CitiMeasure

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

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

EC Technical Support Instrument Grant Agreement number 101046124

Call: TSI-2021-SMARTCITIES-IBA

Topic: Citizen's participation and green solutions in smart cities

Type of action: TSI-PJG

Deliverable 4.2: A final presentation of the project

Delivery Year: 2023

DOCUMENT INFORMATION

Project Number	101046124	Acronym	CitiMeasure
Full title	CitiMeasure - using citizen measurements to create smart, sustainable, and inclusive cities		
Project URL	https://eurocities.eu/projects/citimeasure/		
EU Project officer	Aleksandra Marchewka		

Deliverable Number	D4.2	Title	*A final presentation of the project*
Work package Number	4	Title	*Project management and coordination*

Date of delivery	Contractual	Month 24 *May 2023*	Actual	Month 24 *May 2023*
Dissemination Level	Public			

Authors (Partner)	Eurocities		
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Partner	Eurocities		

Abstract (for dissemination)	This report includes a final presentation of the project
Keywords	communication

Version Log			
Version as date	Author	Partner	Change
2023_05_17	Irene Vivas	Eurocities	Initial document and content creation
2023_05_22	Loe Guthmann	Eurocities	Design of the presentation and inputs to different sections
2023_05_23	Brooke Flanagan	Eurocities	Final internal review
2023_05_31	Farida Polsbroek	BZK	External review

To cite this document:

Guthmann, L., Vivas Lalinde, I., Flanagan, B. (2023). D4.2: A final presentation of the project. *Deliverable report of the CitiMeasure project (grant agreement No 101046124), Brussels, Belgium.*

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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 buildt 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. Guidelines on Behaviour & Policy Change
2. Guidelines on Competencies for Digital Inclusion
3. CitiAIR, 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.

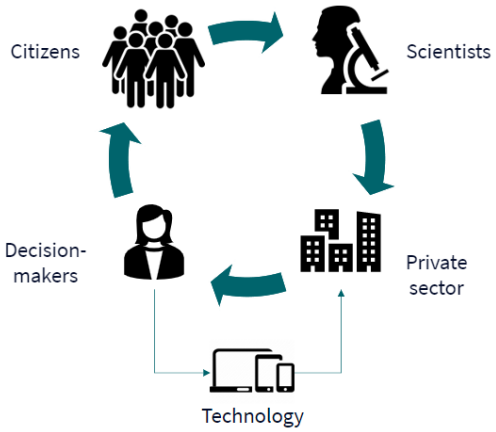


Figure 1: Graphic explaining CS

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).

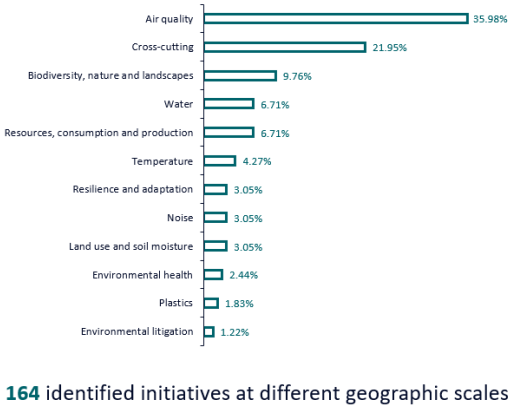


Figure 2: Example of a landscape review graphic

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.

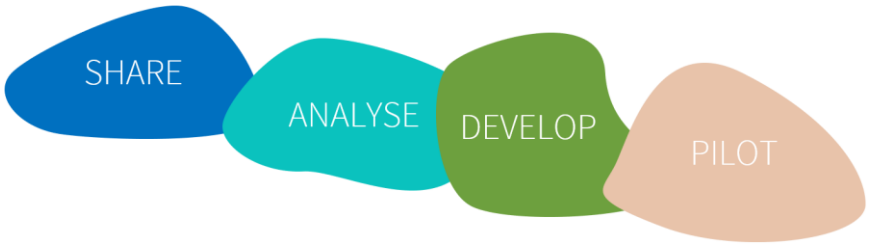


Figure 4: The instrument development stages

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*).

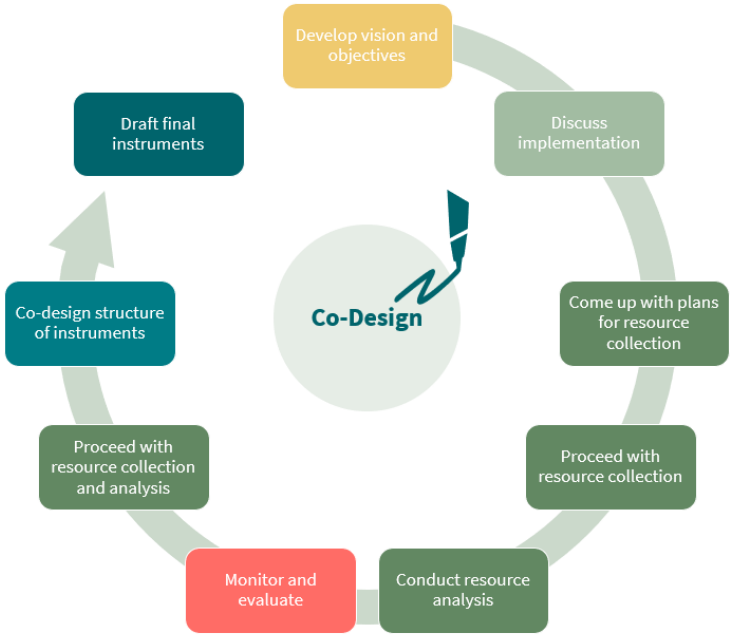


Figure 5: The WG co-creation process

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.

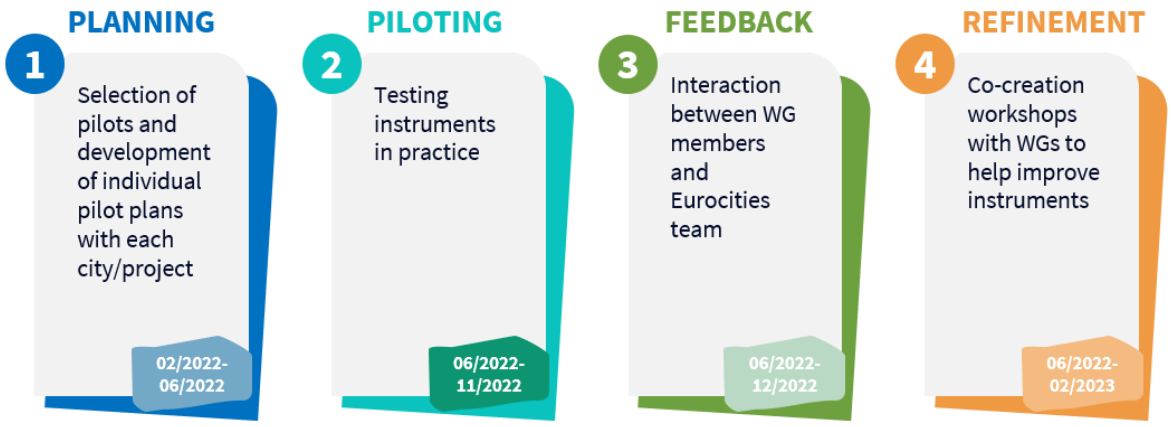


Figure 6: Stages of piloting process

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

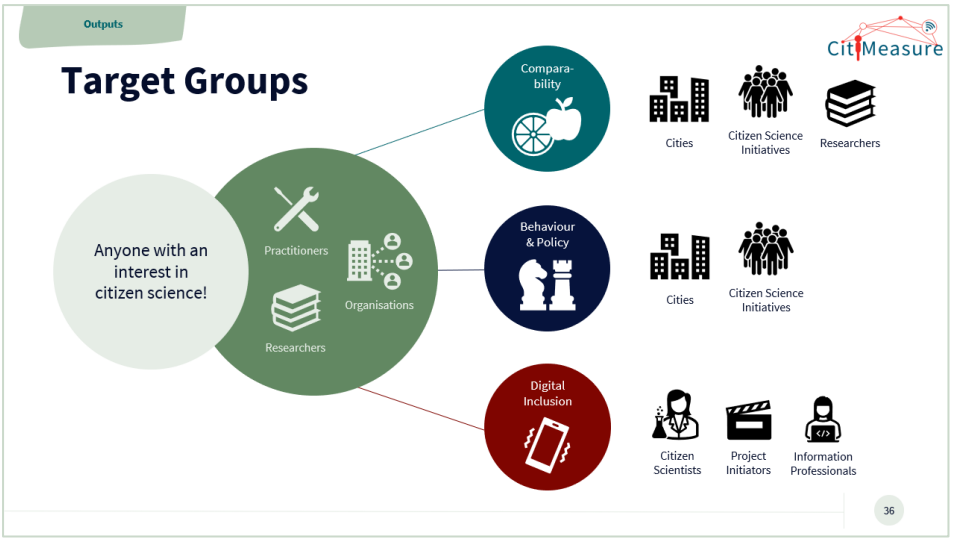


Figure 9: Target groups of the three instruments

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.

