

CitiMeasure - using citizen measurements to create smart, sustainable, and inclusive cities

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Contents

Document Information	2
1 Executive Summary.....	6
2 Introduction	6
2.1 About CitiMeasure	6
2.2 Purpose of this report.....	6
2.3 Structure of the report.....	6
3 CitiMeasure pilots	7
3.1 Smartwaterland – the City of Roeselare	7
3.1.1 Background	7
3.1.2 Aim and approach of the pilot	8
3.1.3 Implementation of the pilot plan.....	8
3.1.4 Outputs of the Smartwaterland pilot.....	10
3.1.5 Main findings and conclusions.....	10
3.2 Training workshops - the City of Barcelona	11
3.2.1 Background	11
3.2.2 Aim and approach of the pilot	11
3.2.3 Implementation of the pilot plan.....	11
3.2.4 Main findings and conclusions.....	15
3.3 Sensor2School (Senzory do škol) - Prague	16
3.3.1 Background	16
3.3.2 Aim and approach of the pilot	16
3.3.3 Implementation of the pilot plan.....	17
3.3.4 Outputs of the Sensor2School pilot	18
3.3.5 Main findings and conclusions.....	20
3.4 Comparability tool	21
3.4.1 Aim and approach of the pilot	21
3.4.2 Implementation of the pilot plan.....	21
3.4.3 Outputs of the CitiAIR pilot	25
3.4.4 Main findings and conclusions.....	26
3.5 Balbyn'air – the City of Bobigny.....	27
3.5.1 Background	27
3.5.2 Aim and approach of the pilot	27
3.5.3 Implementation of the pilot plan.....	28

4	Concluding remarks and next steps	29
	References	29
	Annex 1 - Smartwaterland Communication Strategy	30
	Annex 2 – Selected indicators and impact domains for evaluation of Smartwaterland	33
	Annex 3 – Sensor2School 1st Survey - Primary schools.....	35
	Annex 4 – Sensor2School 1st Survey - High schools.....	41
	Annex 5 – Sensor2School 2nd Survey - Primary schools	47
	Annex 6 – Sensor2School 2st Survey - High schools.....	52
	Annex 7 – List of contacted organisations and pending initiatives that were invited to join CitiAIR... 58	
	Annex 8 – Screenshots of Miro boards - online needs assessment workshop 14 July.....	61

Table of figures

Figure 1	Showcase of Smartwaterland pluviometer at a school	8
Figure 2	Screenshot of the online needs assessment workshop on 14 July 2022	12
Figure 3	CitiMeasure session at the citizen science conference in Sabadell	13
Figure 4	Opening of the seminar and introduction to citizen science/CitiMeasure.....	14
Figure 5	Example of Sensor2School device and information board	16
Figure 6	Sensor building workshops at schools	18
Figure 7	CitiAIR promoted via the Dutch Citizen Science network (CS-NL) - November 2022	22
Figure 8	CitiAIR promoted via the Flemish citizen science network (Scivil) on Twitter - November 2022	23
Figure 9	CitiAIR promoted via the Austria's Agency for Education and Internationalisation (OeAD) - December 2022.....	23
Figure 10	CitiAIR promoted via the City Deal toolbox	24
Figure 11	Social media posts in CitiMeasure's LinkedIn and Twitter	25
Figure 12	Screenshots of the CitiAIR tool	26

Table of Tables

Table 1	Selected recommendations for the development of Smartwaterland's Communication Strategy.....	9
Table 2	Selected recommendations for the development of Smartwaterland's Monitoring and Evaluation Plan.....	10
Table 3	Agenda of the online needs assessment workshop on 14 July 2022.....	13
Table 4	Agenda of the Seminar on Behaviour & Policy and Digital Inclusion guidelines on 17 November 2022	15
Table 5	The action plan of the Balbyn'air pilot	28

Acronyms

API	Application Programming Interface
BZK	Dutch Ministry of the Interior and Kingdom Relations
CS	Citizen science
DIY	Do It Yourself
EC	European Commission
ECSA	European Citizen Science Association
EU	European Union
MICS	Measuring Impact of Citizen Science
NGO	Non-Governmental Organisation
NILU	Norwegian Institute for Air Research
NL	The Netherlands
OeAD	Austria's Agency for Education, and Internationalisation
PM	Particulate Matter
QR	Quick Response
RSA	Revenu de Solidarité Active
Scivil	Flemish Citizen Science network
TSI	Technical Support Instrument
UK	United Kingdom
VIVES	University of Applied Sciences
WG	Working Group
WVI	West-Flemish Intermunicipal

1 Executive Summary

This report presents the results of the implementation phase of the five CitiMeasure pilots. The main aim is to share the lessons learned from each pilot. To do so, details such as practical steps in execution of pilot plans, outputs generated, as well as main findings and conclusions of each pilot are captured and shared. The current report can also serve as inspiration for future applications of the CitiMeasure tools and guidelines.

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 indicators on air quality, temperature, soil moisture, biodiversity, or risk management, among 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) aims 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 builds upon the lessons learned from the City Deal Smart Cities Working Groups, a network of stakeholders working on the broader area of smart cities, including citizen measurement initiatives. The Dutch Ministry of Interior and Kingdom Relations coordinates the City Deal and has been working closely with its partners for over a year.

CitiMeasure builds upon these experiences and has used them to develop and pilot three 'instruments', namely:

1. An instrument that allows the outputs of different city measurement initiatives to be compared.
2. An instrument that safeguards the digital inclusivity of city measurement initiatives (maximising the opportunities for participation of interested individuals and communities).
3. An instrument that connects information to behaviour and policy change.

A 4th (Strategy and Oversight) working group focuses on providing strategic direction and ensuring cohesion of activities across the three Instrument Sub-Groups and the project in general. CitiMeasure will also raise awareness of the importance of citizen measurement initiatives and capitalise 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

The individual pilot plans developed for testing the CitiMeasure instruments served as a basis for implementation of pilots. This report aims to capture and present the detailed steps taken for implementation of each pilot plan, as well as the results produced and reflection on execution of the pilots.

2.3 STRUCTURE OF THE REPORT

The next parts of this report are structured as follows. Section 3 presents the implementation details of all the pilot cases. This section is structured per pilot case and provides information such as background and aims of each pilot, implementation details, produced outputs, as well as main findings

and conclusions. Additional information about implementation of the pilots or produced results are provided as annexes. The report is concluded in Section 4, with some remarks and elaboration of next steps.

3 CitiMeasure pilots

The CitiMeasure pilots consisted of four local pilot cases to test the Behaviour & Policy and Digital Inclusion guidelines and a special pilot plan for the Comparability tool. Three of the local pilots were planned in collaboration with the cities of Roeselare (BE), Barcelona (ES) and Bobigny (FR), and one in collaboration with the Sensor2School initiative in Prague. For detailed pilot plans, please refer to Deliverable D1.8: Pilot plans for each of the pilots. The CitiMeasure team followed the pilot plans and used the monitoring and evaluation framework of each pilot case as a basis to collect information and feedback from the pilots. To do so, each pilot received a reporting template that was developed based on the specific approach and indicators of the monitoring and evaluation framework for that case. This section is dedicated to presenting the details of each pilot. We would like to acknowledge the contribution of the following pilot representatives to the development of this report.

Pilot case	Pilot representative
The City of Roeselare	Jasmien Wellens
The City of Barcelona	Diana Escobar Vicent, Beatriz Cordero, Rebeca Ribas
Sensor2School initiative - Prague	Michael Lažan
The City of Bobigny	Nour Diab

3.1 SMARTWATERLAND – THE CITY OF ROESELARE

3.1.1 Background

Smartwaterland is a citizen science project, through which the City of Roeselare is trying to collect precipitation data via a fine-mesh network of pluviometers and to use the data for managing water in the city in a smarter way. As a part of this project, a well-functioning pluviometer was developed. In addition the University of Applied Sciences (VIVES) is creating educational packages for using these pluviometers for rainfall monitoring in schools. Between September and December 2022, the city implemented the project in a selected pilot school. The city council is the project leader and coordinates project activities with different stakeholders. Other partners of Smartwaterland and their roles include:

- WVI – West-Flemish intermunicipal
 - Design and testing of the prototype of the pluviometer and working with the 3D-printer
- Quicksand – a company of micro-electronics
 - Sensor and dashboard providers
- Vives – University of Applied Sciences
 - Academic validation and pedagogic support while developing the educational packages for the teachers
- Broederschool Roeselare
 - High and middle schools where the pilot was be held
- Funder: The Flemish government who provides grants for this project via the “Smart in the City”-award



Figure 1 Showcase of Smartwaterland pluviometer at a school

3.1.2 Aim and approach of the pilot

The City of Roeselare has been a member of the CitiMeasure Behaviour & Policy and Digital Inclusion working groups. Initially, Smartwaterland and AiRsl were identified as pilot projects for testing *the CitiMeasure Behaviour & Policy guidelines*. The main aims of the pilot in this case were:

1. To strengthen the communication efforts of both projects by developing a communication plan for projects to disseminate the activities and outcomes of the projects to the different stakeholders such as the school and parents, as well as general communication of the city.
2. To help develop robust monitoring and evaluation plans for the two projects to ensure long-term outcomes for the city, all partners and stakeholders.

At the start of the pilot phase, and based on a reassessment by the city, the focus of the pilot was changed from the two projects, to Smartwaterland. The main reason for this choice was internal staff capacity issues at the City of Roeselare.

3.1.3 Implementation of the pilot plan

The first introductory meeting of the pilot phase was held on 21 March 2022. After this meeting, the pilot team (Coordinator of Smartwaterland and the CitiMeasure team) met eleven times¹ to coordinate, develop and implement the pilot plan. All the meetings were held online. The developed pilot plan included a list of activities and a timeline (for details, see Deliverable D1.8: Pilot plans for each of the pilots). The main expected outputs of this plan thus were the communication strategy and the monitoring and evaluation plan for the Smartwaterland project. The Coordinator of Smartwaterland spent approximately 61.5 hours, and the two members of the CitiMeasure team spent roughly 37.5 hours per person on the pilot implementation. In addition, the CitiMeasure team

¹ Meeting dates: 13 April, 9 May, 16 May, 15 June, 15 July, 28 July, 6 September, 30 September, 27 October, 10 November and 5 December

spent 12 hours on pilot meetings and 4,5 hours in the meetings with the Behaviour & Policy working group.

