



TransformAr

Accelerating and upscaling transformational adaptation in
Europe: demonstration of water-related innovation
packages

Learning Stories on Awareness-Raising and Behavioural Change Solutions

Deliverable 4.1



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TABLE OF CONTENTS

EXECUTIVE SUMMARY	4
1. INTRODUCTION	5
1.0 Overview of Behavioural Change Strategies and the solutions implementing these strategies	5
1.1 Goals and Expected Outcomes	10
2. CONTEXT	11
2.0 Behavioural Actions and Interventions	11
2.1 Education & Awareness Raising	12
2.2 Monitoring & Feedback	12
3. OBSERVATION AND LESSONS LEARNED	13
4. IMPACT AND REFLECTION	14
4.0 Environmental Impact	14
4.1 Social Impact	14
4.2 Governance Impact	15
4.3 Link to Goals and Outcomes	16
5. FUTURE STEPS	18
5.0 Planning	18
5.1 Activities	18
6. ANNEX	19

EXECUTIVE SUMMARY

This deliverable is part of Work Package 4 of the TransformAR project, which focuses on implementing and testing region-specific solutions in key community systems. These solutions aim to address territorial vulnerabilities to climate change and improve resilience within the regions and communities. WP4 also evaluates the replicability of these solutions, defining their potential to be included in Innovation Packages for broader implementation. In this deliverable, the learning stories from the behavioural change solutions will be explained in detail, showcasing the outcomes, challenges, and successes of these interventions.

Four behavioural change solutions were implemented across three regions to promote climate awareness, sustainable practices, and community resilience. Each initiative specifically targets groups utilizing different strategies. This document compiles and presents the learning stories from these four behavioural change solutions. The four solutions are:

- An **awareness-raising program** in the Municipality of Egaleo targeting 16-18-year-old children to make them more aware of climate change and its impact on the environment.
- A **Citizen app** in the Municipality of Egaleo that displays data from weather stations in the region
- A **Citizen app** in Lappeenranta that displays stormwater information
- A **nudging experiment** in Guadeloupe that targets tourists on the archipelago to nudge them to reduce their water consumption overall, but with more focus on water consumption in the shower.

While this deliverable focuses on behavioural change, other solutions implemented in WP4 are addressed in separate learning stories. These include governance schemes, nature-based solutions, digital and technical solutions, and insurance and financial solutions. Some of these solutions have a direct impact on behavioural change solutions, such as the Smart Climate Stations in Egaleo, which feed data into the citizen app to support climate awareness.

Key Learnings:

Targeted Engagement Works: Tailored strategies effectively raised awareness and promoted action, such as using nudging for water conservation among tourists in Guadeloupe and citizen apps for real-time data sharing and feedback in Finland and Greece.

Youth are Key Agents of Change: The awareness-raising program in the Municipality of Egaleo showed that young people are highly receptive to climate education and can drive community-wide behaviour changes.

Technology Enhances Participation: Citizen apps facilitated direct engagement between residents and authorities, empowering communities and guiding policy through real-time data and feedback.

Data Accessibility is Critical: The lack of centralised data, particularly in Finland for stormwater management, highlighted the need for better data sharing to enhance regional climate resilience.

Local Stakeholder Involvement is Essential: Challenges in engaging stakeholders, like hotel managers in Guadeloupe, underscored the importance of local support and collaboration for successful implementation.

Continuous Feedback Improves Solutions: Ongoing feedback from participants helped refine and adapt the solutions, such as adding datathons in Egaleo to enhance citizen engagement.

Conclusion:

The project demonstrates the value of combining education, technology, and community involvement to drive climate action. Future efforts will focus on improving data sharing, strengthening local partnerships, and scaling solutions to new regions and groups to enhance community resilience to climate change.

1. Introduction

1.0 Overview of Behavioural Change Strategies and the solutions implementing these strategies

The key behavioural change strategies applied in the TransformAr project are awareness and education, citizen participation and engagement, feedback mechanisms, and nudging. These approaches operate on different levels, from education and awareness-raising to changing behaviour through subtle environmental adjustments and technology. The behavioural change strategies were applied in four different behavioural change solutions and implemented in three different regions within the TransformAr project: Egaleo (Greece), Lappeenranta (Finland) and Guadeloupe (France).

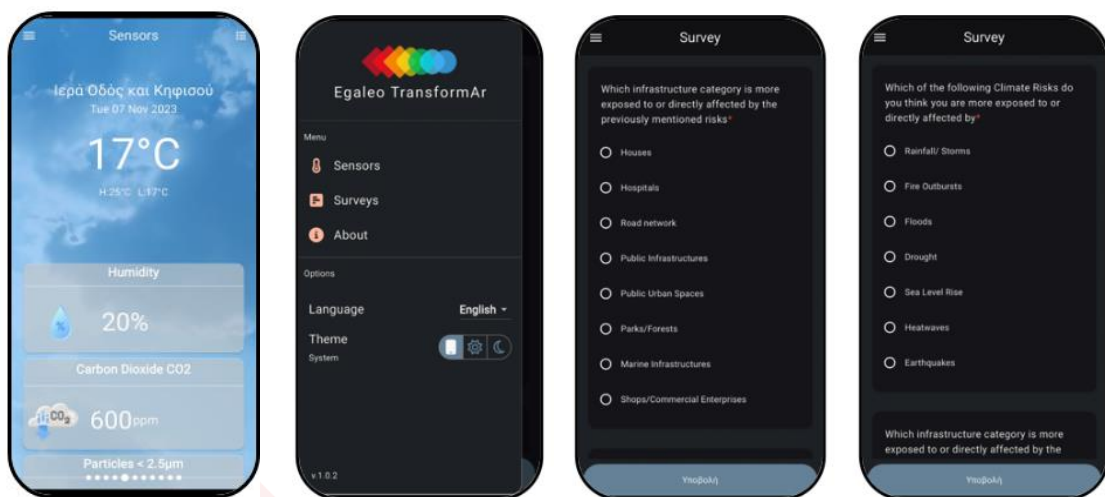
The solutions were created based on the outcome of work completed in an earlier phase of the TransformAr project. A detailed report can be found on the TransformAr Knowledge Centre under the name of [D1.4 Beliefs Towards Transformational Adaptation Conceptual Map](#). This report identifies barriers to the implementation of climate solutions and explores public perceptions, attitudes, and beliefs that either hinder or facilitate behavioural change. The analysis includes insights from past and existing climate actions and policies, providing a foundation for defining desired behaviours.