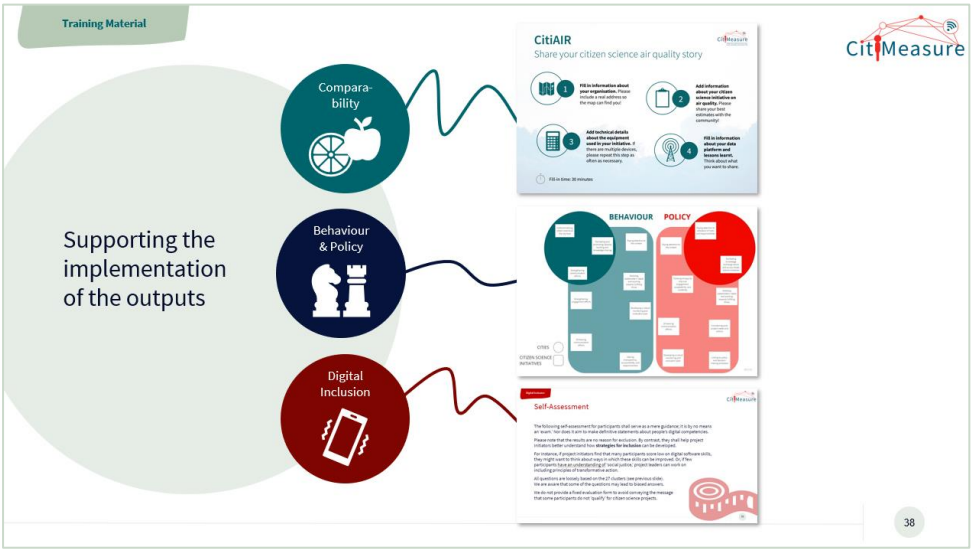


Figure 10: Training material slide with examples of different tools

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.

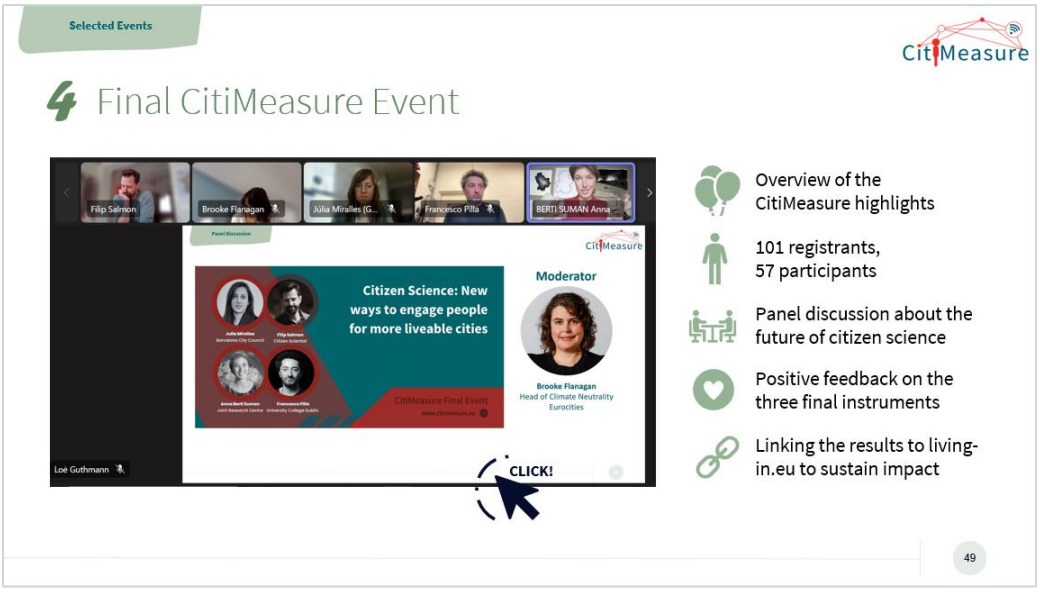


Figure 11: Example slide of selected events

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.