As a first exercise for developing the communication strategy, the Coordinator of Smartwaterland scanned the CitiMeasure Behaviour & Policy guidelines and selected a sub-set of recommendations that could be useful for informing the communication strategy for the project. The following table presents the selected recommendations.

Table 1 Selected recommendations for the development of Smartwaterland's Communication Strategy

Recommendation(s)	Reason for selection/application
The set of recommendations related to strengthening the communication efforts	After reading the guidelines for the first time and linked to highlighting the importance of communications in a citizen science project, the city decided to develop a communication strategy for Smartwaterland. Furthermore, these recommendations provided tips and tools on how to communicate more effectively with different target groups.
Recommendations regarding strengthening engagement efforts and especially framing projects around participants' values and focusing on local and tangible concerns	These recommendations informed key messages of the communication strategy.
Recommendation regarding post-project needs and actions, and more specifically the one about reflection after the project "Take time to reflect on how the process went"	This helped the city realise the importance of evaluating the communication strategy and not only the outputs of the project in general.

At the request of the city, examples of communication strategies of existing citizen science projects and other useful documents were shared with the Coordinator of Smartwaterland. This included two example dissemination and communication strategies from past citizen science projects, namely Ground Truth 2.0 (Prat et al., 2016) and WeCount (Nemeth & Boschetti, 2020), as well as a practical guide on communication and engagement in citizen science (Veeckman, 2019). Based on these resources, a first version of a communication strategy for Smartwaterland was developed. A number of feedback and discussion rounds were organised in which the team of CitiMeasure provided inputs to the initial version of the communication strategy. This included discussions on how to incorporate selected recommendations from the CitiMeasure Behaviour & Policy guidelines to improve the first initial version. Based on the feedback and the guidelines, the communication strategy for Smartwaterland was adopted and finalised.

Similarly, the Coordinator of Smartwaterland selected two recommendations to inform the monitoring and evaluation plan of the project. Table 2 presents the selected recommendations and the reason for their selection.

Table 2 Selected recommendations for the development of Smartwaterland's Monitoring and Evaluation Plan

Selected recommendation	Reason for selection/application
The importance of paying attention to the context	This recommendation was especially used while selecting impact indicators for the monitoring and evaluation plan by revisiting the aim, setup of the project, and expected domains of impact.
Recommendations regarding developing a robust monitoring and evaluation plan	These recommendations made the city aware of the importance of such plans and why evaluation in general, is important. Tapping into experiences of past projects and best practices was also considered as a useful tip.

The starting point for the development of the monitoring and evaluation plan was an existing template for evaluation that was widely used in the city for reporting on the impact of projects. The CitiMeasure team provided feedback on the structure of this template and highlighted that while the template clarified *what* needed to be measured and reported on, it didn't provide guidance on *how* to measure those parameters. The pilot team then discussed possible approaches for evaluation of the project and, based on the timeframe and available resources, concluded that an indicator-based approach would be the most appropriate method in this case. The MICS Impact Indicator Explorer² was used as a basis for selecting indicators. In a joint exercise, the pilot team reviewed and selected the most relevant and realistic indicators to measure in this project. At the time of writing the report, the city of Roeselare was in the process of finalising the Monitoring and Evaluation plan, but the full list of selected indicators and impact domains can be found in Annex 2.

3.1.4 Outputs of the Smartwaterland pilot

The main outputs of the CitiMeasure pilot in Smartwaterland are the project's Communication Strategy and Monitoring and Evaluation Plan.

In addition to introductory sessions such as background and context of the project, the Smartwaterland Communication Strategy includes goals of communication, categories of target audiences, key messages that are formulated for each category of audience and identified channels and tools for communication. In addition, steps for implementation of the communication strategy, roles of actors involved, and considerations for post-implementation evaluation of the strategy are included in this plan (see Annex 1 for further details).

The main outputs of the pilot phase for the development of the Smartwaterland Monitoring and Evaluation Plan of the project can be summarised as (1) the selected approach, i.e., an indicator-based approach, and (2) impact domains, namely 'Science and Technology', 'Society', 'Governance', and 'Environment', and (3) specific impact indicators that are provided in Annex 2.

3.1.5 Main findings and conclusions

The feedback collected from the Smartwaterland project coordinator revealed that the CitiMeasure Behaviour and Policy guidelines helped with becoming more aware of the importance of a communication strategy and an evaluation plan in general. The guidelines also helped the city design these products in a way that considers the needs and challenges of citizen science projects. Without the CitiMeasure guidelines, the city would follow a communication strategy made up by their

² <https://about.mics.tools/guidance/measure/indicators>

communications department, and the evaluation template that is usually used in the city without the set of selected impact indicators.

Moreover, while the Smartwaterland project coordinator found the CitiMeasure guidelines useful, she believed that the most added value was in the collaboration and discussions with the CitiMeasure team and the feedback that was provided on different phases of developing the communication strategy and monitoring and evaluation plan. She believed that the CitiMeasure Behaviour and Policy guidelines include examples of good practices from different countries, so it can also be seen as an inspirational document, but it is not a 'one size fits all' document. These guidelines should be seen as a basis to trigger thinking about different aspects of citizen science projects and decide together with the project team on which ones are relevant for the project. Furthermore, a certain level of experience and knowledge is needed to operationalise the application of the guidelines.

"The CitiMeasure Behaviour and Policy guidelines shouldn't be seen as a one-size-fits-all document, rather it should be used as an inspirational document for reflection and adaptation of a project approach" (Jasmien Wellens, City of Roeselare).

3.2 TRAINING WORKSHOPS - THE CITY OF BARCELONA

3.2.1 Background

This pilot was a collaboration between the CitiMeasure project and the Barcelona Citizen Science Office. Since 2012, the Barcelona Citizen Science Office has been supporting citizen science by advising, accompanying, and promoting projects that want to work in the city and its Metropolitan Area. The office also works towards developing actions to bring citizens and researchers closer together and strengthen their connection with new civic and cultural agents.

3.2.2 Aim and approach of the pilot

The main aim of the pilot was to disseminate the CitiMeasure Behaviour & Policy and Digital Inclusion guidelines via the network of the Barcelona Citizen Science Office, and through that, collect feedback on the guidelines from a wide range of potential end-users including city council staff, public administration officers, citizen science projects and practitioners, and other interested stakeholders.

The pilot approach was designed as a three-step approach for disseminating the guidelines and collecting feedback from the stakeholders³:

(1) An online needs assessment workshop to identify the focus of the training workshops

(2) Training workshop on the Behaviour & Policy guidelines

(3) Training workshop on Behaviour & Policy and Digital Inclusion guidelines

3.2.3 Implementation of the pilot plan

The pilot team in this case consisted of three members from the Barcelona citizen science office and Eduscopi (a company with expertise on scientific communication and dissemination), and two

³ For more details about each step see Deliverable D1.8: Pilot plans for each of the pilots

members from the CitiMeasure project. The pilot team met nine times from March to November 2022 to coordinate the implementation of the pilot. Eight meetings were held online (23 March, 19 May, 13 June, 28 June, 15 September, 30 September, 11 October, and 14 November), and one meeting (19 October) in person and in Barcelona. The Barcelona citizen science office and EDUSCOPI spent roughly 60 hours on implementing the pilot. The two members of the CitiMeasure team have spent roughly 73 hours per person⁴.

(1) Online needs assessment workshop (14 July 2022)

The pilot team organised a 1h45 minutes online workshop on 14 July 2022 to identify the focus of the training workshops. The session was held in English and had two main aims: (1) to present the CitiMeasure project and the draft Behaviour & Policy and Digital Inclusion guidelines to participants, and (2) to collect their inputs for the design of the training/seminar in November 2022.



Figure 2 Screenshot of the online needs assessment workshop on 14 July 2022

The session started with an interactive exercise and tour de table. Then, the project, the two sets of guidelines, and the pilot plans to test the guidelines were introduced. Through two participatory exercises, the team extracted inputs from the participants regarding the main categories of the recommendations of the Behaviour & Policy guidelines and the clusters of skills, knowledge and attitudes included in the digital inclusion competencies framework. For that, the programme Miro was used as a digital environment for collecting inputs from participants (See Annex 8 for screenshots of the Miro boards). There were 15 participants from the Spanish and Catalan citizen science community. Table 3 provides the workshop's agenda.

⁴ Approximately 9 hours of preparatory meetings, 9 hours of coordination with the Behaviour & Policy and Digital Inclusion working groups, 17 hours in the three co-organised events, and approximately 37.5 hours of preparatory work, excluding travel time to Barcelona in October and November 2022.

Table 3 Agenda of the online needs assessment workshop on 14 July 2022

Agenda item	Duration
Welcome & Introduction to the session	5 minutes
Tour de table	10 minutes
Introduction to CitiMeasure and its outputs	15 minutes
Pilot plan	10 minutes
Participatory exercise	40 minutes
Wrap-up	10 minutes

(2) Conference session on the Behaviour & Policy guidelines (19 October 2022)

The pilot team organised a one-hour workshop during a [local citizen science conference in Sabadell](#) on 18 and 19 of October. The session aimed to introduce the CitiMeasure guidelines and pilot plans to participating experts and citizen science practitioners, and jointly reflect on the behavioural aspects of citizen science projects. The session was designed as a panel discussion with three experts on citizen science: Montse Llasat-Botija, Marc Aguilar and Miriam Calvera Isabal and was moderated by the CitiMeasure project officer.



Figure 3 CitiMeasure session at the citizen science conference in Sabadell

The discussions were moderated, and panellists were asked to reflect on questions related to challenges and opportunities of citizen science regarding changes in the participants' behaviour (including individuals and local authorities). Around 35 participants attended the session. Because of the nature of the conference and participating audience, the session was held in Spanish/Catalan. The CitiMeasure Behaviour & Policy guidelines were presented at the end of the panel discussions, and participants had the chance to ask questions from the panellists.

(3) Seminar on Behaviour & Policy and Digital Inclusion guidelines (17 November 2022)

The seminar on the CitiMeasure guidelines was the last phase of the Barcelona pilot. While the first and second events aimed to understand the local context and assess the community's needs and interests, this final event aimed to dive deeper into the two CitiMeasure guidelines. The seminar was designed as an interactive session with hands-on exercises to encourage participants to share real experiences and engage in conversations with peers and other actors that they may not discuss with on a regular basis (e.g., the city council staff). The event took place on 17 November from 9:00 to 14:00 at the Centre de Vida Comunitaria de Trinitat Vella. This public venue is the result of an innovative proposal to allow all the residents and social agents of the neighbourhood to collaborate.