The four behavioural change solutions:

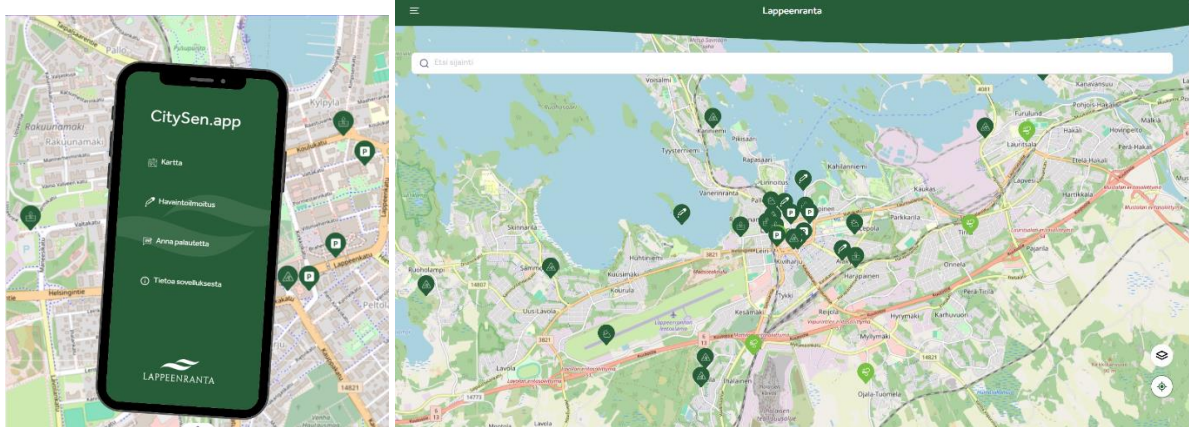
- **An awareness-raising program in the Municipality of Egaleo** (Greece) that consists of a curriculum of 45 min for pupils between 16-18 years old related to climate change understanding and climate awareness.



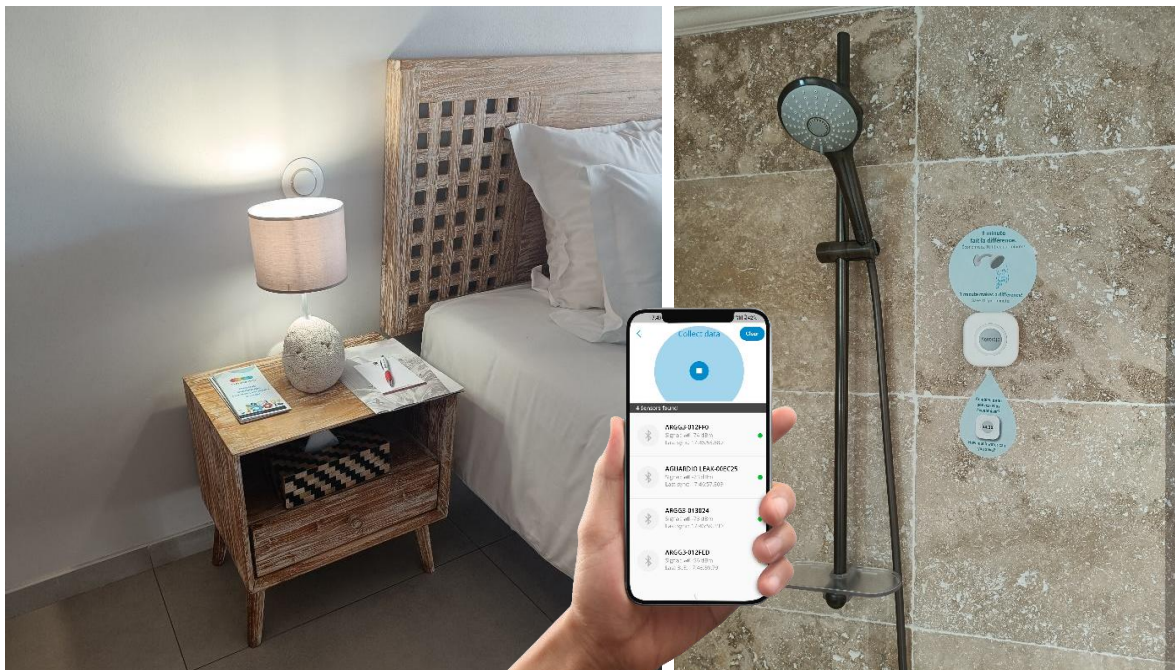
- **A citizen app in Egaleo** (Greece) for gathering and distributing information. It will use crowdsource data about climate awareness of citizens of MOE via a questionnaire, to disseminate TransformAr's solutions to the public and to provide notifications for climate-related events



- **A citizen application in Lappeenranta (Finland)** for crowd sensing and real-time monitoring of anomalies due to climate change events. The citizen application is a tool that allows citizens to interact with the local municipality, report issues, and access information.



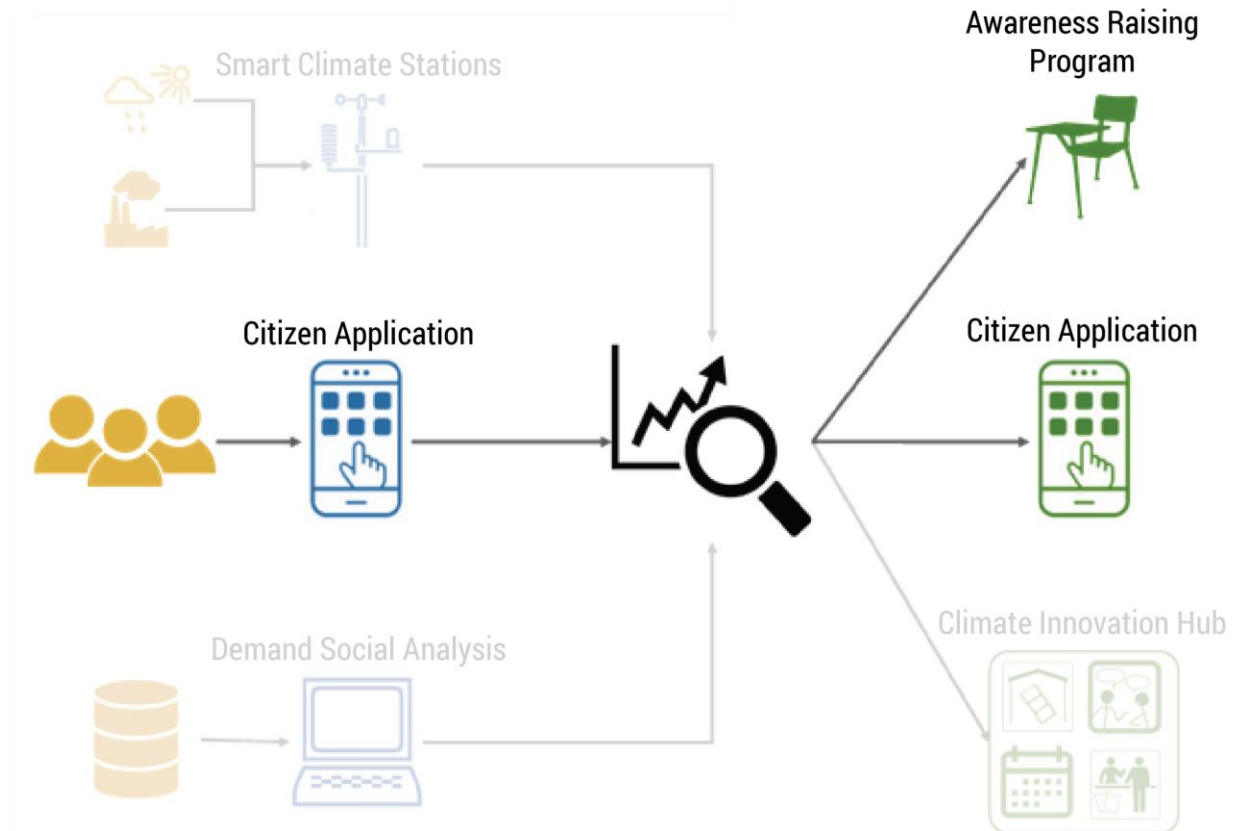
- **A nudging experiment in Guadeloupe** that targets tourists to consume less water by using flyers, stickers and shower sensors.