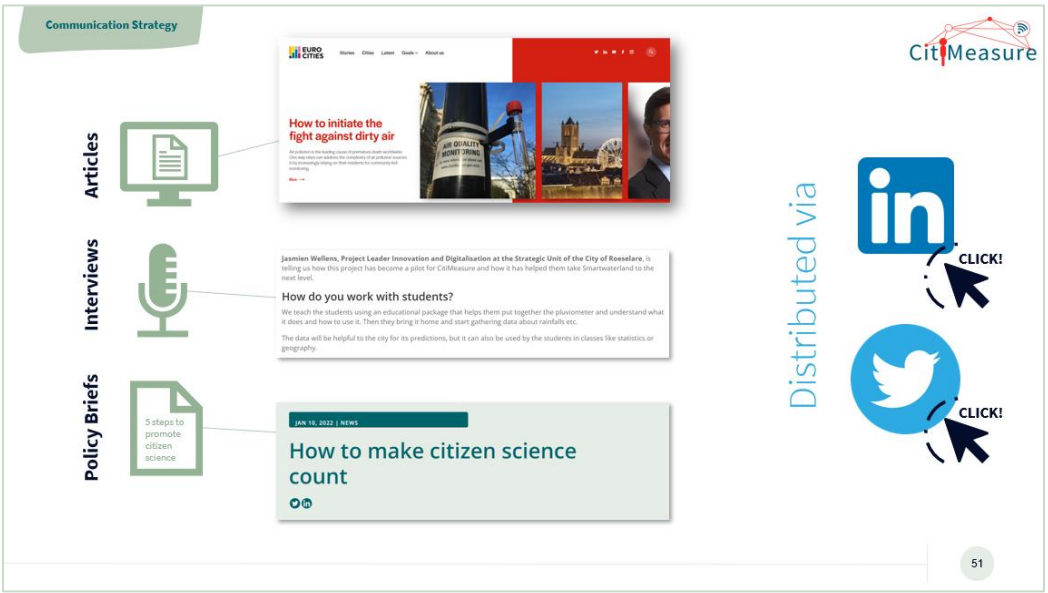


Figure 12: Example slide of communication strategy

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

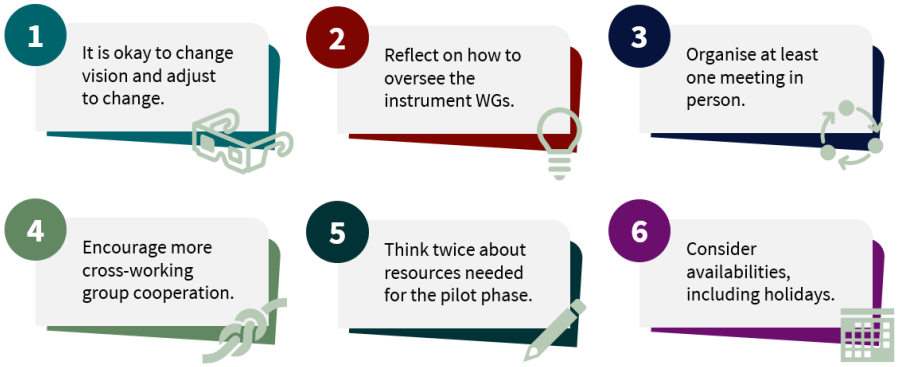


Figure 13: Visual representation of lessons learnt

3.12 DELIVERABLES

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

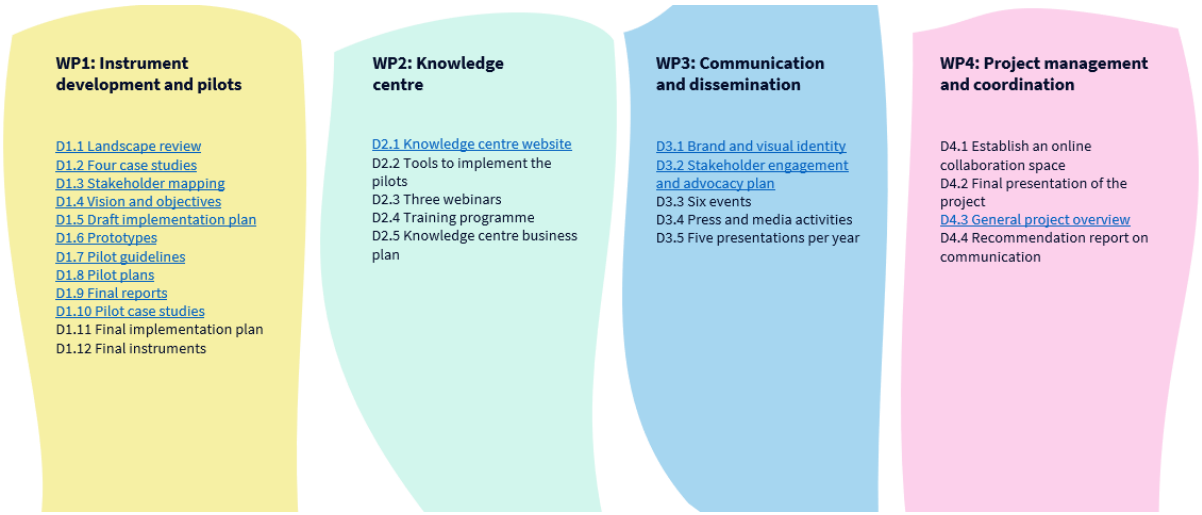


Figure 14: List of deliverables

Annex 1 – Final presentation

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

CitiMeasure

Using citizen measurements to create smart, sustainable and inclusive cities

FINAL PRESENTATION

EUROCITIES

Funded by the European Union

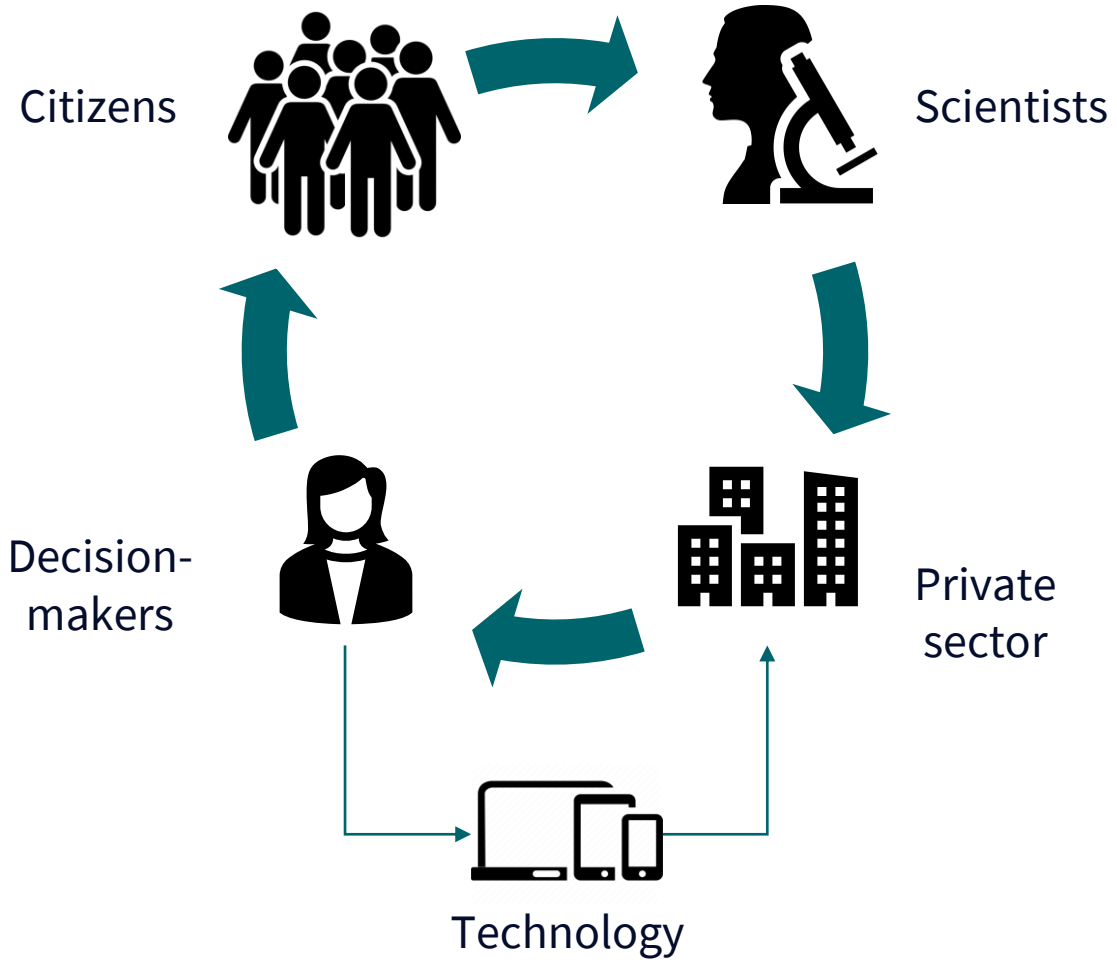
The project has received funding from the European Union's Technical Support Instrument (TSI) programme under grant agreement 101046124

1

Citizen Science and CitiMeasure

What is Citizen Science?

Citizen Science entails a spectrum of **participatory processes** with the aim of studying an issue (often natural phenomena) using scientific methods and often involves **collaboration** between **citizens**, **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**

EUROCITIES

CitiMeasure

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

CLICK!

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).

2

Beginnings

Groundwork

A Desk research to understand landscape

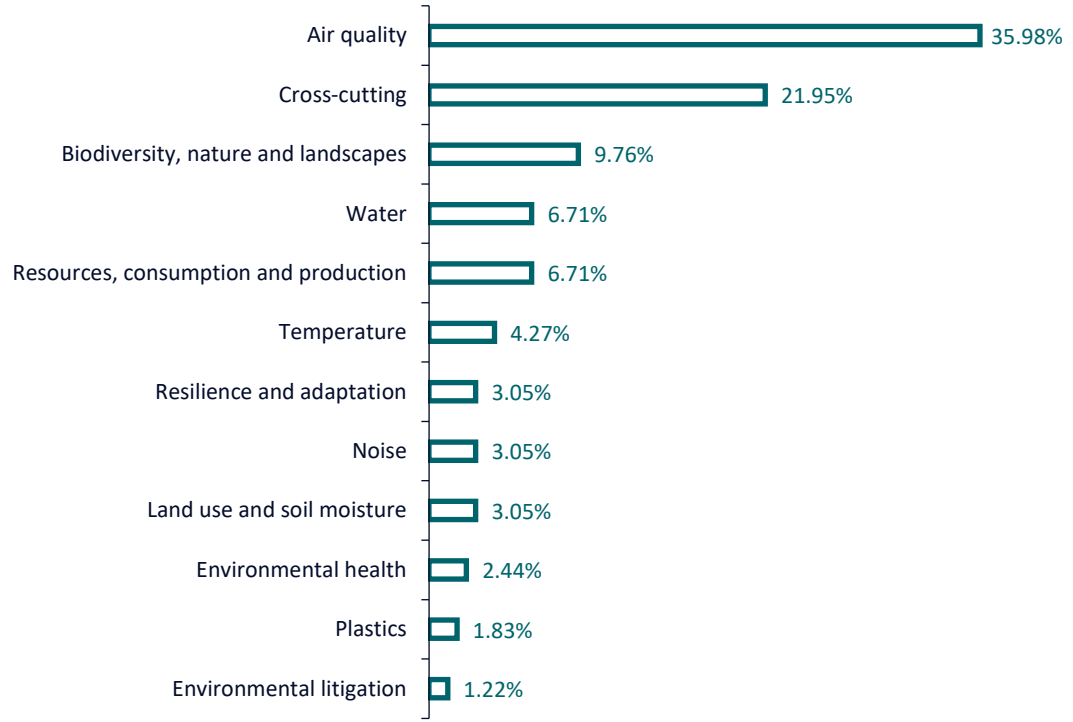
B Mapping key actors and stakeholders

C Identifying best practices across Europe

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/environment 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**

