ARV

CLIMATE POSITIVE CIRCULAR COMMUNITIES

D3.3 CPCC LIVING LABS REPORTS

WP3 COMMUNITY ENGAGEMENT, ENVIRONMENT, AND WELLBEING

Nicol Staňková
Klára Dvořáková
Kateřina Bošková
Soňa Stará
Anne Branderup
Marcello Curci
Marta Nicolau
Roel Massink
Ruth Woods

21.12.2023

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101036723

PROJECT INFORMATION

Project acronym	**ARV**[1]
Project title	Climate Positive Circular Communities
Project number	101036723
Coordinator	Norwegian University of Science and Technology / Inger Andresen
Website	www.GreenDeal-ARV.eu

DOCUMENT INFORMATION

Deliverable Number and Title	**D3.3 CPCC Living Labs reports**
Due Month	Month 24 (December 2023)
Work Package Number and Title	WP 3. Community Engagement, Environment, and Wellbeing
Task number and Title	Task 3.4. Monitoring and reporting of CPCC Living Labs in demo sites
Dissemination Level	PU = Public, fully open
Date of Delivery	21.12.2023
Lead Author	Nicol Staňková (CVUT) Klára Dvořáková (CVUT) Kateřina Bošková (CVUT) Soňa Stará (CVUT)
Contributors	Living Lab coordinators: Anne Branderup (Sonderborg) Marcello Curci (Trento) Marta Nicolau (Palma) Roel Massink (Utrecht) Ruth Woods (Oslo)
Reviewers	Caroline Cheng (SINTEF) Judith Thomsen (SINTEF) Anandasivakumar Ekambaram (SINTEF) Phuc Huynh Evertsen (SINTEF) Lillian Rokseth (SINTEF)

[1] *ARV is a Norwegian word meaning "heritage" or "legacy". It reflects the emphasis on circularity, a key aspect in reaching the project's main goal of boosting the building renovation rate in Europe.*

	Marianne Skaar (SINTEF) Claudia Moscoso (SINTEF)			
Status	Final version			
Revision Log	**Version**	**Author**	**Main changes**	**Date**
	V.1.0	Nicol Staňková (CVUT) Klára Dvořáková (CVUT) Kateřina Bošková (CVUT)		06.12.2023
	V1.1	Judith Thomsen (SINTEF) Anandasivakumar Ekambaram (SINTEF) Pru Evertsen (SINTEF) Lillian Rokseth (SINTEF) Marianne Skaar (SINTEF) Claudia Moscoso (SINTEF)	Proofread and provide input to respective LL chapters	07.12.2023
	V1.2	Caroline Cheng (SINTEF)	Organisation of each LL chapter; Suggestion to include reflection and learnings in Chapter 6 and 7.	15.12.2023
	V2	Klára Dvořáková (CVUT) Soňa Stará (CVUT)	Implement suggestions and edits	
	V2.1	Caroline Cheng (SINTEF)	Refined Executive summary; coherence in Chapter 6 and 7	20.12.2023
	V2.2	Klára Dvořáková (CVUT) Soňa Stará (CVUT)	Implement suggestions and edits and submit	21.12.2023