On the following pages, we provide a visual representation of each solution, illustrating what it looks like and outlining the different steps involved.

Besides the two solutions in Egaleo that are included in this report, other solutions were implemented during the TransformAr project. All these solutions are connected to each other as shown in the visual below:

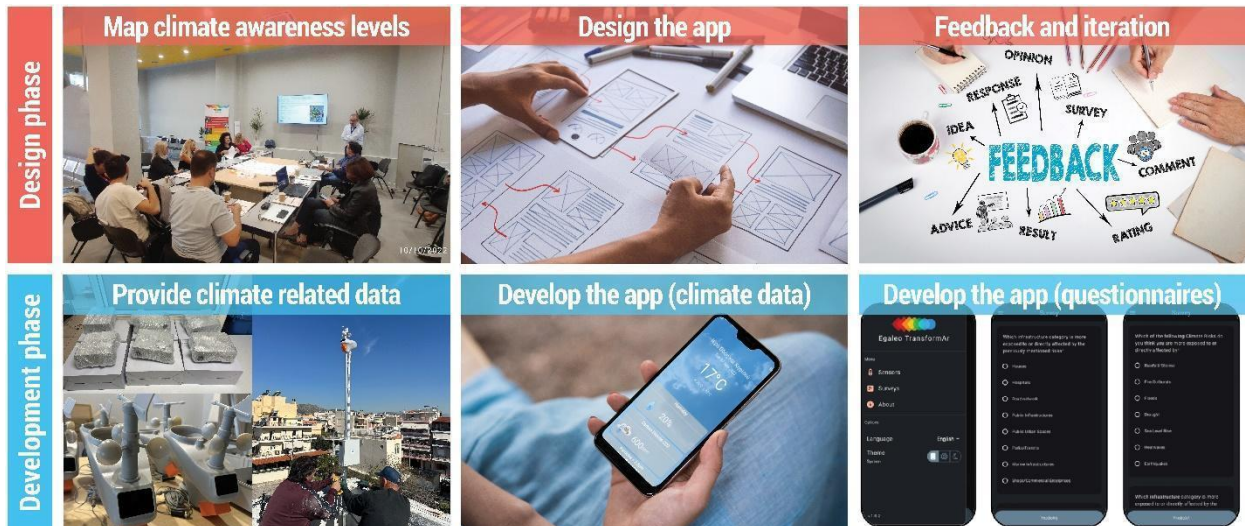


The data gathered from the citizen app (questionnaires), the smart climate stations (weather stations that are installed on different places in Egaleo) and the demand social analysis (demand of social and health services that are provided by the municipality of Egaleo) is analysed and used in the awareness raising program, the citizen application and the climate innovation hub (multi-purpose facility with a permanent exhibition on climate change and TransformAr solutions, live data streaming from the weather stations and a place to organise event promoting climate innovation). This report only includes the behaviour change solutions: The citizen app and the awareness-raising program.

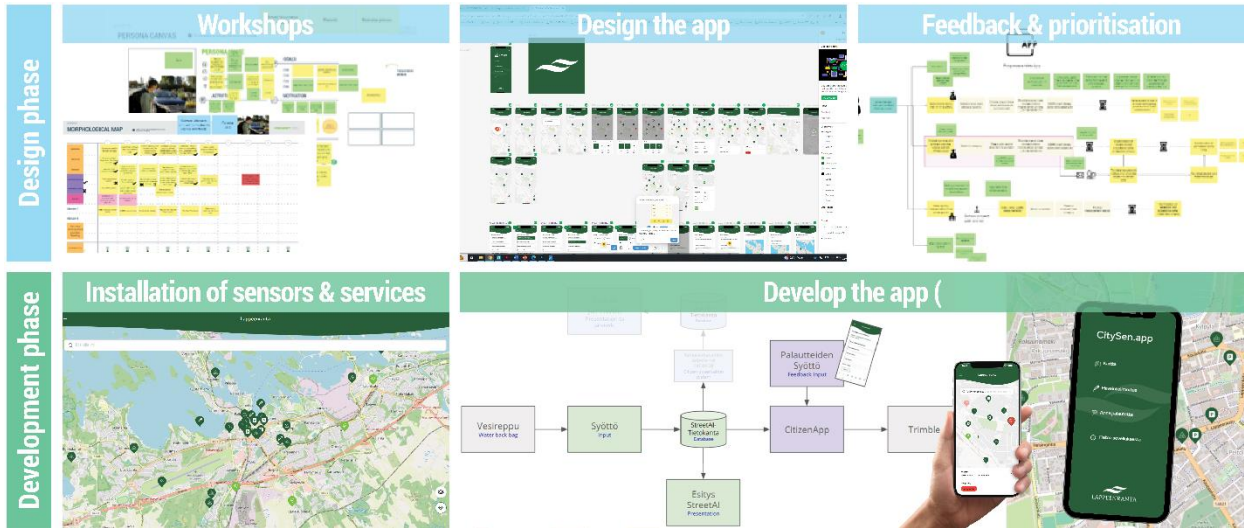
The awareness-raising program in Egaleo consists of 2 phases: The design phase and the implementation phase. The visual below highlights specific steps that were taken in these phases:



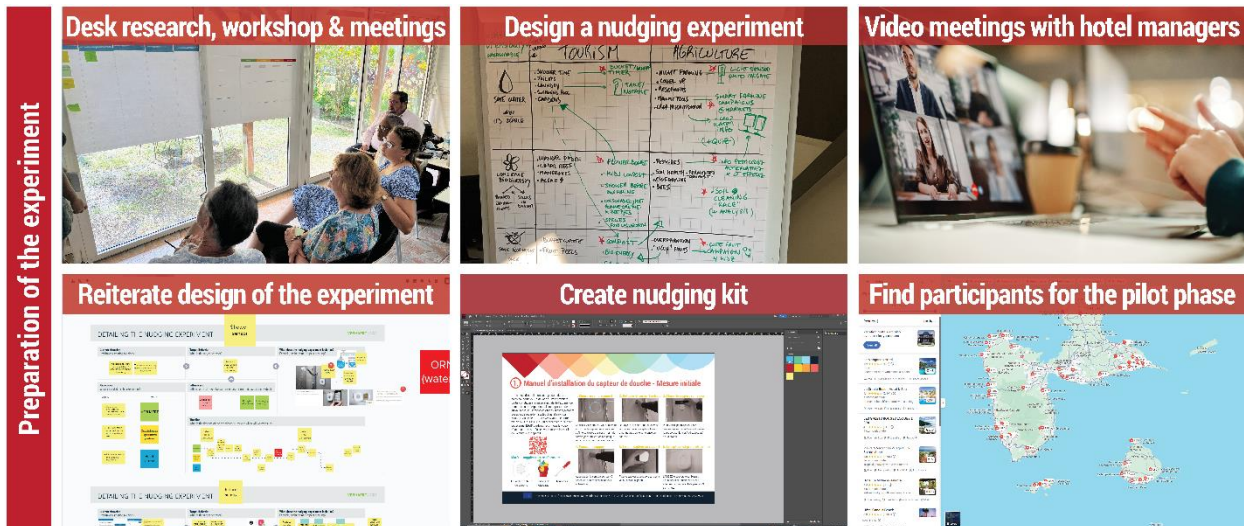
The citizen app in Egaleo went through a design and development phase. The citizen app has three main functionalities: distributing the data gathered by the climate stations, gathering data via the questionnaires and sending notifications for climate-related events.