The first part of the webinar was a political introduction by Júlia Miralles de Imperial, Adviser on Science and University Policy at the Barcelona City Council, and Anna Broll, Head of Science and University at the Barcelona City Council, who set the scene and clarified the work of the Barcelona City Council to support citizen science. Then, the pilot team shared some questions in Slido to identify who was in the room. The CitiMeasure project coordinator followed this icebreaker by introducing citizen science (for those less familiar with the concept) and presenting the CitiMeasure project.



Figure 4 Opening of the seminar and introduction to citizen science/CitiMeasure

The first interactive exercise focused on the topic of behaviour. Five different problem statements based on existing or hypothetical cases of citizen science projects were presented. Participants were divided into break-out groups (of 4-5) which could choose one of the problem statements and discuss it using guiding questions that were presented by the table's moderator. The organisers made sure the groups included different stakeholders, e.g., technical staff in the city council, researchers, citizen science practitioners, or representatives of civil society organisations. A representative from each breakout group then shared the summary of discussions from each table. At the end of this part, the team presented a selection of recommendations from the CitiMeasure Behaviour and Policy guidelines that connected to the behavioural change aspects discussed at different tables.

The second interactive exercise focused on the topic of competencies for digital inclusion. Firstly, the pilot team shared a digital questionnaire (in Microsoft Forms) to capture the perception of participants about the importance of categories of skills, knowledge, and attitude for participation in citizen science projects. 18 participants completed the questionnaire. The team and the participants jointly analysed and discussed the results. This exercise also served as a validation exercise for the identified

clusters of skills, knowledge, and attitudes in the Digital Inclusion guidelines. This part of the session was concluded by presentation of selected recommendations from the Digital Inclusion guidelines.

The third interactive exercise focused on the topic of policy change. Two representatives from local projects: [CoACT](#) and [Mosquito Alert](#), presented their challenges and successes in influencing policies. Participants shared their experiences and engaged in the discussions using guiding questions raised by the moderators and the participants. Similar to the other two interactive parts of the session, a selection of the recommendations from the CitiMeasure Behaviour & Policy guidelines were presented to familiarise the participants with potential applications of the guidelines.

The session was concluded with some final words from Diana Escobar, the project coordinator of the Barcelona citizen science office. Table 4 Agenda of the Seminar on Behaviour & Policy and Digital Inclusion guidelines on 17 November 2022 Table 4 presents the agenda of the session (in Spanish).

Table 4 Agenda of the Seminar on Behaviour & Policy and Digital Inclusion guidelines on 17 November 2022

Agenda	Duración
Bienvenida e introducción	10 minutos
¿Quién es quién?	10 minutos
Introducción a ciencia ciudadana y CitiMeasure	25 minutos
<u>Sesión interactiva I: Ciencia ciudadana y cambios en el comportamiento</u>	55 minutos
Descanso (almuerzo)	30 minutos
<u>Sesión interactiva II: Competencias para la inclusión digital en proyectos de ciencia ciudadana</u>	40 minutos
Descanso (café/té)	10 minutos
<u>Sesión interactiva III: Ciencia ciudadana y políticas públicas</u>	55 minutos
Cierre	5 minutos
Visita al centro	30 minutos

After the seminar, a feedback form was sent to the participants. Ten participants completed this feedback form. Analysis of the feedbacks shows that:

- 60% did not know the project before joining the session
- 90% found the introduction to citizen science and the project, the first and third exercises *very useful or useful*
- 50% found the second exercise *very useful or useful*
- 70% are willing to use the recommendations in their work

3.2.4 Main findings and conclusions

Throughout the three steps of the pilot in this case, participants learned about the CitiMeasure Behaviour & Policy and Digital Inclusion guidelines and had the chance to provide inputs for improvement of the two sets of guidelines. Collected inputs helped improve the formulation and categorisation of recommendations in both guidelines and helped reflect on categories of competencies in the Digital Inclusion guidelines. Interaction with participants also resulted in a better understanding of potential applications of the guidelines and confirmed the value of visualisation of the content of both guidelines. More specifically, in the first workshop, the categories of recommendations were validated and linked to the real challenges and needs of the local community. In addition, participants reflected upon the clusters of competencies and validated those. In the second workshop, discussions with experts and the audience helped with reflection on the challenges

and opportunities of citizen science regarding behavioural changes. Lastly, the final seminar allowed for a more in-depth presentation and validation of the content of both products. The fact that 70% of the respondents to after seminar survey are willing to use the recommendations in their work confirms the added value of the guidelines for the city and citizen science community in Spain.

3.3 SENSOR2SCHOOL (SENZORY DO ŠKOL) - PRAGUE

3.3.1 Background

[Senzorvzduchu, z.s.](#) (in English - Air Sensor) promotes citizen air quality measurements based on the [Sensor.Community](#) DIY sensor kit solution. The initial aim of Senzorvzduchu as an NGO was to fill up the blank space of sensors between Germany and Poland on the sensor map. Nowadays, Senzorvzduchu organises community building workshops and is active on social networks. There is a Twitter alarm bot informing citizens about the air quality PM10 pollutant above 50 µg/m3. They also have been measuring NO₂ in cooperation with Deutsche Umwelthilfe for one year in Prague. Senzorvzduchu participated in CitiMeasure with one of their projects called Sensor2School ([Senzorydoskol.cz](#)) where the aim was to build 50 sensors in schools together with students, giving them lectures about the possibility of citizen measurements and the importance of air quality. Students build their own sensor and start measuring in school and use an information board with a QR code to see the results that are shared via a web-platform.



Figure 5 Example of Sensor2School device and information board

3.3.2 Aim and approach of the pilot

The aim of this CitiMeasure pilot was to test the application of the Digital Inclusion guidelines to assess the competencies required for, and acquired from, participation in the Sensor2School initiative. To do so, a before and after survey design was used that included a 1st survey before the start of the project and a follow-up 2nd survey after the measurements. This approach helped gain an understanding of the required competencies for participation, as well as acquired knowledge and change in the perception of students about air quality topic. The results of the pilot were expected to provide insights for the future design of similar projects.

Originally, the project was meant to be supported by the city of Prague in a contest [Nakopni Prahu](#)-Prague innovation marathon. The project did get into the finals but was not selected between the three supported projects. Senzorvzduchu, z.s. thus decided to work on the project without the support of city of Prague and with its own resources. The pilot was promoted on social media and Makerfaire exhibitions. At the time of writing this report, 11 schools (2 elementary schools, 3 high schools and 6 kindergartens) have shown interest and were included in the project. Without the support of city of Prague, the number of participating schools is lower than originally expected. However, the aim and approach of the project and the CitiMeasure pilot stayed the same. Sensor building workshops were organised and complemented by a lecture.

3.3.3 Implementation of the pilot plan

Following the pilot plan, the CitiMeasure team and the founder of Senzorvzduchu, z.s., as the representative of the Sensor2School project, met regularly and collaborated closely on development and implementation of a before and after survey to test the learning outcomes of the Sensor2School in participating schools. The surveys were directly designed based on the CitiMeasure Digital Inclusion guidelines and more specifically the identified categories of Skills, Knowledge, and Attitude in these guidelines. Based on a joint reflection, the team decided to design these surveys slightly differently for students in primary schools and high schools. The main reason for this decision was the different expected level of understanding among the students. Some students in the primary schools may not have enough knowledge of the topic or understand certain terminology as well as high school students. Because of the same reason (level of complexity of the questions), the pilot team did not include the kindergartens in the surveys. The surveys were designed in Czech, but for reporting purposes, an English translation of the before and after surveys are provided in Annexes 3 to 6. A total of nine online meetings have been organised between May and November 2022 in preparation and during the pilot phase⁵. The Sensor2School project representative spent 19 hours for the design and implementation of the surveys. The two members of the CitiMeasure team spent approximately 25 hours per person on communications, advice on the use of the guidelines and design of the surveys, 10 hours on meetings, and 3 hours on meetings with the Digital Inclusion working group members.

At the Sensor2School project level the implementation was as follows. After confirmation of the project implementation by participating schools, the first survey was conducted. It was necessary that the 1st survey is performed before the lecture and sensor building workshop. On the agreed date, a lecture was given to students during class (usually the informatics class). First, there was an overall lecture about the impacts of pollution on the human body and society. Students learned where and how to get information about air quality and how air quality is measured. Then they learned about the possibility of building an air sensor by themselves, and the use of the data acquired in various subjects in their daily school life. Then the group was divided usually into groups of 5 pupils, and under the supervision of an instructor, the sensors were built. Pupils tested the sensors to see if they built them correctly. One of the sensors was then installed on the school building, connected permanently to power and school Wi-Fi. Each school was provided with an informational banner with a QR code to check the live values on the sensor, widget implementation resources on their webpages and an overview of other resources that could be used in various school subjects. The school signs an agreement on joint purpose about the services, confirming ways of mutual information, and a project duration of two years. Schools are then provided with instructional working papers for activities connected with the use of the data from the sensor. Allowing some time for the school to implement sensor data to daily life (usually 1 month) the 2nd survey was completed to assess the change in the perception of the subject by pupils.

⁵ Meeting dates: 13 May, 19 May, 9 June, 8 July, 15 July, 2 August, 9 August, 13 October and 10 November
CitiMeasure_D1.9_Final reports of the pilots (2022) 17 of 62



Dvořákovo gymnasium



Gymnázium Paměti národa



Základní škola Campanus



ZŠ Sázavská

Figure 6 Sensor building workshops at schools⁶

At the time of writing this report, the surveys were deployed in four schools (2 high schools and 2 elementary schools). Altogether, 90 pupils participated in the 1st survey and 41 in the 2nd survey. The findings of the surveys are presented in the following section.

3.3.4 Outputs of the Sensor2School pilot

The main output of the pilot in this case was the results of the surveys and analysis of these results to assess the learning outcomes of the Sensor2School project. At the time of writing this report, the 2nd round of surveys was still ongoing in some of the schools. Therefore, the reported results only reflect the completed surveys. This section provides a detailed summary of the available survey outputs in the four schools.

(1) ZŠ Sázavská (elementary school)

The survey was deployed in the 6th and 7th grade of this elementary school. Pupils aged 11 – 13 years participated in the survey. In total, there were 34 participants of the 1st survey followed by 29 participants in the 2nd survey.