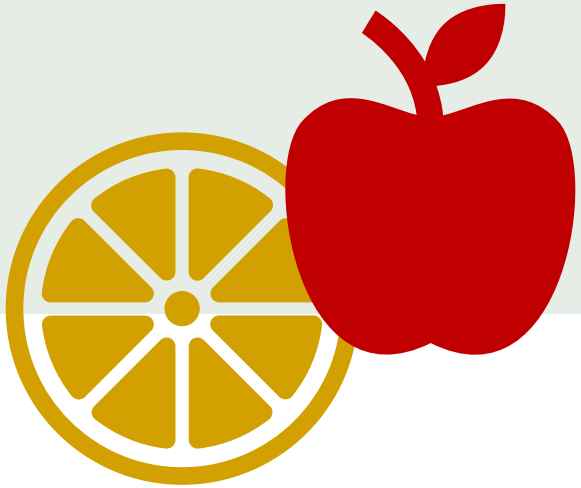


164 identified initiatives at different geographic scales

Identified Challenges in Citizen Science

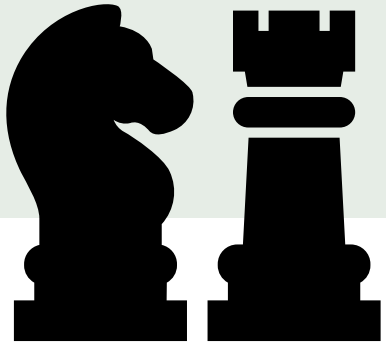
1

Comparability and Inter-operability



2

Changing behaviour and impacting policies



3

Addressing the Digital Divide

Creation of Working Groups

Comparability WG **1**

Behaviour & Policy WG **2**

Digital Inclusion WG **3**

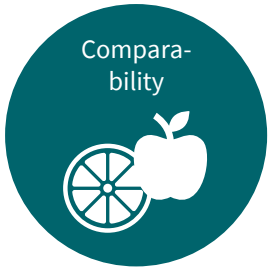
\+ Strategy & Oversight WG **4**

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."

1. Co-design a structure for the inventory of air quality monitoring activities and approaches
2. Validate the co-designed structure by receiving feedback from WG members
3. Continuously add to initiatives to inventory from organisations within and outside of WG
4. Create online interactive tool(s) for city officials and citizen science initiatives for better information flow
5. Pilot the developed tool(s) and aim for the inclusion of 50 air quality monitoring initiatives
6. Consolidate the tool with lessons learnt from the pilot phase and further analysis



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."

1. Share ideas, case studies, best practices related to behaviour and policy change in citizen science
2. Jointly analyse/document lessons learnt from (un)-successful initiatives for catalysing changes in behaviour and policy
3. Develop guidelines and principles on behaviour and policy change for cities and citizen science
4. Pilot the developed best practice in at least one real life example of citizen science initiatives
5. Consolidate the guide-lines with lessons learnt from the pilot phase and further analysis

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."

1. Share ideas, case studies, best practices of digital inclusion in citizen science initiatives
2. Jointly analyse/document competencies (knowledge, skills, attitude) required for engagement and participation
3. Map the identified competencies against specific purposes and applications
4. Develop guidelines for cities and citizen science to enhance competencies for digital inclusion
5. Pilot the developed guidelines in at least one real-life example of citizen science initiatives
6. Consolidate the guide-lines with lessons learnt from the pilot phase and further analysis

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."

1. Ensure strong oversight, support and advice of the WGs and the instruments being developed
2. Monitor and support pilots and ensure that lessons learnt are shared
3. Develop foresight for citizen science and CitiMeasure
4. Support development of the Knowledge Centre and its long-term business plan
5. Engage with external stakeholders and policy-makers through events, keynotes and policy briefs

Strategy & Oversight

3

Best Practices

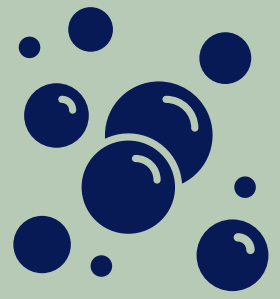
Selection Criteria

1

Relevance for Working Groups

2

Thematic and Geographic Diversity



3

Previous References as Best Practices

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

A

Curieuze Neuzen

Topic: Air quality (NO_2) 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)

B

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

C

Brenta-Bacchiglione Citizens Observatory

Behaviour & Policy

Topic: Flood risk management

Location: The Brenta-Bacchiglione catchment, the Veneto Region, Northern Italy

Duration: October 2012 – Present

Initiator(s): WeSenseIt project partners

Stakeholders: Citizens and Civil Society groups, the regional and local civil protection agencies, municipalities, environmental agencies, irrigation authorities

D

D-NOSES

Topic: Odour pollution

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

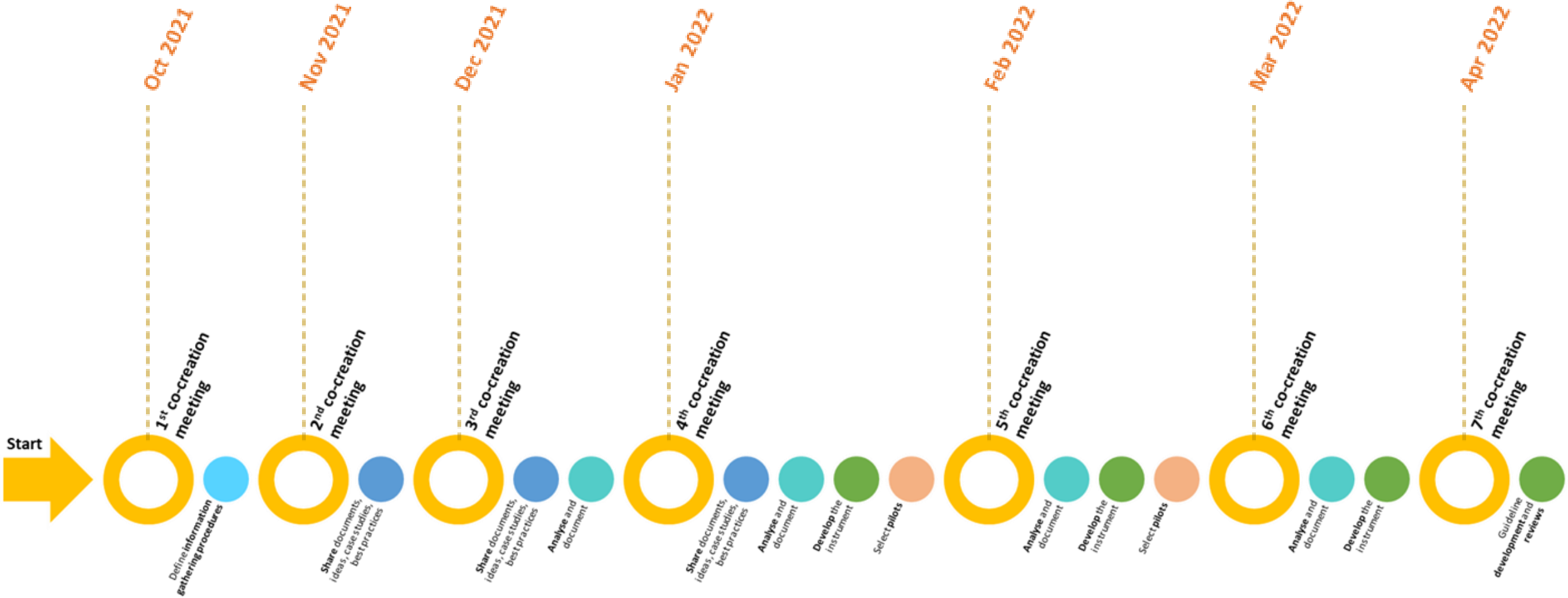
Duration: April 2018 – September 2021

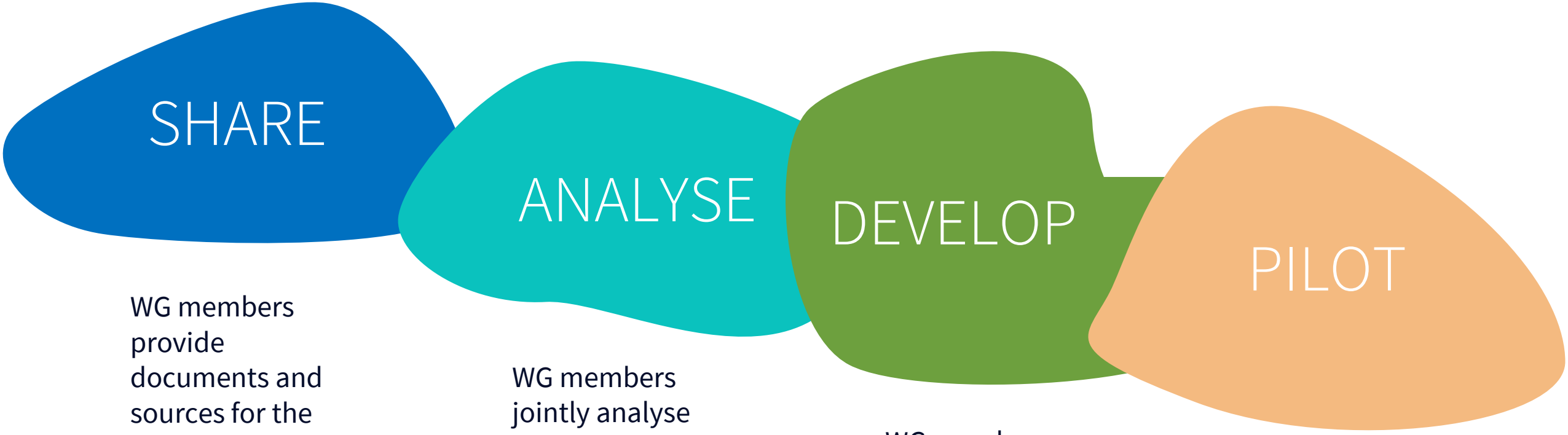
Initiator(s): D-NOSES project partners, coordinated by Fundación Ibercivis