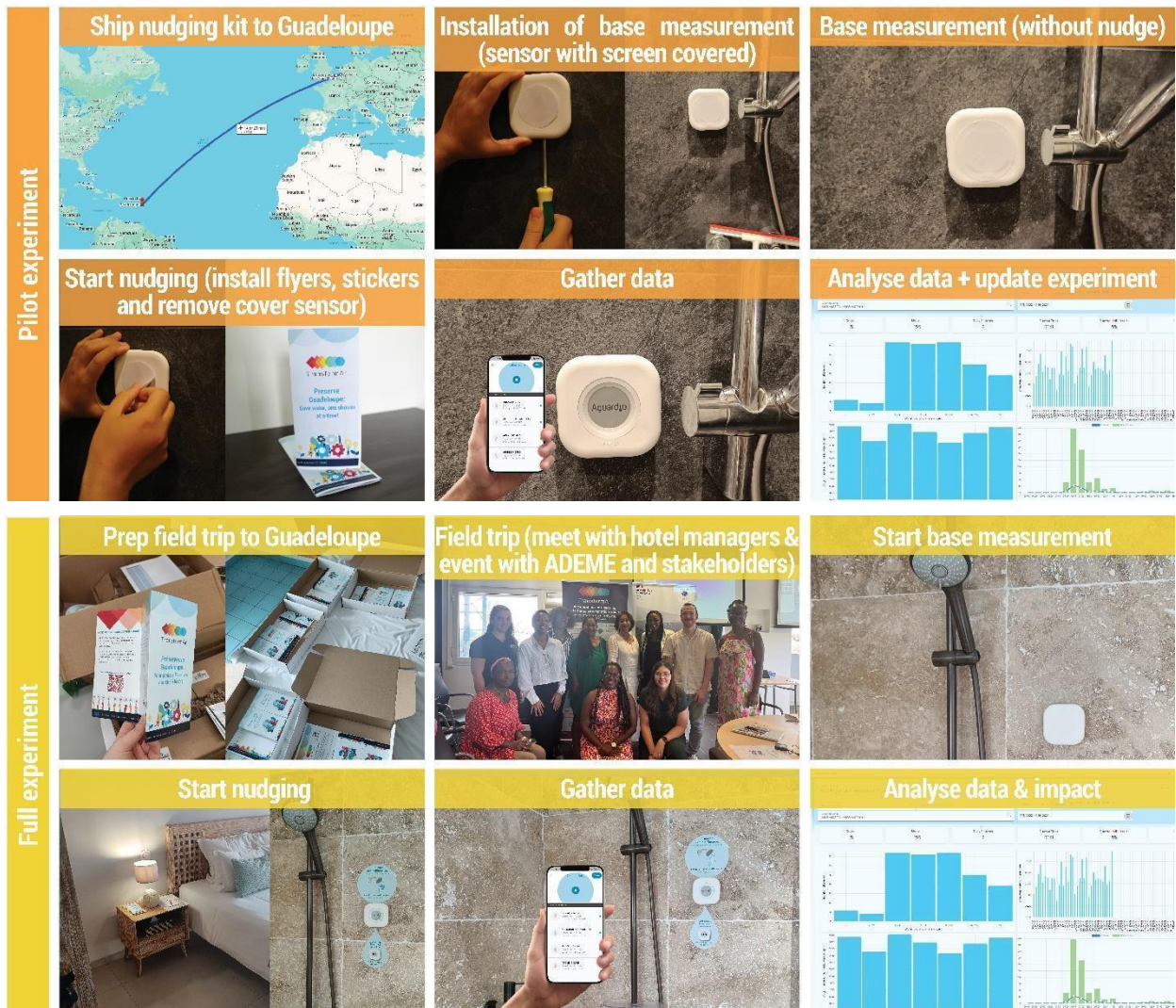


The citizen app in Lappeenranta was developed after a series of workshops that helped decide what to include in the application. During the design phase, relevant stakeholders provided feedback and helped prioritise the app's various features. This was followed by the development phase. Similar to the app in Egaleo, this one has multiple functionalities. It will be used for crowd sensing and real-time monitoring of anomalies related to climate change events. Additionally, it serves as a tool for citizens to interact with the local municipality, report issues, and access information.



The nudging experiment in Guadeloupe consisted of three phases: preparation of the experiment, pilot experiment, and full experiment. The visual below highlights some specific steps that were taken for the nudging experiment in Guadeloupe.





1.1 Goals and Expected Outcomes

The proposed solutions aim to drive behavioural change and enhance community adaptation to climate-related challenges through targeted awareness, education, and engagement strategies. While each solution focuses on different aspects, they share common goals: increasing climate awareness, promoting sustainable practices, and strengthening community resilience. In this context, perception is a key concept, as these solutions challenge not only individuals' awareness of a problem but also their positions and those of their communities. Understanding how a problem is perceived is essential because it influences the community's response and the type of actions they are willing to take. All the solutions mentioned below call for action, and it is important that the necessity of these actions is clearly stated so that they are effectively embraced by the target audience.

1. **The awareness-raising program in Egaleo** aims to build climate awareness among students by organising climate-related events and courses in classrooms. By educating the younger generation, this solution fosters early adoption of environmentally conscious behaviours, contributing to long-term community resilience.
2. The goals of **the citizen application in the Municipality of Egaleo** includes crowdsourcing data on climate awareness, disseminating information on climate adaptation strategies, and providing

notifications for climate-related events. This approach ensures that citizens are well-informed and actively engaged in climate resilience efforts.

3. **The citizen application in Lappeenranta** focuses on raising awareness about climate impacts in urban areas, distributing information on adaptation measures, and engaging citizens in environmental monitoring. This solution empowers individuals to take proactive steps in addressing climate challenges and contributes to community-driven data collection.
4. **The nudging experiment in Guadeloupe** aims to evaluate and promote sustainable water usage through behavioural nudging strategies. By providing feedback and raising awareness, the nudging experiment seeks to reduce water consumption and identify effective techniques for future conservation efforts.

The four solutions are expected to achieve a common outcome: raising awareness about climate change and encouraging behaviour changes that reduce its impacts on the region. By targeting different audiences and employing various strategies, these solutions are anticipated to make individuals more conscious of how their actions affect climate change, ultimately fostering more sustainable behaviours.

2. Context

2.0 Behavioural Actions and Interventions

Each solution is designed to engage different audiences and leverage technology and community involvement to promote climate-conscious behaviours.

In Egaleo, an awareness campaign was developed focusing on students.

Egaleo's citizen app will not only share information with the citizens, but will also collect feedback through questionnaires, enabling the Municipality of Egaleo to better understand public awareness and tailor future initiatives accordingly.

Cooperation with local schools was a key component in Egaleo and Lappeenranta. In Finland, water sample test kits were provided for students to collect and analyse samples from stormwater management structures. The results were then uploaded via the app, integrating community science into the broader climate adaptation efforts.