- Based on the comparison of both surveys gain of the skills needed for research can be easily observed; 10 participants in the 1st survey didn't know how to get information about air quality and only 3 participants didn't know it in the 2nd survey.
- Participants showed strong gain of knowledge of digital skills; 8 participants didn't know how to measure air quality in the 1st survey as opposed to 15 participants learned how air quality is measured in the 2nd survey.

⁶ Photos are blurred to protect the privacy of minors at the elementary schools

- Regarding transferable skills, there was a clear gain of skills among participants on how to interpret and use air quality data. Also, the majority indicated they knew how to inform other pupils or members of their families.
- The skills for using electronic devices stayed the same. However, there was understandably a big gain of knowledge on how to use the air quality sensor – from 8 in the 1st survey to 16 participants in the 2nd survey. The number of participants who don't know how to use the sensor decreased from 24 in the 1st survey to 13 in the 2nd survey.
- Knowledge of environmental problems stayed pretty much the same. However, more respondents stated air quality as a problem in the 2nd survey.

Overall, the survey outcomes clearly demonstrate that pupils learned about air quality and various ways of measuring air quality. It is also clear that pupils learned digital skills while assembling the sensor and using it to monitor values daily.

(2) Gymnázium Paměti národa (high school)

The survey was deployed in the 1st year of high school with pupils aged 15 years. In this school, the 1st survey finished 13 participants and only 6 participants finished 2nd survey.

- In the skills section there was a clear shift to better scientific research skills because there are no participants in 2nd survey who state that they don't know where to get and analyse air quality data.
- A similar shift was observed for skills related to communicating the topics to peers, friends, and family.
- In the digital (software and hardware) skills there was a better understanding of how to evaluate data.
- There was also knowledge gains about environment and effects of air quality and its sources.
- There was a clear gain in knowledge about measuring air quality.
- Knowledge of ethics stayed pretty much the same
- Attitude towards science and environment changed as more participants acknowledged that science is important for the environment and now believe that everybody can participate in science (5 in 2nd survey as opposed to 2 in the 1st survey).

Ongoing activities in school include the construction of a display for the sensor build on raspberry pi to display measurements on school premises. There has been a presentation in biology class about the effects of air quality on the human body by one of the students. The subject is perceived very positively in this school, and many more actions are coming. The Sensor2School project also plans to conduct focus group discussions and structured interviews.

(3) Dvořákovo gymnásium (high school)

The survey was performed with the last year of high school pupils aged 18 – 19 years. Installation of the sensor was made on 23 November. 1st survey was completed by 16 pupils and the 2nd survey by 5 pupils so far. Although the 2nd round of surveys is not yet complete, judging from the results so far there is:

- Gain of knowledge in scientific research skills can already be observed in the few responses to the 2nd survey
- Confidence in skills for being able to analyse air quality data was increased in 2 respondents
- A clear increase in knowledge about measuring air quality can also be already observed among the respondents in the 2nd survey

(4) Základní škola Campanus (elementary school)

For this school, so far only the results of the 1st survey are available. The Sensor2School project has planned the second survey for the start of the next year. 27 pupils from the 9th grade participated in the 1st survey. These are students from the last year of elementary school aged 15 years. Based on the results of the 1st survey:

- Pupils can run a typical school project
- The majority of the pupils can obtain information about air quality and understand the information when they find it
- They know how to use electronic devices and are capable of cooperation with other schoolmates.
- They have strong knowledge of the importance of the state of the environment and its impact on people, animals, and plants.
- They are well aware of the environmental problems we face.
- Most pupils also know they must get permission before posting sensitive information online.

3.3.5 Main findings and conclusions

Based on the feedback from the Sensor2School project, the CitiMeasure guidelines provided them with a much-needed framework for assessing the learning outcomes of this project. This resulted in a better understanding of the scope and focus of the tools, skills and knowledge needed to start and run sensor-building workshops and start measuring in schools. The Sensor2School project representative found no difficulties for the incorporation of the Digital Inclusion guidelines in the project. The Sensor2School project especially found the collaboration on the design of both surveys very helpful and necessary. At a higher level, the pilot helped the Sensor2School project define some priorities and think about citizen science differently. The project benefitted from the feedback and insights at a European level by the CitiMeasure working group members. These interactions provided perspectives as citizen science initiatives are still relatively new in the local context. For example, after the discussions with the working group members, the Sensor2School project is planning to focus more on inequalities by comparing data and school surveys in deprived regions like Ústí and Labem, Karlovy Vary and Moravian-Silesian regions.

“The CitiMeasure Digital Inclusion guidelines gave us the much-needed framework for this project. We could better understand the scope of focus on the tools, skills and knowledge needed to start and run building sensor workshops and start measuring in schools” (Michael Lažan, Senzorvzduchu, z.s.).

3.4 COMPARABILITY TOOL

3.4.1 Aim and approach of the pilot

The comparability tool ([CitiAIR](#)) is an online tool focusing on capturing information about different air quality initiatives and the stories behind them (who is doing them, what exactly they are doing, and how they are doing the measurements). The tool has been co-designed by CitiMeasure working group members, with the support of an external expert.

These are three main aims of the pilot phase:

1. Polish the online tool by testing it internally to make sure that the wording and structure fits the purpose for a wider audience.
2. Add a minimum of 50 initiatives to both improve the user experience and create a pool of initiatives that can attract people to use the tool in the development or implementation of their own initiative.
3. Disseminate the tool as a unique online experience to share valuable information with the aim of improving the comparability of air quality initiatives.

3.4.2 Implementation of the pilot plan

Based on the pilot plan, there have been three phases for the implementation of the CitiAIR tool:

Phase I - June to September 2022: In this first phase, the CitiMeasure team reached out to eleven cities⁷, organisations⁸ and initiatives⁹ to be the first group to test the initial version of CitiAIR. Based on the availability of volunteers or initiatives, the formulation of the questions in the form was tested with eight volunteers from Sensor.Community, University of Aveiro, FabLab Barcelona, Sensor2School, AtmoSud, and cities of Antwerp, Ghent, and Bobigny. These volunteers completed the form in a 30-minute guided process. Except for the University of Aveiro which has not yet permitted the CitiMeasure team to publish the initiative, all other seven initiatives were added to the CitiAIR. Because of the summer holidays, Phase I was extended until the end of August 2022.

Phase II - September to October 2022: In this second phase, the improvements to the questionnaire, its operationalisation and its visualisation continued based on the feedback from the guided process and in collaboration with the company in charge of the technical development of CitiAIR. Points for improvements were identified with volunteers from six initiatives and organisations including iChange, SocioBEE, SamenMeten, Airparif, MeetMeMechelen, Les Chercheurs d’Air. These inputs served to conclude the final version of the tool, which was validated by the Comparability WG on 20 September. At this stage, the input forms were considered final, as there was no more substantial feedback from the volunteers. Five more initiatives (Snuffelfiets, Compair, Rumia, Airbreak and Luchtclub) were then added independently by the CitiMeasure working group members and external volunteers. In total, eleven initiatives were added in this second phase, which was extended until the end of October. Additionally, eight other cities and organisations¹⁰ were contacted and did not reply to our call, declined it, or couldn’t add their initiatives because of internal constraints.

Phase III - November to December 2022: The final version of the data gathering form was produced in the second phase of the pilot. The official launch of the tool took place on 3 November. In this last phase, efforts were put on outreach and dissemination to add at least 50 initiatives, with the higher

⁷ Antwerp, Ghent, Roeselare, Belfast and Bobigny

⁸ University of Aveiro, FabLab Barcelona, Air Sentinels and AtmoSud

⁹ Sensor.Community and Sensor2School

¹⁰ ICTU, Kunak, NILU and cities of Milan, Torino, Dublin, Maribor and Debrecen

aim of CitiAIR becoming a reference tool when looking for information about these types of initiatives. The CitiMeasure team used four main strategies to disseminate the CitiAIR in this phase.

- **Strategy 1 - Outreach through citizen science networks:** Citizen science networks such as ECSA, the Dutch (CS-NL) and the Flemish (Scivil) science networks, Austria's Agency for Education, and Internationalisation (OeAD), the City Deal programme in the Netherlands, and the Citizen Science Office of the City of Barcelona have shared information about the tool in their social media and internal communication channels, newsletters and knowledge sharing platforms.



Share your Citizen Science story on air quality with CitiAIR

Our new comparability tool is finally here! [CitiAIR](#) is an inventory of citizen science stories on air quality. For the past ten months, the [CitiMeasure](#) Comparability WG members have co-created this online tool to collect technical and descriptive information about citizen science initiatives for air quality monitoring.

So far, 18 organisations have added their initiatives to **CitiAIR**. Would you like to share your story? [Click here](#) and take 30 minutes to answer a simple form. The process includes adding information in four steps about your organisation, the initiative, the technical equipment, and the data platform. Once you are done, we encourage you to share it on social media (Twitter and LinkedIn) and help us spread the word!

Figure 7 CitiAIR promoted via the Dutch Citizen Science network (CS-NL) - November 2022



Figure 8 CitiAIR promoted via the Flemish citizen science network (Scivil) on Twitter - November 2022



Figure 9 CitiAIR promoted via the Austria's Agency for Education and Internationalisation (OeAD) - December 2022

