Knowledge centre

D2.1 Knowledge centre website D2.2 Tools to implement the pilots D2.3 Three webinars D2.4 Training programme [confidential] D2.5 Knowledge centre business plan [confidential]

WP3: Communication and dissemination

D3.1 Brand and visual identity D3.2 Stakeholder engagement and advocacy plan D3.3 Online and physical events D3.4 Press and media activities D3.5 Yearly presentations

WP4: Project management and coordination

D4.1 Establish an online collaboration space [confidential] D4.2 Final presentation of the project D4.3 General project overview D4.4 Recommendation report on communication

Visit <u>https://citimeasure.eu/</u> for more information

Cit Measure

Berry Mr. Samerican

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