The Citizen apps were launched as a tool to engage citizens in climate action.

In addition, the three demonstrators organised an Open Day to showcase their climate solutions and actively disseminated information about the impacts of climate change. On the right is a picture of the Open Day event held in Lappeenranta. Besides the Open Day, Lappeenranta also used the city's social media pages to publish information about climate impacts and TransformAr-related initiatives, further spreading awareness.



In the nudging experiment conducted with hotel guests in Guadeloupe, we focused on understanding guest behaviours and designing an effective nudging campaign to promote water conservation. This involved developing a comprehensive nudging kit, conducting both a pilot and final experiment, and analysing the data to draw scientific conclusions about the impact of these subtle behavioural prompts.

2.1 Education & Awareness Raising

Different educational actions were undertaken in the demonstrator areas. Two of the solutions cooperated with schools to spread awareness and educate school-going children on climate change and how to cope with it. The nudging solution in Guadeloupe is using flyers and stickers to educate hotel guests on the impact of their water consumption on the planet and the citizen apps focus on citizen science where they try to get citizens motivated by organising datathons and handing out kits so they can build their environmental station.

The information shared with the target audience includes the climate problems and their impacts on the specific region, human impacts on the environment, real-time information from weather stations, and the results of citizen science (sample kits). Sharing this information is intended to create awareness by making the consequences of climate change more tangible and relatable to the audience's own environment. For example, real-time data from weather stations can help people understand the immediacy of climate effects, while hands-on activities like building environmental stations engage citizens actively, thereby fostering a sense of responsibility and encouraging them to adopt more sustainable behaviours. Research on environmental education and behavioural psychology suggests that such targeted information, especially when it is localised and action-oriented, is more likely to lead to meaningful engagement and behaviour change in the target audience.

2.2 Monitoring & Feedback

The impact of the solutions and feedback on it is monitored in different ways:

- The citizen app in Egaleo is monitoring the impact of the solution via the questionnaires in the application.
- The awareness program in Egaleo collects feedback directly from the students that are following the course. Once the application is published there will be a monitoring of the number of users and the number of citizen science results.
- The citizen app in Lappeenranta monitors the number of users and the number of citizen science results. Besides this, it will have a feedback section so the citizens can give their feedback directly.
- The nudging experiment is gathering feedback in 3 different ways: via the shower sensor that is installed in the bathrooms of the participating hotels, via a feedback form that is available to the hotel guests and via a feedback form that is filled in regularly by the hotel managers.

Some of these solutions are just at the start of being implemented, but some feedback is already received.

For the citizen app and the awareness program in Egaleo :

Overall the targeted audience was rather positive. They asked to see more data and/or make the data more accessible. For example, in Egaleo the teachers that participated in the awareness program asked the Municipality of Egaleo to provide access to local weather and environmental datasets (from the Smart Climate Station) to be used in their classes and exercises. The datathon was performed as a response to their request.

For the citizen app in Lappeenranta :

In the city's feedback system there will be an own feedback category for the solution

The application was recently launched, and before that, a test run took place where test users could leave feedback and suggestions on what information should be added. One suggestion was to include the swimming water quality.

For the nudging experiment in Guadeloupe :

We are gathering feedback through both quantitative data collection and qualitative assessments. Quantitatively, we use digital shower sensors to measure the shower duration and water consumption of hotel guests in two distinct phases: before and after the implementation of nudging materials. The sensors collect real-time data that is uploaded to a centralised platform (Aquadio Hub), allowing us to analyse changes in behaviour resulting from the nudging interventions.

Qualitatively, we also solicit direct feedback from hotel guests and staff. This involves distributing surveys and conducting interviews to understand their perceptions of the nudging materials, the visibility and effectiveness of the shower sensors, and any behavioural changes they may have noticed. This combination of quantitative data and qualitative feedback provides a comprehensive understanding of the impact of our solution and helps us refine our approach for future implementations.

3. Observation and lessons learned

Different observations were made during the implementation of the solutions, with one common issue being the absence of essential data.

In Greece it was observed that citizens, and especially younger people, are more receptive to new information and motivated to act on climate change. They are generally aware of the problem; however, the compilation and course format of climate change information can provide new perspectives and often help them surpass misinformation. Despite this awareness, many young people struggle with how to act effectively. TransformAr's approach to adaptation addresses this challenge by offering tailored guidance and actionable frameworks that empower young people to translate their motivation into meaningful actions. Through carefully designed educational programs, community-based projects, and digital tools, TransformAr helps bridge the gap between awareness and effective action. By reframing climate information in a way that is accessible and engaging, TransformAr ensures that young individuals are equipped to make informed and impactful contributions to climate resilience.

In Finland, there is no centralised data collection point for stormwater data as there is for lake water quality. Stormwater data is often not available in electronic form, such as the results of laboratory analyses, and is rarely shared outside individual organisations or municipalities, each of which maintains its own database. This lack of data sharing is a significant hurdle, as the challenges posed by climate change are similar across municipalities. Wider sharing of research data would benefit both organisations and citizens. A specific action to address this issue is the development of a centralised database, which will be pursued in future projects.

Regarding the application development in Finland, the budget constraints meant that not everything planned could be implemented, such as the warning system. In hindsight, earlier involvement of the application's users would have been beneficial to identify their preferred functionalities. The continued development of the warning system is planned for future projects. On the positive side, the integration of different applications through interfaces opened up new opportunities to share information with users.

In Guadeloupe, several challenges were encountered, particularly in engaging stakeholders for the nudging experiment targeting hotel guests, as well as in the installation and registration of technical components. Many hotel managers were difficult to reach, making it challenging to involve them actively



in the project. This difficulty was compounded by the considerable distance between the implementation team in Belgium and the project site in the Caribbean. Despite these obstacles, the team managed to provide effective remote support to several hotels from Belgium, resulting in successful installations and the collection of valuable data and insights. This experience highlighted the importance of strengthening and supporting local networks and partnerships to improve communication and coordination. Consistent with TransformAr's approach, which focuses on flexibility and creativity in addressing challenges, valuable lessons have already been learned from these experiences. Future initiatives will focus on building stronger local support structures and engaging local stakeholders early in the process. By implementing pilot projects in test areas like Guadeloupe, TransformAr aims to provide initial impulses that can inspire and empower local communities to take ownership of these initiatives in the future, fostering sustainable practices and enhancing local adaptation strategies.

4. Impact and Reflection

4.0 Environmental Impact

At this moment, results from the solutions are being analysed which makes it difficult to dive deeper into the measured impacts of the solutions. Some preliminary conclusions have already been drawn.

Raising awareness among the targeted audiences has led to a better understanding of the actions needed to address climate-related challenges in the future.

For instance, in Finland, increased awareness has highlighted the importance of implementing natural stormwater management measures. This includes solutions such as green infrastructure, bioswales, rain gardens, and permeable surfaces that help manage excess rainwater and reduce flooding risks. Such measures not only mitigate the effects of climate change but also promote sustainable urban planning and resilience. The growing recognition of these needs suggests a shift towards more nature-based approaches for climate adaptation in the region.