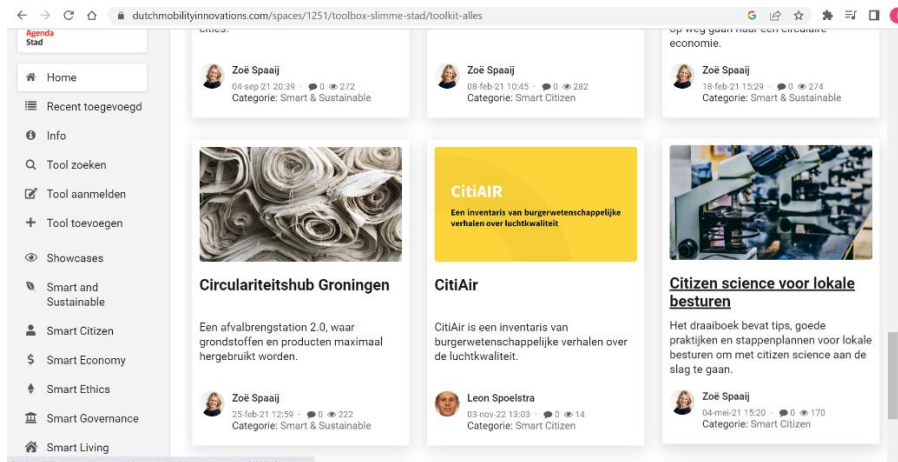


Figure 10 CitiAIR promoted via the City Deal toolbox

- Strategy 2 - Outreach via individual emails:** To reach out to known air quality initiatives, several personalised emails were sent to initiative owners. These initiatives were identified in the CitiMeasure landscape review (CitiMeasure Deliverable 1.1: Report of landscape review) and the COMPAIR landscape review (Kogut et al., 2022). From this pool of initiatives, a total of 15 out of 75 were already added in previous phases. The list of contacted organisations and pending initiatives can be found in Annex 7. This Annex also indicates whether an initiative has been discarded or the contact email was not available. In addition, other initiatives and organisations were identified online, in events, and through more desk research, all of which have been reached out to. Some of these initiatives declined the invitation, or were excluded due to the lack of alignment with the scope of the CitiAIR tool and others are pending.
- Strategy 3 - Outreach via Eurocities' network:** Several methods were used to reach out to the Eurocities' network that included weekly newsletters to members of the Environment and Digital Forums from November to December 2022, two dedicated articles in Eurocities Flash (Eurocities' monthly newsletter) in November and December 2022, an article in Eurocities' website in December 2022, an online presentation in an Air Quality working group meeting on 16 September, and emails to CitiMeasure working group members and observers.
- Strategy 4 - Outreach via social media:** In consultation with CitiMeasure's Communication Officer, a social media campaign was designed to promote the CitiAIR tool, based on the already added initiatives. Case-specific posts were developed based on the already added initiatives to attract more organisations and cities to add their initiatives (See Figure 11 for example posts). A total number of 40 posts have been published in social media between November and December 2022 (20 posts on LinkedIn and 20 on Twitter).

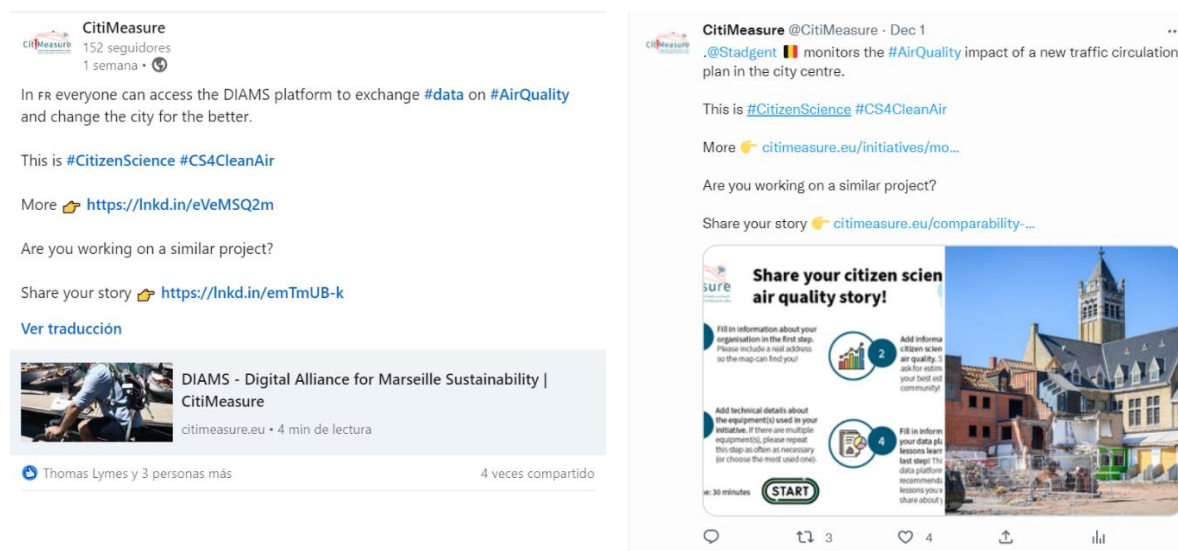


Figure 11 Social media posts in CitiMeasure's LinkedIn and Twitter

Based on the outreach efforts, the following initiatives have so far been added in this phase: isPeX, HOPE, AirEAS, CurieuzenAIR, MySense, WeCount, SAMHE, hackAIR, Samen Meten Zuid Holland, URwatair, OdourCollect, and GLOBE campaign in schools.

3.4.3 Outputs of the CitiAIR pilot

The main output of the pilot in this case was the final version of the CitiAIR tool. There have been four different types of adaptations of the tool based on the feedback that were received during Phase I and II of the pilot.

1. **Formulation of the questions:** While the steps and topic of the questions in the form were discussed with the Comparability WG, the exact formulation of the questions evolved based on the received feedback in Phase I and II of the pilot.
2. **Format of the questions:** While the steps and topic of the questions in the form were discussed with the Comparability WG, the exact format of the questions (dropdown list or open question, etc.) was adapted based on the received feedback in Phase I and II of the pilot.
3. **Visualisation:** The structure of the tool, the map, and the graphics evolved based on the feedback from the pilot phase and discussions with the working group members. This resulted in a much more visually appealing final product.
4. **Technical details:** Throughout the tool's development, multiple technical development constraints were resolved in consultation with the working group members and by the company responsible for the technical developments. For example, the visualisation of the details about initiatives was redesigned to a more accessible (tabular) format. In addition, the Google API and the automation of the form to make the backend management easier were improved.

Figure 12 presents the key figures, search and filter bar, and the map of the final tested version of CitiAIR. At the time of writing this report, 33 citizen science initiatives on air quality were added to the tool by 32 organisations. These initiatives represent ten countries in Europe (including the UK) that monitor more than 13 parameters using approximately 37000 sensors.

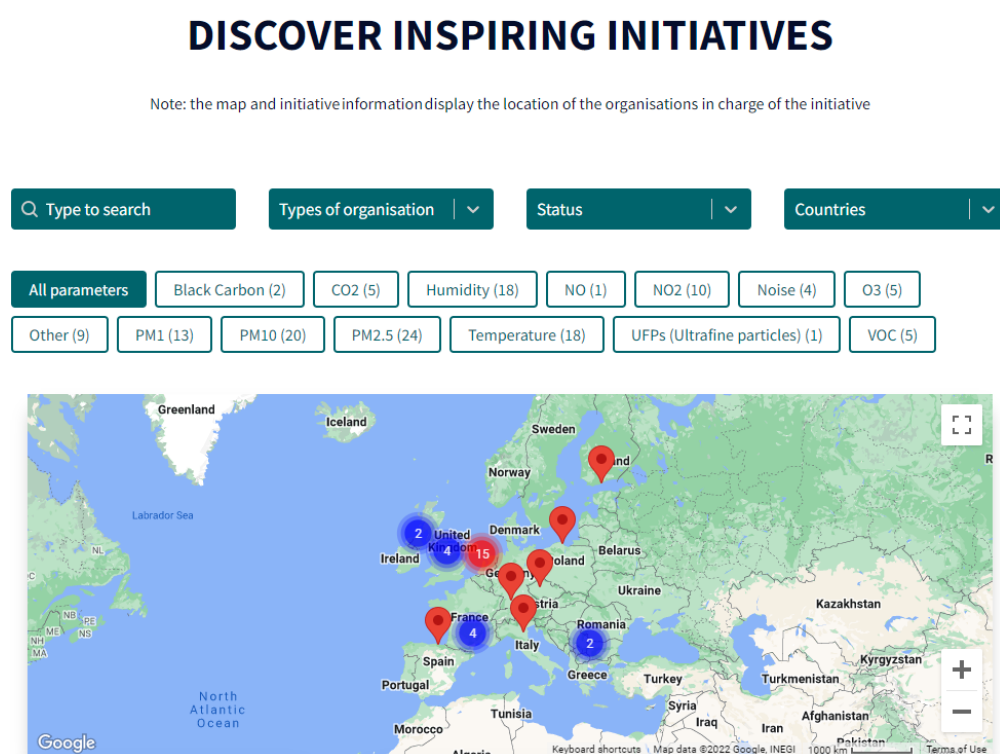
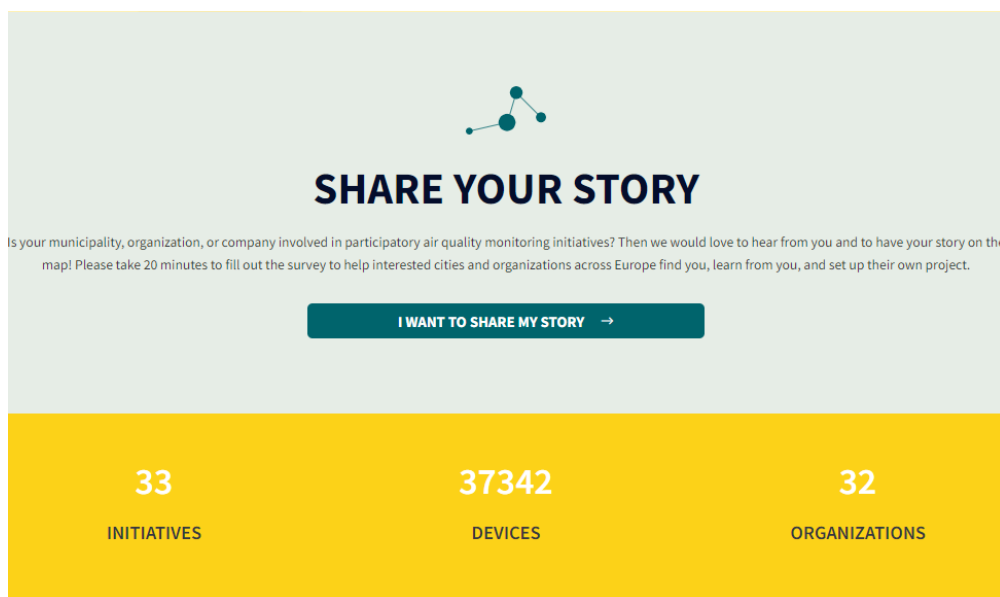


Figure 12 Screenshots of the CitiAIR tool

3.4.4 Main findings and conclusions

The co-design process has resulted in a unique tool to collect technical and descriptive information about air quality initiatives involving citizens. This information can be used to compare different initiatives and also to get inspired when setting up new ones. CitiAIR has been widely tested with a variety of European stakeholders who have provided feedback to improve the user experience. Given the limited timeline and the time-demanding process of functional and technical design, adding 50 initiatives to the CitiAIR tool was very ambitious. In practice, it meant adding no less than 2/3 of the total number of air quality monitoring initiatives identified in the landscape review, which was 75 (See CitiMeasure Deliverable 1.1: Report of landscape review). For that, extensive outreach and communication efforts have been implemented as described in section 3.4.2. At the time of writing

this report in December 2022, 31 initiatives have been added to CitiAIR. This number is expected to grow in 2023 and the CitiMeasure team still aims to add as many initiatives as possible to CitiAIR.