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

4

Instrument Development


Oct 2021
Nov 2021
Dec 2021
Jan 2022
Feb 2022
Mar 2022
Apr 2022
Start
1st co-creation meeting
Define information gathering procedures
2nd co-creation meeting
Share documents, ideas, case studies, best practices
3rd co-creation meeting
Share documents, ideas, case studies, best practices
Analyse and document
4th co-creation meeting
Share documents, ideas, case studies, best practices
Analyse and document
Develop the instrument
Select pilots
5th co-creation meeting
Analyse and document
Develop the instrument
Select pilots
6th co-creation meeting
Analyse and document
Develop the instrument
7th co-creation meeting
Guideline development and reviews



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

WG members jointly analyse the shared documents and additional sources found

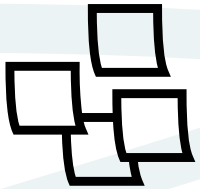
WG members co-design the structure of the instruments, and provide input for their content development

5

Co-Creation Process

What do we mean by co-creation?

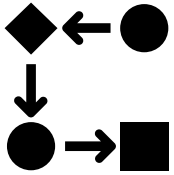
Numerous facilitated online sessions



Use of programmes such as Miro and MURAL for interactive exercises

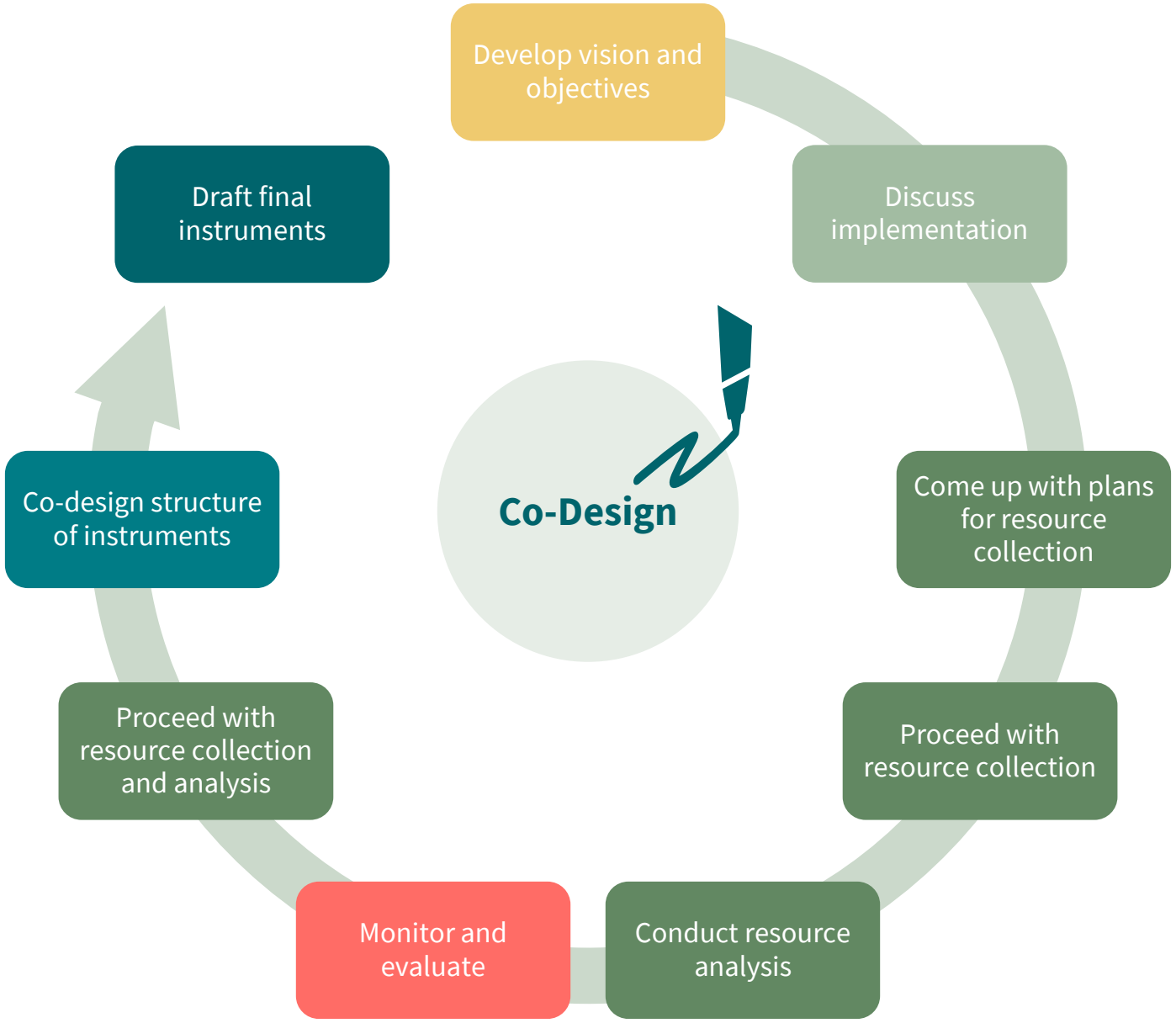
Collaboration space developed to facilitate co-creation

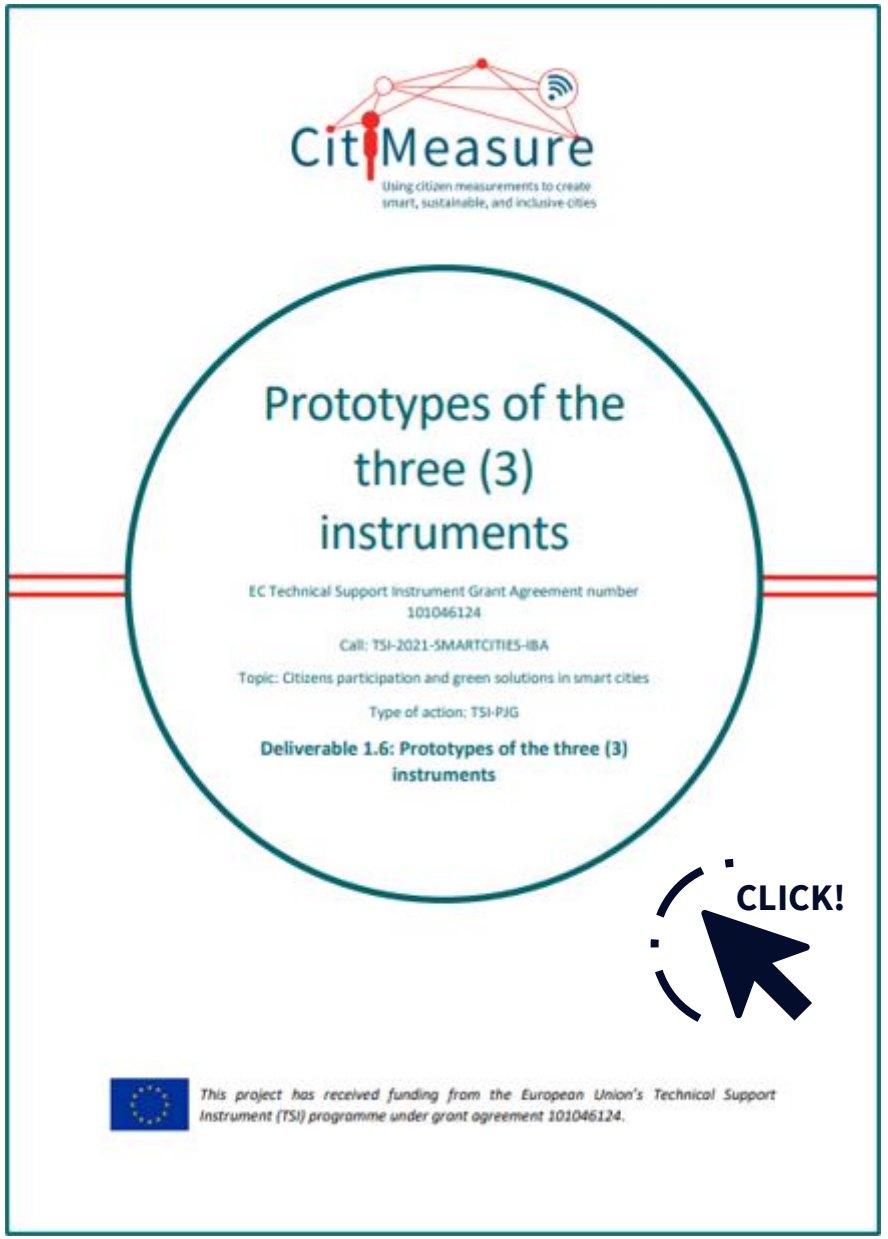
Support by external experts with expertise on the topics of citizen science and air quality