In Guadeloupe, our solution has the potential to achieve significant environmental benefits in the demonstration area if applied on a large scale, by promoting water conservation and reducing overall water consumption. Through the use of digital shower sensors and nudging materials, we have observed sometimes a reduction in shower durations among hotel guests. This decrease in water usage helps conserve a vital resource and simultaneously reduces the energy required to heat the water, contributing to a smaller carbon footprint for the hotel.

Additionally, the increased awareness and behavioural changes encouraged by our nudging interventions contribute to a culture of sustainability among both guests and staff. By fostering more environmentally conscious habits, our solution helps to preserve local water resources and supports the broader goals of environmental protection and sustainability in the region. The data collected from our experiment also provides valuable insights that can be used to further enhance water conservation efforts in other areas, amplifying the positive environmental impact beyond the immediate demonstrator area.

4.1 Social Impact

In all four solutions of the TransformAr project, the main social impact is the increased awareness of climate change and its effects on the regions where the target audiences live. Through targeted education, engagement, and technological tools, the solutions have fostered a deeper understanding of climate-related issues among diverse groups, including students, local residents, and tourists.



The awareness-raising program in Egaleo (Greece), for instance, has had a significant impact on students aged 16-18 by integrating climate education into their curriculum. This has not only enhanced their knowledge of climate change but also encouraged proactive attitudes towards environmental conservation. By educating younger generations, the program has planted the seeds for long-term behavioural changes that can extend into families and the wider community, promoting sustainable practices across the region.

Similarly, the citizen apps in Egaleo and Lappeenranta (Finland) have empowered residents to actively participate in climate action by providing them with tools for real-time monitoring, reporting, and information sharing. This increased engagement has strengthened the relationship between citizens and local governments, enabling a more collaborative approach to addressing climate challenges. The apps have also encouraged community-driven data collection, enhancing collective responsibility and fostering a culture of citizen science.

The nudging experiment in Guadeloupe has brought about a shift in social norms among tourists by using behavioural cues to promote water conservation. By leveraging simple but effective nudging techniques, such as stickers, flyers, and shower sensors, the experiment has not only reduced water consumption but also raised awareness about the importance of sustainable resource use. This, in turn, has influenced both tourists and hotel managers, creating a ripple effect of sustainable practices within the local tourism industry.

Overall, the combined effect of these solutions has resulted in a more informed, engaged, and climate-conscious society. The shared understanding and awareness fostered through these initiatives have the potential to lead to more resilient and sustainable communities, where citizens are better equipped to adapt to and mitigate the impacts of climate change. The social impact extends beyond mere awareness, as it also involves fostering a sense of shared responsibility and encouraging collective action to protect the environment for future generations.

4.2 Governance Impact

These solutions are expected to have a substantial impact on the governance and management of the demonstrator area by showcasing the effectiveness of sustainable practices and influencing the development of policies that prioritise environmental resilience and sustainability. By providing tangible evidence of what works in terms of climate action, these initiatives serve as a valuable proof of concept for scaling up similar practices in other regions.

Additionally, the citizen apps and awareness campaigns serve as crucial tools for fostering a two-way communication channel between the government and its citizens. They not only increase public awareness and knowledge of climate issues but also provide an ongoing feedback loop that enables local authorities to gauge the community's level of climate literacy and engagement. This interactive approach allows governments to better understand public perception, identify gaps in knowledge, and adapt strategies to address specific needs and concerns. As a result, policymakers are better equipped to make informed, data-driven decisions about future actions and interventions, ensuring that climate strategies are both effective and community-centred.

From our experience in Lappeenranta, we have observed that feedback collected from citizens through the application can significantly influence governance and policy-making. By integrating real-time input and concerns from the public, the application provides valuable insights that can shape decision-making processes and inform policy adjustments. This feedback loop enables policymakers to better understand community needs and preferences, leading to more responsive and effective governance. Consequently,

the data gathered helps ensure that policies are more aligned with the actual experiences and expectations of the citizens, fostering greater public engagement and trust in the governance process.

In Guadeloupe, the solution is expected to have a significant impact on the governance and management of the demonstrator area by demonstrating the effectiveness of sustainable practices and influencing policy development. Although the experiment is still ongoing and the final results are yet to be determined, preliminary observations suggest that the implementation of nudging materials and digital shower sensors can enhance awareness of water usage and promote environmentally conscious behaviour among hotel guests and stakeholders in the broader area surrounding the experiment.

Ultimately, these initiatives contribute to a more inclusive, transparent, and adaptive governance model that encourages continuous learning and collaboration between citizens, involved stakeholders and local authorities.

4.3 Link to Goals and Outcomes

It is still quite early in each of the initiatives to draw any definitive conclusions, as the projects are in different stages of implementation. However, some preliminary observations and insights have already emerged from the teams involved. These early findings provide a glimpse into the potential impact of the strategies being tested, highlighting both the successes and the challenges faced so far. While more data and analysis are needed for a comprehensive assessment, these initial observations help guide the next steps and inform adjustments to the ongoing efforts.

1. The awareness-raising program in Egaleo & the citizen application in the Municipality of Egaleo

Awareness-Raising Program: Targeting students, this curriculum aims to deepen understanding of climate change and its impacts. The outcome is to create a generation of students who are well-informed about climate issues and motivated to engage in sustainability efforts. This aligns with the goal of fostering long-term climate resilience by educating young people.

Application: The app's goal is to enhance climate awareness and facilitate communication between citizens and the municipality. The expected outcome is a better-informed public and actionable data for the municipality. This aligns with the goal of increasing climate knowledge and engagement through direct feedback and information dissemination.

Each initiative contributes to the overarching goals of increasing climate awareness, engaging the community, and fostering innovation, thereby achieving the project's intended outcomes.

2. The citizen application in Lappeenranta

For the citizen application in Lappeenranta, initial findings suggest that increasing public awareness can lead to a higher level of community interest in the projects and initiatives being developed within the city. As citizens become more informed about these efforts, they are more likely to engage with them actively and provide meaningful feedback to city management. This engagement can enhance collaboration between the community and local authorities, leading to more effective and well-received climate adaptation strategies.

3. The nudging experiment in Guadeloupe

The nudging experiment in Guadeloupe was conducted in 10 hotels on the island. Additionally, test sensors were installed in several bathrooms in Belgium to provide our team with experience in installation and data capture. A total of 91 shower sensors were used for the experiment. Initially, the hotel owners were willing to participate in the experiment, but in practice, many challenges and operational difficulties emerged. One significant challenge was the large distance between Belgium

and Guadeloupe. Eventually, the shower sensors were correctly installed in 5 out of the 10 hotels, and local stakeholders succeeded in connecting the sensors to the online platform. This means that 35 of the 91 sensors were able to collect data during the experiment.

There were also operational difficulties with timely synchronisation of the shower sensors with the online platform, which resulted in gaps in the data logging. Additionally, it proved challenging in practice to distinguish between the period before nudging and the period after the nudging materials were installed. This led to some misunderstandings among the stakeholders responsible for implementing the experiment.

Despite these operational challenges, several results were recorded. So far, and the experiment is still ongoing, a total of 1,644 showers have been registered by the 35 active sensors. In one hotel (Les Galets Rouges), a reduction in total shower time was indeed observed throughout the experiment, with a total of 1,062 showers recorded (see reference in the appendix). However, this trend has not been observed in all the hotels for which we were able to collect data. It was also noted that the average shower time in Europe is higher (+/- 6:00 minutes) than in Guadeloupe (+/- 3:00 minutes).