3.5 BALBYN'AIR – THE CITY OF BOBIGNY

3.5.1 Background

The City of Bobigny has embarked on an effort to involve citizens in awareness-raising campaigns about air quality. This is in the form of a citizen science initiative called Balbyn'air. As a part of this initiative:

- Volunteer citizens are provided with devices that they can carry and use to measure air quality across the city.
- The city provides volunteers with a notebook that has different tables for different daily activities which need transportation, e.g., going to work, picking up kids from school, grocery shopping, exercising, and going for a stroll.
- For each activity, the citizen can check boxes for the means of transport, and they check boxes of how the air quality was during the trip: good, average, bad.
- Volunteers can also write down their observations such as warning, weather conditions, and other comments.
- At the end of the one-month campaign, the city provides the volunteers with an opportunity to meet and express their general remarks and astonishments during the experience as a part of a group reflection session.

3.5.2 Aim and approach of the pilot

As a CitiMeasure pilot, the ambition was to use the CitiMeasure Behaviour & Policy guidelines to inform different parts of the process of Balbyn'air campaigns, more specifically the one planned for October 2022. Based on a pre-screening of the guidelines by the City of Bobigny, some main ideas were identified to apply the guidelines in the next Balbyn'air campaign that was planned for October 2022, including:

- *'Capturing the baseline situation'*: the city is interested to compare the behaviour of volunteers regarding air quality before and after the initiative. For example, how often volunteer citizens have conversations about air quality with their friends, peers, and family. This can help capture some of the learning outcomes resulting from the campaigns.
- *'Promoting the concept of citizen science at the city'*: at Bobigny there is a service called "Local Democracy", for the next campaign representatives of the city plan to involve more colleagues from "Local Democracy" service to raise their awareness about the potential of such projects.
- *'Diversifying participation in the campaigns'*: The city will try to diversify the age and social status of volunteers in the next campaign, e.g., by involving high school students, (un)employed people, and pensioners.
- *'Citizens are more likely to engage in initiatives if they believe their actions make a difference'*: The City of Bobigny could provide citizens with examples of how the initiative and their participation can impact and influence policy decisions.
- *'Involving citizens in co-creation of evaluation KPIs and impact assessment'*: The city can determine the impact indicators of the initiative in collaboration with citizens.
- *'Provide opportunities for citizens to present their evidence to policy makers'*: The city can consider an opportunity for the citizens to speak directly with the elected officials and present the result of the initiative and their proposals/action plans.

3.5.3 Implementation of the pilot plan

The CitiMeasure team and the representative of the Balbyn'air initiative from the City of Bobigny met 7 times between March and October 2022 to discuss the implementation of the pilot. In September 2022, the City of Bobigny announced that they had decided to postpone the Balbyn'air campaign from October 2022 to the end of January or the beginning of February 2023. The pilot team discussed this change in plans and decided to develop an action plan based on the city's needs and the new timeline of the Balbyn'air campaign (see Table 5). Linked to the selected recommendation by the city, this action plan included a description of the action, practical steps, and timeline of each action, based on the adjusted timeline of the campaign.

Table 5 The action plan of the Balbyn'air pilot

Recommendation	Action description	Practical steps	Timeline
'Capturing the baseline situation'	The city is interested in comparing the behaviour of volunteers regarding air quality before and after the initiative. For example, how often volunteer citizens have conversations about air quality with their friends, peers, and family. This can help capture some of the learning outcomes resulting from the campaigns.	- Design a before-after survey	End October – Beginning of November
'Promoting the concept of citizen science at the city'	At Bobigny there is a service called "Local Democracy", for the next campaign representatives of the city plan to involve more colleagues from "Local Democracy" service to raise their awareness about the potential of such projects.	- Organising an internal meeting/session with the Local Democracy group - Internal Communications - Involving them in the campaigns (access to community, inputs into the survey, etc.)	During November
'Diversifying participation in the campaigns'	The city will try to diversify the age and social status of volunteers in the next campaign, e.g., by involving high school students, (un)employed people, and pensioners. - Use cities contacts in the region to reach the students - Contacts at RSA to reach (un)employed people - Contact senior service to reach pensioners	- Extend the invitation for participation to more groups	Beginning of December
'Citizens are more likely to engage in initiatives if they believe their actions make a difference'	The city of Bobigny could provide citizens with examples of how the initiative and participants can have an impact and influence policy decisions.	- List of examples of how they can have an impact on policy – e.g., to be shared during the recruitment process	During November
'Involving citizens in co-creation of evaluation KPIs and impact assessment'	The city can determine the impact indicators of the initiative in collaboration with citizens.	- Proposed KPIs to discuss with citizens - Brainstorming during the launch meeting in January	November/December January 16 th 2023
'Provide opportunities for citizens to present their evidence to policy makers'	The city can consider an opportunity for the citizens to speak directly with the elected officials and present the result of the initiative and their proposals/action plan.	- Organise an event after the January/February campaign? - Who will be there? Citizens, elected officials and the city	January-February 2023

During the period between October and early December 2022, the CitiMeasure team had to postpone/cancel meetings with the pilot case due to other priorities and limited capacity in the city. On 8 December 2022, the City of Bobigny informed the CitiMeasure team that due to the same reasons, they have decided to run the next Balbyn'air campaign without testing the CitiMeasure

guidelines. However, they would like to meet at the end of January or the beginning of February 2023 to reassess the possibility of testing the guidelines. As the new timeline doesn't align with the pilot phase of the CitiMeasure project, in consultation with the EC project officer, the project team decided to continue with the reporting of the pilot phase without the results of this case. If in 2023, the pilot happens, the results of the case will be reported in an updated version of this deliverable.

4 Concluding remarks and next steps

This report summarised the detailed steps taken for the implementation of each of the five CitiMeasure pilot plans, and the results of the pilots. Based on the lessons learned and joint reflections with the pilots and working groups, several improvements were already made to the CitiAIR tool. Others are planned for the final version of the Behaviour & Policy and the Digital Inclusion guidelines. The added value of the CitiMeasure pilot phase was not limited to the improvement of the instruments. Learnings resulted from interactions and exchanges between the pilots, working group members, and the CitiMeasure team proved to be valuable outputs for all parties involved. Although the timeline of the pilot phase may not have allowed for capturing and reflecting on all the lessons learned from the pilots in this report, the CitiMeasure team plans to continue the collaboration with the pilots and reflect on future application of the guidelines, especially in the case of Bobigny. The current report serves as inspiration for future applications of the CitiMeasure tools and guidelines. The lessons learned from the pilots will also be captured and communicated in a more narrative format, and as case studies, in the upcoming deliverable D1.10 (Pilot case studies) in January 2023. Furthermore, a webinar will be organised in 2023 to share the lessons learned from the CitiMeasure pilots with a wider audience. The next step for developing the Behaviour & Policy and the Digital Inclusion guidelines will be the visualisation in which the current text format of the guidelines will be transformed into more visual and interactive products.

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Annex 1 - Smartwaterland Communication Strategy

1. Introduction

1.1. Background of the project

Smartwaterland is a smart city project that involves citizen sciences. The project is coordinated by the City of Roeselare and has the following partners:

- WVI – West-Flemish intermunicipal
 - Design and testing of the housing of the pluviometer and working with the 3D-printer
- Quicksand – company of micro-electronics
 - Sensor and dashboard providers
- Vives – University of Applied Sciences
 - Academic validation and pedagogic support while making up the educational packages for the teachers

Besides, the pilot of the project will be held in the Broederschool in Roeselare (a high and middle school).

Smartwaterland has won the “Smart in the City”-award of the Government of Flanders in 2019. Because of this, the project is mainly funded by the Flemish Government.

The general aims of the project of Smartwaterland include the following:

- Avoid or at least limit flooding in the future
- Bridging periods of drought
- Increase awareness of data, both for young and old, for businesses and agriculture, and for internal employees
- Contextualise and enrich diverse data
- Harness the power of inter-municipal cooperation to address challenges
- Improve the quality of life in the city by focusing on good water quality

Smartwaterland is also selected as a pilot to test the Citimeasure Behaviour and Policy guidelines which is a project of Eurocities. This communication strategy is established with the help of these guidelines, the input of the policy officers of Eurocities and the feedback of the working group.

1.2. Purpose of this document

This document aims to provide a communication strategy for the project Smartwaterland and more specific wants to answer the questions why, who, what, how and when regarding communication.

1.3 Context of Smartwaterland

Extreme weather phenomena seem to become more frequent due to global warming. Groundwater resources in Roeselare are the lowest since the start of the measurements which has an impact on the economy, ecology, biodiversity and the quality of life. Cities worldwide are facing this challenge but Flanders is particularly vulnerable because it is one of the most paved regions in Europa and has the fourth lowest water resources of Europe. Roeselare has been repeatedly affected by droughts and floods in recent years. Since 2016 the City has a water management plan and since last year, 2021, the City of Roeselare has a climate adaptation plan. In these plans, the role of data is becoming more important in order to take more data-driven policy decisions.

While the focus of Smartwaterland is gathering data, is the goal of another project named Rainbrain to develop a platform to use these data during the policy process. An important actor here is the thematic

section 'Water' of the City of Roeselare where different policy officers and experts work together on water control, softening, sewerages... Currently Roeselare gathers already data on rainfall but only via a very few pluviometres owned by the City. The goal of Smartwaterland is to gather a lot of data via an intricate network of pluviometres.

2. Goals of communication

Beside general communication about the project to the public at large, the communication strategy is mainly linked to one of the aims of the project: "increase awareness about data, both young and old, for business and agriculture, and for internal employees".