Working sessions dedicated to reflect on formulations and conceptualisations

Opportunities for feedback after every co-creation session


Develop vision and objectives
Discuss implementation
Come up with plans for resource collection
Proceed with resource collection
Conduct resource analysis
Monitor and evaluate
Proceed with resource collection and analysis
Co-design structure of instruments
Draft final instruments
Co-Design


CitiMeasure
Using citizen measurements to create smart, sustainable, and inclusive cities
Prototypes of the three (3) instruments
EC Technical Support Instrument Grant Agreement number 101046124
Call: TSI-2021-SMARTCITIES-IBA
Topic: Citizens participation and green solutions in smart cities
Type of action: TSI-PJG
Deliverable 1.6: Prototypes of the three (3) instruments
CLICK!
This project has received funding from the European Union's Technical Support Instrument (TSI) programme under grant agreement 101046124.

6

Pilot Stages

1 PLANNING

Selection of pilots and development of individual pilot plans with each city/project

02/2022-06/2022

2 PILOTING

Testing instruments in practice

06/2022-11/2022

3 FEEDBACK

Interaction between WG members and Eurocities team

06/2022-12/2022

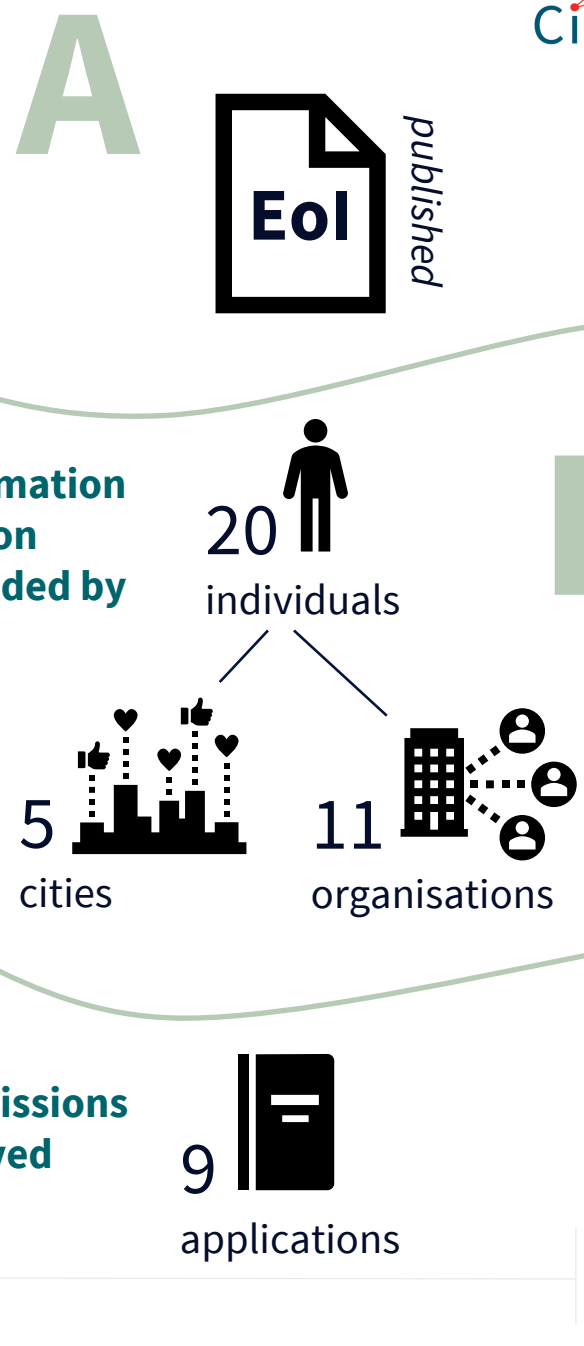
4 REFINEMENT

Co-creation workshops with WGs to help improve instruments

06/2022-02/2023

Criteria for Pilot Selection

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



CitiMeasure

EUROCITIES

Provide **guidance** throughout the process in the development and implementation of pilot plans

Provide **technical support** with the testing of the instruments

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

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

1

The Barcelona Citizen Science Office

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)
3. Workshop on Guidelines on (1) Behaviour & Policy Change and (2) Competencies for Digital Inclusion (in person)

2

Smart-water-land in Roeselare

Behaviour & Policy

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

1. 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

3

Sensor2 School in Prague

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

1. 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

4

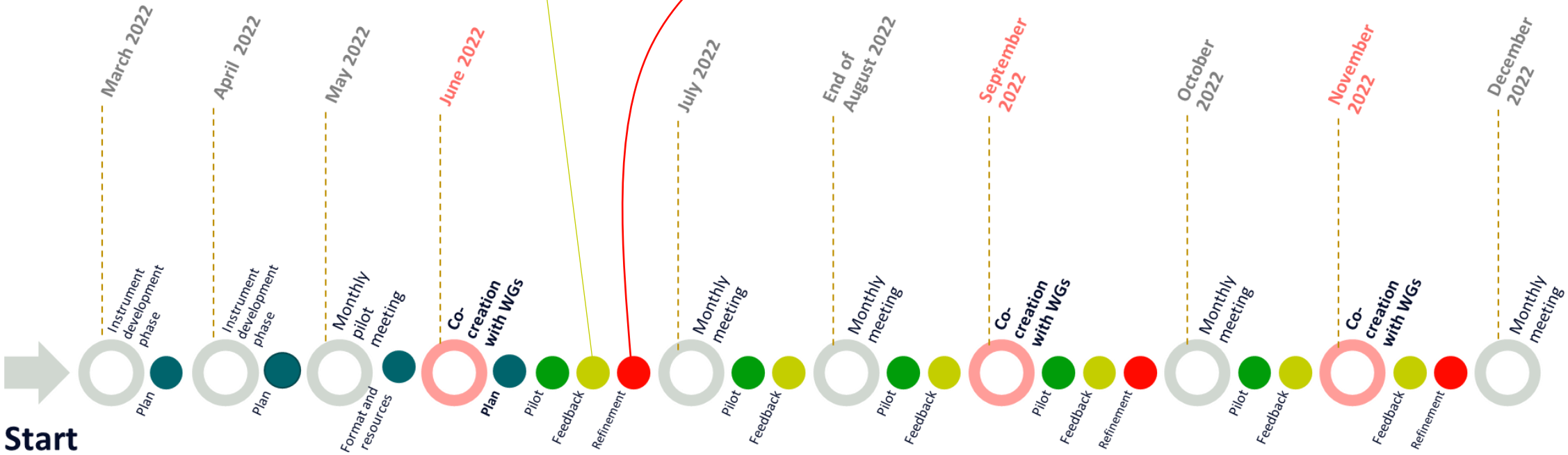
CitiAIR

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

1. 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

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

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



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Outputs

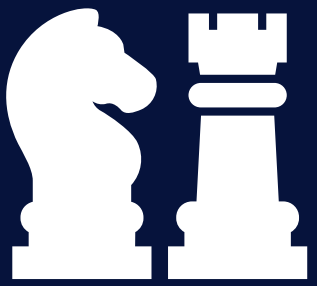
1

Compara-bility

CLICK!