The nudging experiment in Guadeloupe has shown a strong alignment with both its goals and expected outcomes. By using nudging techniques, such as bathroom stickers and digital shower sensors, the experiment successfully promoted water conservation among hotel guests, leading to a reduction in water consumption and an increase in ecological awareness. These results directly support the primary goal of the nudging experiment: to encourage sustainable water usage and foster environmentally friendly practices within the hospitality sector.

Furthermore, the observed impacts—such as reduced water consumption and heightened environmental awareness—align with the desired outcomes of raising awareness among travellers and stimulating innovative resource management strategies. The data collected through digital shower sensors provides quantifiable evidence of changes in guest behaviour, validating the effectiveness of the nudging approach.

By engaging local communities and stakeholders, the experiment has also encouraged a collaborative approach to sustainability, which reinforces broader environmental objectives, including reducing CO2 emissions and informing policy-making. Overall, the outcomes reflect the success of the nudging experiment in achieving its goals and demonstrate its potential to inspire future sustainability practices in the tourism industry.

The preliminary results of the various initiatives demonstrate that the projects are well-aligned with their set goals and intended outcomes. The programs in Egaleo, Lappeenranta, and Guadeloupe show that increased awareness and engagement of stakeholders and citizens lead to greater collaboration and innovative solutions for climate challenges. These initiatives not only contribute to direct behavioural changes but also foster a broader understanding and active participation of the community in sustainability goals. The initial findings suggest that the initiatives are successful in laying a strong foundation for future efforts, enhancing both local community engagement and the development of effective policy measures.

5. Future Steps

5.0 Planning

Building on the initial successes and lessons learned from the four solutions implemented in the TransformAr project, the next steps focus on refining and scaling these approaches to drive further community engagement and behavioural change. The immediate priorities involve finalising ongoing experiments, collecting comprehensive data, and conducting thorough analyses to better understand the effectiveness of each solution. The insights gained will be translated into practical guidelines, case studies, and toolkits that can be used by both the academic community and the general public to promote climate adaptation and resilience.

Strategic planning will also be crucial for enhancing community involvement, ensuring sustained awareness, and driving meaningful behavioural changes. This includes considering how to adapt and scale up the solutions to other regions and target groups, potentially broadening the impact of these initiatives. By continuously refining these approaches and exploring new opportunities for implementation, the project aims to build more resilient, informed, and climate-conscious communities capable of adapting to climate challenges.

5.1 Activities

Following the conclusion of the TransformAr project, several key activities are recommended to build on the project's outcomes and formulate effective next steps for further awareness raising and behavioural change. To maintain and expand community engagement, future initiatives could include organising workshops and training sessions for local stakeholders, such as community leaders, educators, and municipal staff. These sessions would focus on sustaining momentum and empowering local actors to continue driving climate awareness and action. Additionally, the development and enhancement of digital tools—such as updated citizen apps with more intuitive user interfaces and advanced feedback systems—would be crucial to maintain engagement and facilitate ongoing data collection and monitoring. In upcoming projects we plan to improve the features and functionalities of the application to make it more user-friendly and efficient, e.g. enhancing transparency of environmental monitoring, helping citizens identify environmental changes and identify environmental changes that activate alerts and create alert systems. Citizen applications will be integrated to data systems through Application Programming Interfaces, which makes it possible to be replicated and further integrated to other data systems in other municipalities or countries.

Educational campaigns tailored to specific demographics, such as school programs, public events, and interactive exhibitions, should be developed to ensure diverse audiences remain informed and motivated to act. Pilot programs in new regions or with different target groups could help test the adaptability and scalability of the solutions developed in the project. Establishing partnerships with local organisations, NGOs, and governmental bodies will also be essential to create a network of support that can sustain and expand the project's impact. By planning and implementing these follow-up activities, stakeholders can ensure the continuation and growth of the project's goals, fostering resilient, well-informed, and climate-conscious communities.

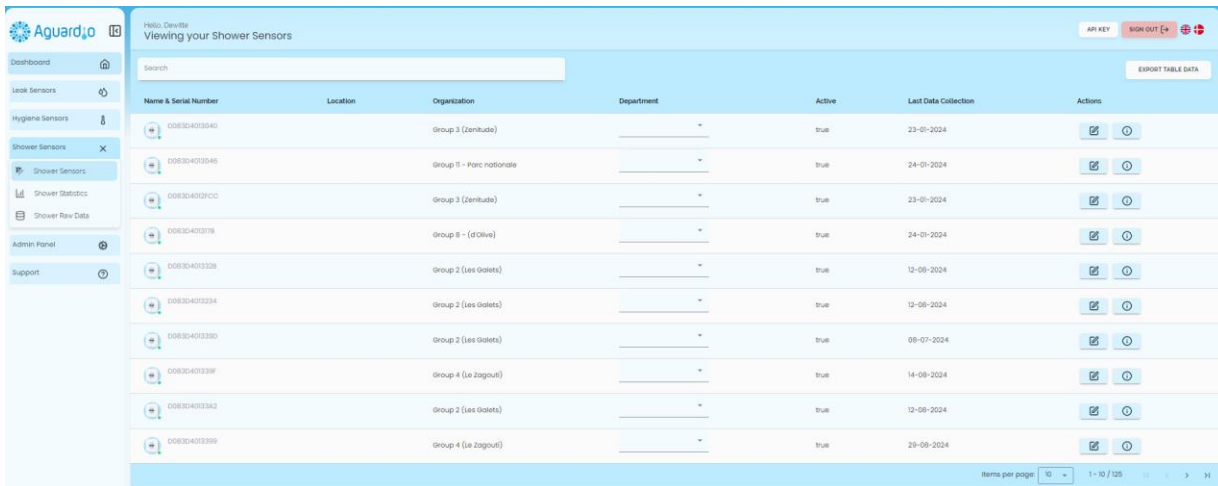
6. References

- TransformAr. (2024, January). *Beliefs towards transformational adaptation conceptual map (D1.4)*: <https://transformar.eu/storage/2024/01/TransformAr-D1.4.pdf>
- TransformAr. *Knowledge center*: <https://transformar.eu/knowledge-center/>
- TransformAr. *Demonstrators*: <https://transformar.eu/demonstrators/>