3. Target audiences

Depending on the message, different target audiences, different interest in the project results

General public	The realisation of the project
The pupils of the school and their parents, the teachers	Purpose of the project, what's in it for me?
Policy officers	Taking data-driven decisions
Politicians	Taking data-driven decisions
Flemish Government	Realisation of the project

4. Key messages

General public	<ul style="list-style-type: none"> The city tackles the challenges around water The city wants to involve the youth in this so they can learn new things The city works together with different partners
The pupils of the school and their parents, the teachers	<ul style="list-style-type: none"> It is important to tackle this challenge together
Policy officers	<ul style="list-style-type: none"> Information about how the data are gathered and how to use them
Politicians	<ul style="list-style-type: none"> Information about how the data are gathered and how to use them
Flemish Government	<ul style="list-style-type: none"> An overview of the accomplishments of the project, the lessons learned and a plan for the future

5. Channels and tools

General public	<ul style="list-style-type: none"> Website of the City Social media channels of the City Monthly magazine (more storytelling) Press statement
The pupils of the school and their parents, the teachers	<ul style="list-style-type: none"> Educational package Information given with the pluviometer
Policy officers	<ul style="list-style-type: none"> Informing via steering groups (smart city, climate...)
Politicians	<ul style="list-style-type: none"> Informing via steering groups (smart city, climate...)
Flemish Government	<ul style="list-style-type: none"> End report

6. Planning

- Week of 22th of August: meeting with department communication
- 18/11 and 25/11/2022: roll out of the pilot in the school
 - Communication to general public
 - Communication to the pupils and the parents
- Beginning of December: communication about the gathered data to policy officers and politicians
- Middle of December: end report for Flemish Government

7. Evaluation

An evaluation of this communication strategy is planned in the general evaluation at the end of the pilot.

8. Roles

- Project leader of Smartwaterland (Jasmien Wellens):
 - Informing the policy officers of the City of Roeselare
 - Draw up of the end report
- Communication department:
 - Draw up of a press release
 - Draw up the communication messages
- The University of Applied Sciences Vives
 - Draw up of the educational packages with information for the teachers and pupils

Annex 2 – Selected indicators and impact domains for evaluation of Smartwaterland

Environment	
Biophysical and geographical characteristics of natural resources	Geographic scale
Governance	
Power dynamics within CS initiative	<ul style="list-style-type: none"> • Access to and control over data • Access restrictions to the data for different stakeholder groups • The procedures for storing, quality control, visualisation of the data (Data Management Plan and policies)
Science & technology	
Community participation in research	<ul style="list-style-type: none"> • In which specific research activities (and to what extent) community partners were involved?
Communication material	<ul style="list-style-type: none"> • Newsletters • Videos • Presentations • Website
Evaluation and adaptation	<ul style="list-style-type: none"> • Project evaluation • Adaptive project management • Are project structures adaptive and reactive, including feedback loops for adaptation, and possibly a scoping phase? • Does the project have an appropriate risk management plan?
Society - individual level	
Individual development	<ul style="list-style-type: none"> • What are the specific goals to be achieved by the participants? • What are the learning outcomes for the individuals? • Do individuals gain new knowledge, skills and competences? • Does the project contribute to a better understanding of science? • Does the project influence the values and attitudes of participants regarding science? • How much involvement and responsibility is offered to the participants? • Does the project foster ownership amongst participants? • Does the project contribute to personal change in behaviour? • Does the project raise motivation and self-esteem amongst participants? • Are participants motivated to continue the project or involve in similar activities? • In case of younger students, do they consider a scientific career?
Individual learning outcomes	<ul style="list-style-type: none"> • Improved participant understanding of science content

	<ul style="list-style-type: none"> • Enhanced participant understanding of science process • Better participant attitudes toward science • Improved participant skills for conducting science • Increased participant interest in science as a career • Other (case specific)
Society - meso level	
Community engagement and participation	<ul style="list-style-type: none"> • Diversity of participants/organisations • Recruitment/retention of new members • Role in the initiative or its activities • # and type of events attended • Amount of time spent in and outside of initiative activities • Benefits and challenges of participation • Satisfaction with the work or process of participation • Balance of power and leadership.
Society - societal level	
Environmental risk perception	<ul style="list-style-type: none"> • Perceptions of environmental risks (likelihood, impact) • Perceptions of extreme weather events (likelihood, impact) • Perceptions of climate change (likelihood, impact) • Perception of water crises (likelihood, impact)
Public understanding of science	<ul style="list-style-type: none"> • Change in Interest in science and nature • Self-efficacy for science and environmental action • Motivation for science and environmental action • Skills of science inquiry • Data interpretation skills • Knowledge of the nature of science • Environmental stewardship

Annex 3 – Sensor2School 1st Survey - Primary schools

Sensor2school **1st survey** - 2nd grade primary

In a while you will be building your own air quality sensor. Before that we ask you to take this survey which will help us to understand your initial position on the air quality subject.

In couple of months after finishing the Sensor2School project and gathering data from the sensor in your school, there will be follow-up 2nd survey. This will help to assess the shift of your comprehension on the air quality subject.

**Povinné pole*

SKILLS

Scientific research skills

Rate to what extent do you agree or disagree with the following statement:

1. *I can easily do a project in my school. **

Označte jen jednu elipsu na každém řádku.

	Agree	Disagree	I don't know
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. *I know where to get information about the state of air quality. **

Označte jen jednu elipsu na každém řádku.

	Agree	Disagree	I don't know
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. *I understand the information about air quality, when I find it. **

Označte jen jednu elipsu na každém řádku.

	Agree	Disagree	I don't know
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. *I can communicate about the results to my friends and family **

Označte jen jednu elipsu na každém řádku.

	Agree	Disagree	I don't know
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Digital (software and hardware) skills

Rate to what extent do you agree or disagree with the following statement:

5. *I can comfortably use the following devices: **

Označte jen jednu elipsu na každém řádku.

	Agree	Disagree	I don't know
Computer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Smart phone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tablets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Air quality sensors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. *I can use the internet for the following purposes: **

Označte jen jednu elipsu na každém řádku.

	Agree	Disagree	I don't know
Search the internet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Download information	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Transferable skills

Rate to what extent do you agree or disagree with the following statement:

7. *I can comfortably work together with my classmates **

Označte jen jednu elipsu na každém řádku.

	Agree	Disagree	I don't know
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8. *I can comfortably ask questions about a subject in school, when I am not sure. **

Označte jen jednu elipsu na každém řádku.

	Agree	Disagree	I don't know
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. *I can comfortably read and/or find a direction on a online map **

Označte jen jednu elipsu na každém řádku.

	Agree	Disagree	I don't know
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

KNOWLEDGE

Subject matter - Air quality

Rate to what extent do you agree or disagree with the following statement:

10. *I know about the challenges that our environment faces today (e.g., wildfires, floods, heatwaves, droughts, air pollution) **

Označte jen jednu elipsu na každém řádku.

	Agree	Disagree	I don't know
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

11. *I understand the importance of clean air for people, animals and plants. **

Označte jen jednu elipsu na každém řádku.

	Agree	Disagree	I don't know
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

12. *I think the following pollute the air. **

Označte jen jednu elipsu na každém řádku.

	Agree	Disagree	I don't know
Factories	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cars	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trees	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rivers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Scientific process

Rate to what extent do you agree or disagree with the following statement:

13. *I know how air quality is measured **

Označte jen jednu elipsu na každém řádku.

	Agree	Disagree	I don't know
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Place-based

Rate to what extent do you agree or disagree with the following statement:

14. *I have heard about the following problems near my house: **

Označte jen jednu elipsu na každém řádku.

	Yes	No	I don't know
High temperatures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Too little or too much water (droughts and floods)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bad air quality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dirty water in rivers, springs, ...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Ethics

Rate to what extent do you agree or disagree with the following statement:

15. *If I want to share pictures, address, name, phone number of a classmate with someone else, I need to ask for his/her permission first: **

Označte jen jednu elipsu na každém řádku.

	Agree	Disagree	I don't know
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

ATTITUDES

16. *I care about **

Označte jen jednu elipsu na každém řádku.

	Agree	Disagree	I don't know
I think it is important to care about people and the living environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe science is important to understand and protect the environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe everyone can participate in science	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I trust technology and think it can help us live better	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think everyone is responsible for protecting the environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think we should work together to protect the environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I want to learn more about the environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

17. *Are there any other things that you want to mention?*

Annex 4 – Sensor2School 1st Survey - High schools

Sensor2school 1st survey - High School

In a while you will be building your own air quality sensor. Before that we ask you to take this survey which will help us to understand your initial position on the air quality subject.

In couple of months after finishing the Sensor2School project and gathering data from the sensor in your school, there will be follow-up 2nd survey. This will help to assess the shift of your comprehension on the air quality subject.

**Povinné pole*

SKILLS

Scientific research skills

Rate to what extent do you agree or disagree with the following statement:

1. *I can understand, plan, and follow the steps of a project in my school. **

Označte jen jednu elipsu na každém řádku.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. *I can collect/get data about air quality **

Označte jen jednu elipsu na každém řádku.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. *I can analyse data that I have collected. **

Označte jen jednu elipsu na každém řádku.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. *I can communicate about the results to my friends and family **

Označte jen jednu elipsu na každém řádku.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Digital (software and hardware) skills

Rate to what extent do you agree or disagree with the following statement:

5. *I can comfortably use the following devices: **

Označte jen jednu elipsu na každém řádku.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Computer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Smart phone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tablets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Air quality sensors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. *I can easily (on the Internet): **

Označte jen jednu elipsu na každém řádku.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
browse webpages	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
search a topic I want to understand	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
download data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
evaluate data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. *I can set up and maintain a digital device [thermometer/thermostat...]* *

Označte jen jednu elipsu na každém řádku.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Transferable skills

Rate to what extent do you agree or disagree with the following statement:

8. *I can comfortably work together with my classmates* *

Označte jen jednu elipsu na každém řádku.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. *I can comfortably ask questions about the process/challenge the results of a school project* *

Označte jen jednu elipsu na každém řádku.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. *I can comfortably read and/or find a direction in a online map* *

Označte jen jednu elipsu na každém řádku.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

11. *Do you know about other skills that you normally use in a school project? If yes, please explain those.*

KNOWLEDGE

Subject matter - Air quality

Rate to what extent do you agree or disagree with the following statement:

12. *I know about the challenges that our environment faces today **

Označte jen jednu elipsu na každém řádku.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

13. *I understand the effect of air quality on the environment **

Označte jen jednu elipsu na každém řádku.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

14. *I have a good understanding about the sources of air pollution **

Označte jen jednu elipsu na každém řádku.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Scientific process

Rate to what extent do you agree or disagree with the following statement:

15. *I know how air quality is measured **

Označte jen jednu elipsu na každém řádku.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Place-based

Rate to what extent do you agree or disagree with the following statement:

16. *I understand the environmental issues where I live (temperature, rainfall, air quality, water quality...)* *

Označte jen jednu elipsu na každém řádku.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Ethics

Rate to what extent do you agree or disagree with the following statement:

17. *I understand the ethical implications a school project might have (sharing pictures and personal information, sharing data and information with the public...)* *

Označte jen jednu elipsu na každém řádku.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

18. *Is there any other important thing you need to know to participate in a school project? If yes, please explain.*

ATTITUDES

19. *I care about **

Označte jen jednu elipsu na každém řádku.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
I think it is important to care about people and the living environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe science is important to understand, monitor and protect the environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe everyone can participate in scientific research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I trust technology and think it can help to solve the challenges we face	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think everyone is responsible for protecting the environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think we should work together to protect the environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am willing and able to change my behaviour [system?] to protect the environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I want to learn more about the environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

20. *Are there any other things that you want to mention?*

Annex 5 – Sensor2School 2nd Survey - Primary schools

Sensor2school 2nd survey - 2nd grade primary

Thank you for participating in the Sensor2School Project! We hope you had a great time building the sensor and than analyzing and using the data. Now we ask you to fill out the last second survey, which will help us to asses the shift of your comprehension on the air quality subject. On behalf of Senzorvzduchu, z.s. thank you! Michael Lazan

*Povinné pole

1. *I could easily get involved in the Sensor2School project in my school. **

Označte jen jednu elipsu na každém řádku.