2

Behaviour & Policy



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3

Digital Inclusion

CLICK!

Target Groups

Anyone with an interest in citizen science!

Practitioners

Organisations

Researchers

Compara-bility

Cities

Citizen Science Initiatives

Researchers

Behaviour & Policy

Cities

Citizen Science Initiatives

Digital Inclusion

Citizen Scientists

Project Initiators

Information Professionals

8

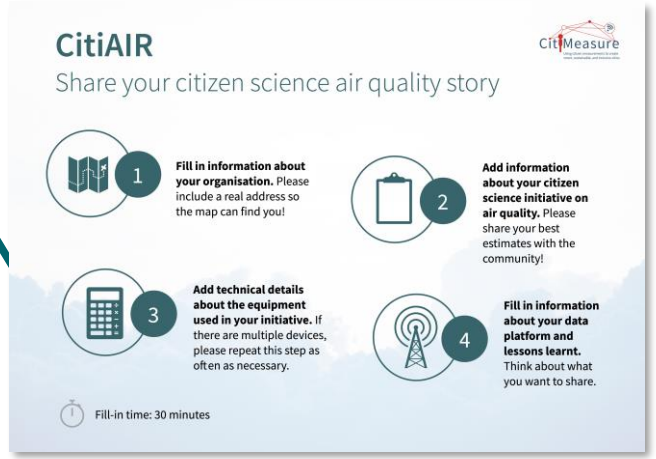
Training Material

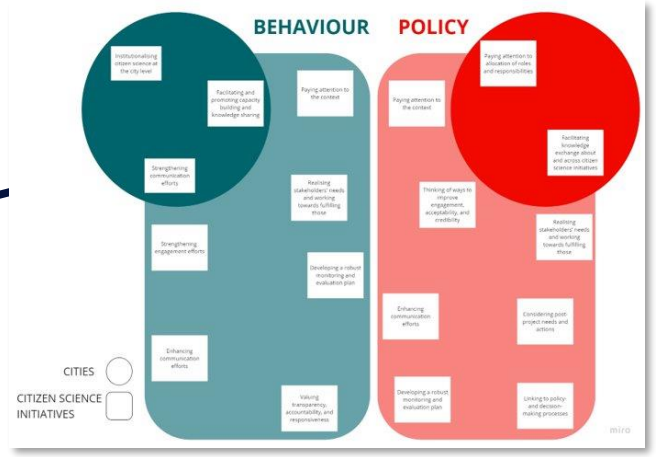
Supporting the implementation of the outputs

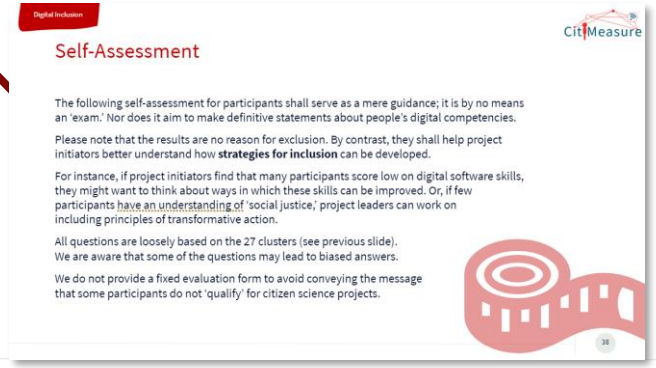
Compara-bility

Behaviour & Policy

Digital Inclusion







LINKS

Compara-bility

Behaviour & Policy

Digital Inclusion

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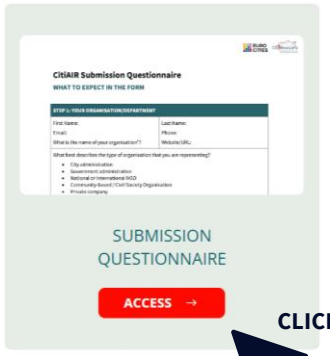

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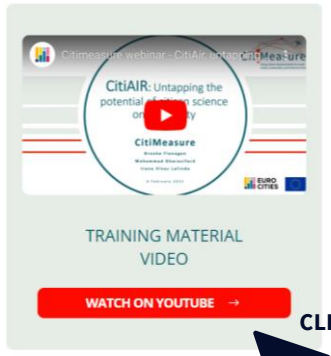

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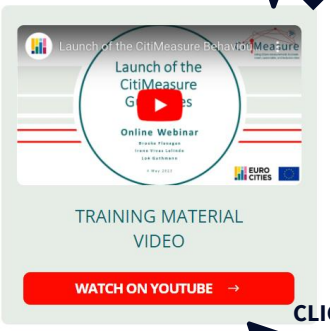

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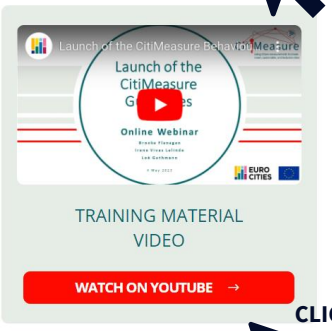

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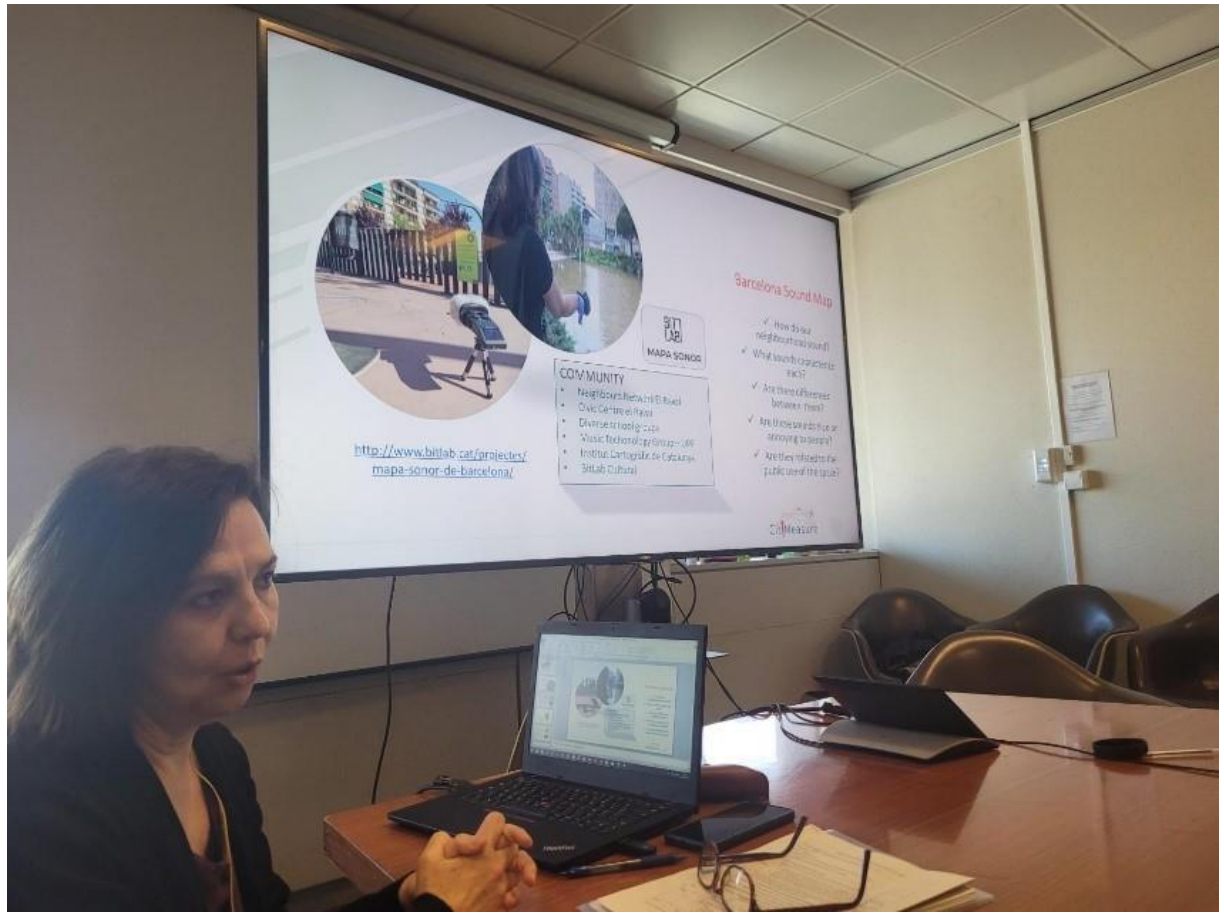
Selected Events