7. Annex

Overview of the sensors on the Aquardio Hub

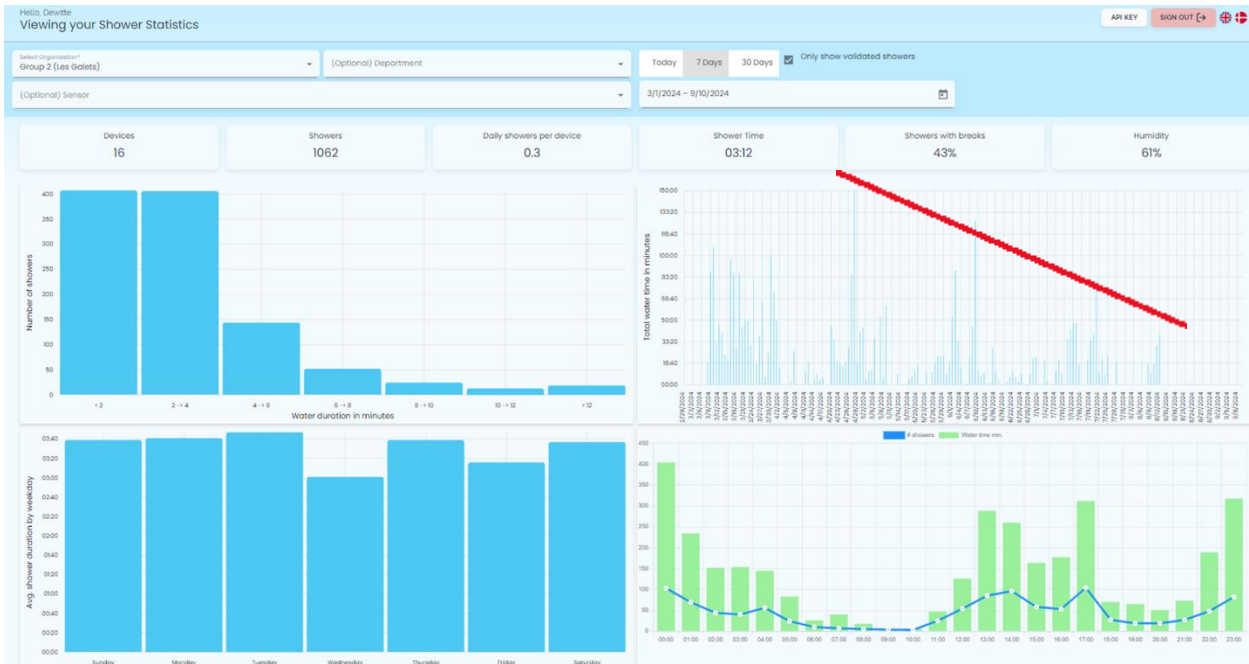
In this screenshot of the Aquardio Hub, the digital platform behind the shower sensors, you can see the different groups in which the 10 hotels are categorised. The 91 shower sensors are distributed among these groups.



Name & Serial Number	Location	Organization	Department	Active	Last Data Collection	Actions
0083D4013240		Group 3 (Zentudo)		true	23-01-2024	[Edit] [Refresh]
0083D4013246		Group 8 - Paris notionale		true	24-01-2024	[Edit] [Refresh]
0083D4013200		Group 3 (Zentudo)		true	23-01-2024	[Edit] [Refresh]
0083D4013276		Group 8 - (d Olive)		true	24-01-2024	[Edit] [Refresh]
0083D4013228		Group 2 (Les Galets)		true	12-08-2024	[Edit] [Refresh]
0083D4013234		Group 2 (Les Galets)		true	12-08-2024	[Edit] [Refresh]
0083D4013280		Group 2 (Les Galets)		true	08-07-2024	[Edit] [Refresh]
0083D401328F		Group 4 (Le Zagout)		true	14-08-2024	[Edit] [Refresh]
0083D4013342		Group 2 (Les Galets)		true	12-08-2024	[Edit] [Refresh]
0083D4013289		Group 4 (Le Zagout)		true	29-08-2024	[Edit] [Refresh]

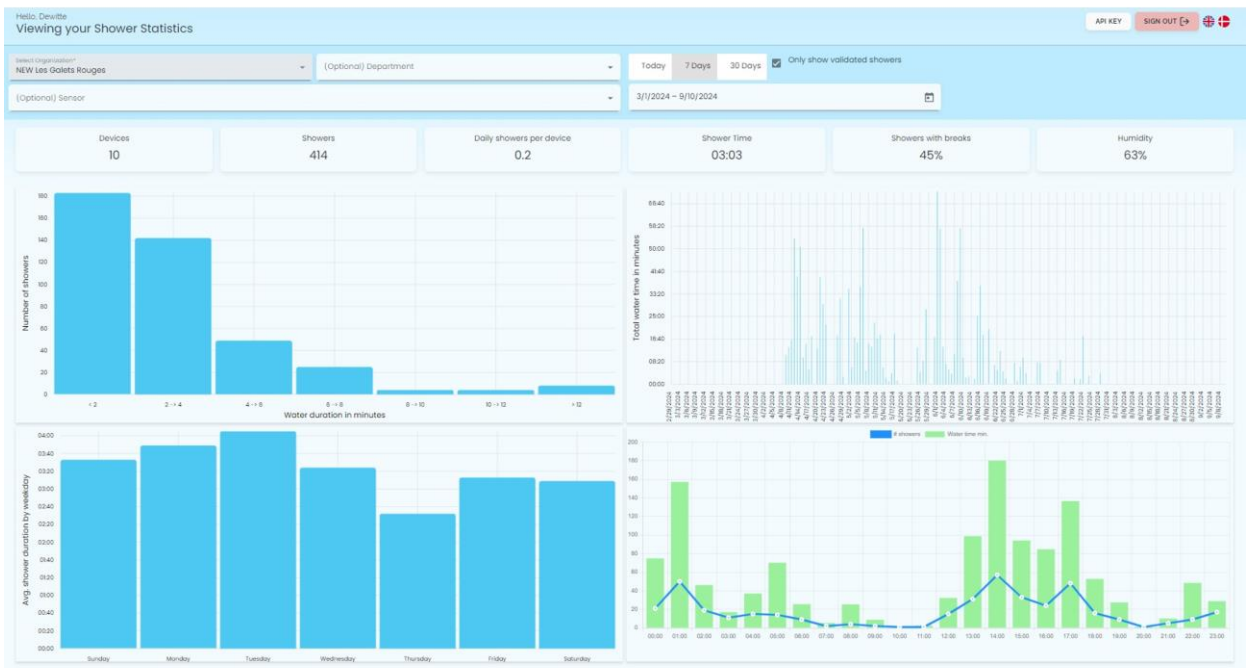
Screenshot on the Aquardio Hub showing a decrease in total shower time over the experiment.

Screenshot of the screen on the Aquardio hub with hotel Group 2 (Les Galets) selected. It shows that 16 sensors were installed in the hotel and that 1,062 showers were recorded over a period from early March to early September 2024. The red line on the graph (at the upper right corner) indicates that the peaks in total shower time are lower over time.



Screenshot on the Aquadrio Hub where the decrease in shower time is not clearly visible

In the screenshot below, we see an increase in total shower time during the first months of the experiment, followed by a decrease in shower time. However, it is currently unclear what caused the decrease in shower time at the end of the experiment.





Climate change impacts are here and now. The impacts on people, prosperity and planet are already pervasive but unevenly distributed, as stated in the new EU Blueprint strategy (European Commission-EC, 2019). To reduce climate-related risks, the EC and the IPCC agree that transformational adaptation is essential. The TransformAr project aims to develop and demonstrate products and services to launch and accelerate large-scale and disruptive adaptive process for transformational adaptation in vulnerable regions and communities across Europe.

The 6 TransformAr lighthouse demonstrators face a common challenge: water-related risks and impacts of climate change. Based on existing successful initiatives, the project will develop, test and demonstrate solutions and pathways, integrated in Innovation Packages, in 6 territories.

Transformational pathways, including an integrated risk assessment approach are co-developed by means of 9 Transformational Adaptive Blocks. A set of 22 tested actionable adaptive solutions are tested and demonstrated, ranging from nature-based solutions, innovative technologies, financing, insurance and governance models, awareness and behavioral change solutions.



TransformAr



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