	Agree	Disagree	I don't know
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. *I know where to get information about the state of air quality. **

Označte jen jednu elipsu na každém řádku.

	Agree	Disagree	I don't know
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. *I understand the information about air quality, when I find it. **

Označte jen jednu elipsu na každém řádku.

	Agree	Disagree	I don't know
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. *I can communicate about the results to my friends and family **

Označte jen jednu elipsu na každém řádku.

	Agree	Disagree	I don't know
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. *I can comfortably use the following devices: **

Označte jen jednu elipsu na každém řádku.

	Agree	Disagree	I don't know
Computer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Smart phone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tablets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Air quality sensors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. *I can use the internet for the following purposes: **

Označte jen jednu elipsu na každém řádku.

	Agree	Download information	I don't know
Search the internet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Download information	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. *I can comfortably work together with my classmates **

Označte jen jednu elipsu na každém řádku.

	Agree	Disagree	I don't know
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8. *I can comfortably ask questions about a subject in school, when I am not sure. **

Označte jen jednu elipsu na každém řádku.

	Agree	Disagree	I don't know
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. *I can comfortably read and/or find a direction on a online map **

Označte jen jednu elipsu na každém řádku.

	Agree	Disagree	I don't know
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

KNOWLEDGE

10. *I know about the challenges that our environment faces today (e.g., wildfires, floods, heatwaves, droughts, air pollution) **

Označte jen jednu elipsu na každém řádku.

	Agree	Disagree	I don't know
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

11. *I understand the importance of clean air for people, animals and plants. **

Označte jen jednu elipsu na každém řádku.

	Agree	Disagree	I don't know
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

12. *I think the following pollute the air. **

Označte jen jednu elipsu na každém řádku.

	Agree	Disagree	I don't know
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

13. *I know how air quality is measured **

Označte jen jednu elipsu na každém řádku.

	Agree	Disagree	I don't know
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

14. *I have heard about the following problems near my house: **

Označte jen jednu elipsu na každém řádku.

	Agree	Disagree	I don't know
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

15. *If I want to share pictures, address, name, phone number of a classmate with someone else, I need to ask for his/her permission first:*

Označte jen jednu elipsu na každém řádku.

	Agree	Disagree	I don't know
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

ATTITUDES

16. *I care about **

Označte jen jednu elipsu na každém řádku.

	Agree	Disagree	I don't know
I think it is important to care about people and the living environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe science is important to understand and protect the environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe everyone can participate in science	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I trust technology and think it can help us live better	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think everyone is responsible for protecting the environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think we should work together to protect the environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I want to learn more about the environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

17. *Are there any other things that you want to mention?*

Annex 6 – Sensor2School 2st Survey - High schools

Sensor2school 2nd survey - High School

Thank you for participating in the Sensor2School Project! We hope you had a great time building the sensor and then analyzing and using the data. Now we ask you to fill out the last second survey, which will help us to assess the shift of your comprehension on the air quality subject. On behalf of Senzorvzduchu, z.s. thank you! Michael Lazan

*Povinné pole

SKILLS

Scientific research skills

Rate to what extent do you agree or disagree with the following statement:

1. *I could easily understand, follow and plan the steps of the Sensor2School project in my school.* *

Označte jen jednu elipsu na každém řádku.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. *I can collect/get data about air quality **

Označte jen jednu elipsu na každém řádku.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. *I can analyse data that I have collected. **

Označte jen jednu elipsu na každém řádku.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. *I can communicate about the results to my friends and family **

Označte jen jednu elipsu na každém řádku.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Digital (software and hardware) skills

Rate to what extent do you agree or disagree with the following statement:

5. *I can comfortably use the following devices: **

Označte jen jednu elipsu na každém řádku.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Computer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Smart phone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tablets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Air quality sensors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. *I can easily (on the Internet): **

Označte jen jednu elipsu na každém řádku.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
browse webpages	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
search a topic I want to understand	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
download data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
evaluate data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. *I can set up and maintain a digital device [thermometer/thermostat...] **

Označte jen jednu elipsu na každém řádku.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Transferable skills

Rate to what extent do you agree or disagree with the following statement:

8. *I can comfortably work together with my classmates **

Označte jen jednu elipsu na každém řádku.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. *I can comfortably ask questions about the process/challenge the results of a school project **

Označte jen jednu elipsu na každém řádku.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. *I can comfortably read and/or find a direction in a online map **

Označte jen jednu elipsu na každém řádku.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

11. *Do you know about other skills that you normally use in a school project? If yes, please explain those.*

KNOWLEDGE

Subject matter - Air quality

Rate to what extent do you agree or disagree with the following statement:

12. *I know about the challenges that our environment faces today **

Označte jen jednu elipsu na každém řádku.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

13. *I understand the effect of air quality on the environment **

Označte jen jednu elipsu na každém řádku.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

14. *I have a good understanding about the sources of air pollution **

Označte jen jednu elipsu na každém řádku.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Scientific process

Rate to what extent do you agree or disagree with the following statement:

15. *I know how air quality is measured **

Označte jen jednu elipsu na každém řádku.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Place-based

Rate to what extent do you agree or disagree with the following statement:

16. *I understand the environmental issues where I live (temperature, rainfall, air quality, water quality...)* *

Označte jen jednu elipsu na každém řádku.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Ethics

Rate to what extent do you agree or disagree with the following statement:

17. *I understand the ethical implications a school project might have (sharing pictures and personal information, sharing data and information with the public...)* *

Označte jen jednu elipsu na každém řádku.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Your answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

18. *Is there any other important thing you need to know to participate in a school project? If yes, please explain.*

ATTITUDES

19. *I care about **

Označte jen jednu elipsu na každém řádku.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
I think it is important to care about people and the living environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe science is important to understand, monitor and protect the environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe everyone can participate in scientific research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I trust technology and think it can help to solve the challenges we face	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think everyone is responsible for protecting the environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think we should work together to protect the environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am willing and able to change my behaviour [system?] to protect the environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I want to learn more about the environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

20. *Are there any other things that you want to mention?*

Annex 7 – List of contacted organisations and pending initiatives that were invited to join CitiAIR

Initiatives	Status
CitiMeasure Landscape review (59)	
AIR BREAK- Co-producing healthy clean commuting air spots in town	Added
AIRbezen Oost-Vlaanderen	Discarded
AirClean School (Environmental agencies)	Added
AiREAS	Added
AIR-HERITAGE	Contacted
Apeldoorn in Data	Contacted
Arnhems Peil	Contacted
Bodegraven-Reeuwijk	Contacted
Boeren en Buren	Discarded
Breathe Brno	E-mail not found
CAPTOR	Contacted
CITI-SENSE	Pending
CitiSense MOB	Contacted
CLAiR-CITY	Added
CLAIRO	Contacted
Coping & Resilience	Email not found
CS Garrotxa	Discarded
CurieuzenAir	Added
CurieuzeNeuzen	Contacted
CurieuzeNeuzen In De Tuin	Contacted
DIAMS	Added
DivAirCity	Contacted
D-NOSES	Discarded
ESAIRE	Contacted
Gelderse Valei	Contacted
hackAIR	Added
Hollandse Luchten	Contacted
HOPE	Added
ICARUS	Contacted
InfluenceAir	Contacted
INNOAIR	Discarded
iSCAPE Improving the Smart Control of Air Pollution in Europe	Contacted
iSpex	Added
Lansingerland	Contacted
Lucht voor Leidschemdam Voorburg	Email not found

Luftdata	Contacted
Maaspoort Meet	Contacted
MySense	Added
NO2 No Grazie	Contacted
Onze Lucht	Contacted
Samen Duurzaam Zeist	Contacted
Samen houtrook meten	Contacted
Samen Luchtkwaliteit Meten in ZuidHolland'	Email not found
Samen Meten Zuid-Holland	Added
Samenmeten	Added
Scapeler	Added
Senshagen	Contacted
Smart emission portal	Contacted
Snuffelfiets	Added
Stadslab Luchtkwaliteit	Contacted
Sympnia	Email not found
TransfAIR	Contacted
Urban AirQ	Email not found
Urwatair	Added
Vigilantes del aire	Discarded
Vigilantes del cierzo	Discarded
Waddinxveen	Email not found
WeCount	Added
Zuidplas	Contacted
COMPAIR landscape review (16)	
AirBG	Email not found
Dustcounters	Email not found
HEAL Sofia	Email not found
IQAir Sofia	Email not found
METER.AC	Contacted
BerlinAIR NO2 Atlas	Contacted
HEAL	Email not found
Measuring the Berlin Air	Contacted
PolDiv	Email not found
SenseBox	Contacted
ExpAIR	Contacted
HASSELair	Contacted
Leuvenair	Email not found
Luchtpijp	Contacted
Meet Mee Mechelen	Added
Cos4Cloud	Contacted
More initiatives (4)	

APICE	Discarded
CARGOBIKE	Contacted
Schools in Aveiro	Pending
Initiatives in Rotterdam	Pending

Annex 8 – Screenshots of Miro boards - online needs assessment workshop 14 July