1 Eurocities Environment Forum 2022



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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 Brussels-based 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

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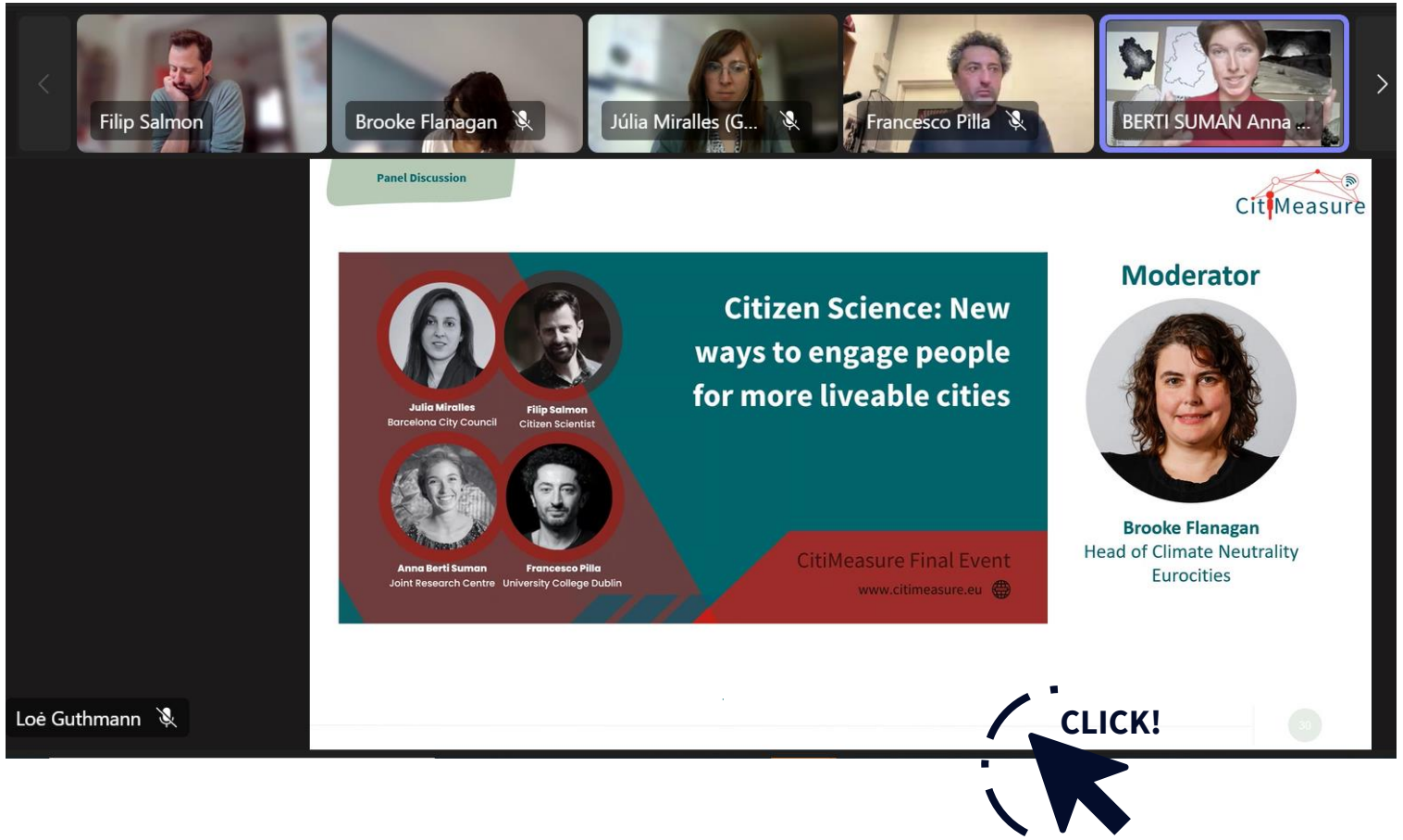
4 Final CitiMeasure Event



- Overview of the CitiMeasure highlights
- 101 registrants, 57 participants
- Panel discussion about the future of citizen science
- Positive feedback on the three final instruments
- Linking the results to living-in.eu to sustain impact

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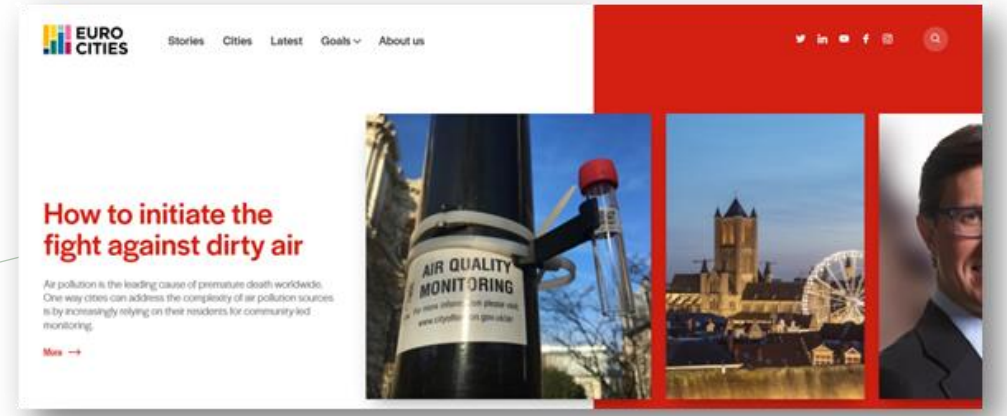
Communication Strategy

CitiMeasure

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.

Policy Briefs

5 steps to promote citizen science

JAN 10, 2022 | NEWS

How to make citizen science count

Distributed via

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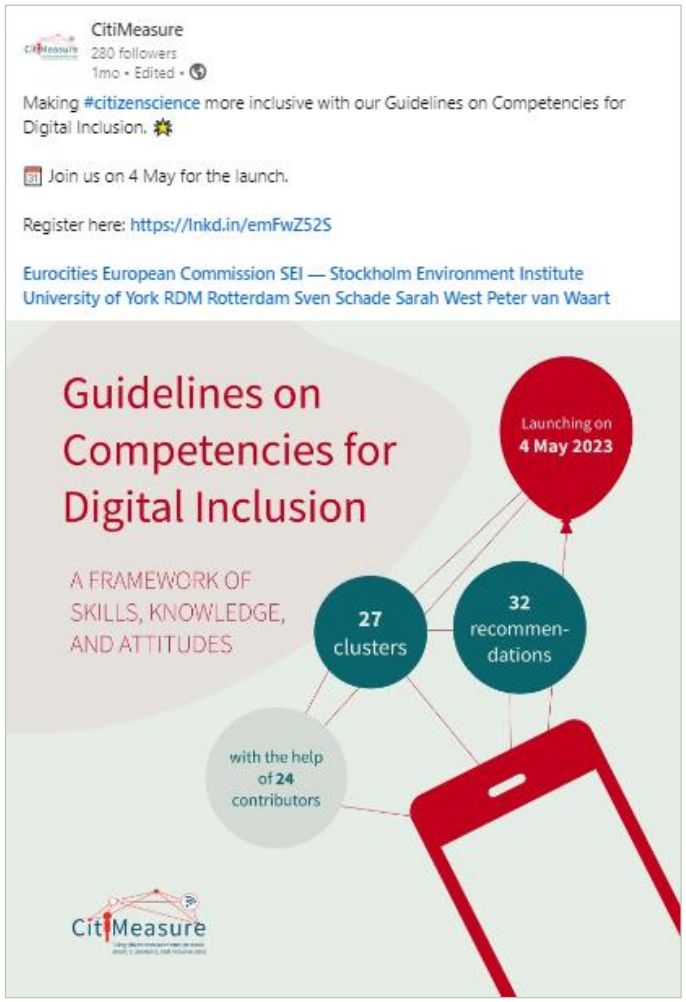
Example of Guidelines Campaign (LinkedIn)



Example of CitiAIR Campaign (Twitter)

Compara-bility

11

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.

12

Deliverables

CitiMeasure

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
D2.5 Knowledge centre business plan

WP3: Communication and dissemination

D3.1 Brand and visual identity
D3.2 Stakeholder engagement and advocacy plan
D3.3 Six events
D3.4 Press and media activities
D3.5 Five presentations per year

WP4: Project management and coordination

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

Visit https://citimeasure.eu/
for more information

CitiMeasure

Funded by
the European Union

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