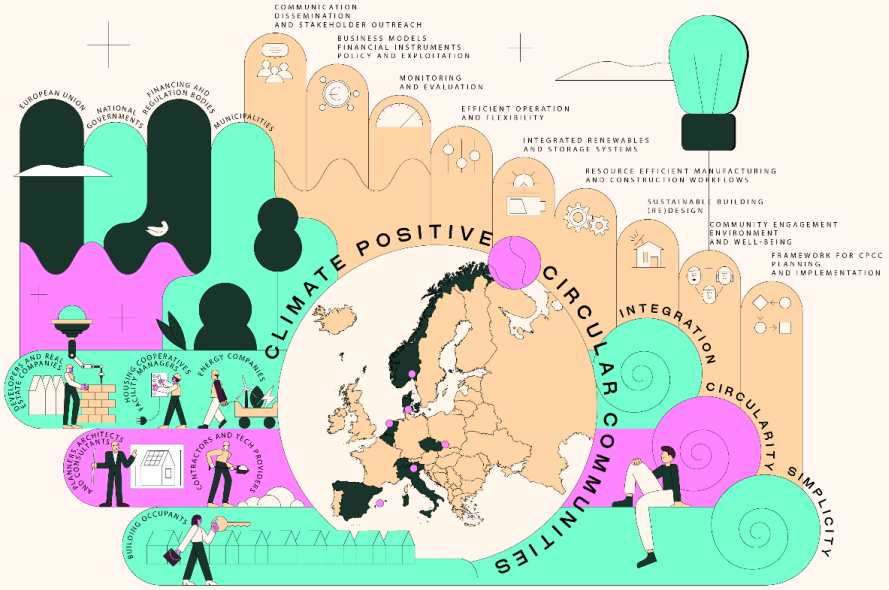
ABOUT THE ARV PROJECT

The vision of the ARV project is to contribute to speedy and wide scale implementation of Climate Positive Circular Communities (CPCC) where people can thrive and prosper for generations to come. The overall aim is to demonstrate and validate attractive, resilient, and affordable solutions for CPCC that will significantly speed up the deep energy renovations and the deployment of energy and climate measures in the construction and energy industries. To achieve this, the ARV project will employ a novel concept relying on a combination of 3 conceptual pillars, 6 demonstration projects, and 9 thematic focus areas.

The 3 conceptual pillars are integration, circularity, and simplicity. **Integration** in ARV means the coupling of people, buildings, and energy systems, through multi-stakeholder co-creation and use of innovative digital tools. **Circularity** in ARV means a systematic way of addressing circular economy through integrated use of Life Cycle Assessment, digital logbooks, and material banks. **Simplicity** in ARV means to make the solutions easy to understand and use for all stakeholders, from manufacturers to end-users.

The 6 demonstration projects are urban regeneration projects in 6 locations around Europe. They have been carefully selected to represent the different European climates and contexts, and due to their high ambitions in environmental, social, and economic sustainability. Renovation of social housing and public buildings are specifically focused. Together, they will demonstrate more than 50 innovations in more than 150,000 m² of buildings.

The 9 thematic focus areas are 1) Effective planning and implementation of CPCCs, 2) Enhancing citizen engagement, environment, and well-being, 3) Sustainable building re(design) 4) Resource efficient manufacturing and construction workflows, 5) Smart integration of renewables and storage systems, 6) Effective management of energy and flexibility, 7) Continuous monitoring and evaluation, 8) New business models and financial mechanisms, policy instruments and exploitation, and 9) Effective communication, dissemination, and stakeholder outreach.



The ARV project is an Innovation Action that has received funding under the Green Deal Call LC-GD-4-1-2020 - Building and renovating in an energy and resource efficient way. The project started in January 2022 and has a project period of 4 years, until December 2025. The project is coordinated by the Norwegian University of Science and Technology and involves 35 partners from 8 different European Countries.

EXECUTIVE SUMMARY

The ARV project's WP3 approach is centred around the idea that sustainable neighbourhood transformation arises from **building and renovating in an energy and resource efficient way along with promoting active citizen engagement**. Enhancing citizen engagement, environment and well-being is therefore one of the 9 thematic focus areas of the ARV project.

The planning and development of **Climate Positive Circular Communities (CPCCs)[2] must necessarily involve and actively work with citizen engagement methods and tools to include citizens** in the process to utilize their competences, experiences and to address their needs. The **Living Labs[3] (LL)** concept is based on **putting people in focus giving them an active role as the co-creators, engaging multiple stakeholders, and exploring the real-life context in an open innovation ecosystem.** CPCC LLs were established in the six demo sites to create such an innovative environment well suited for promoting active citizen engagement in processes of sustainable neighbourhood transformation.

As defined in D3.1 Plan and overall methodology for establishing CPCC Living Labs (pg 72): **CPCC Living Labs** are real-world multi-stakeholder innovation environments where novel social and technical solutions and measures related to sustainable transformation of urban communities are designed and tested alongside and with citizens in different perspectives (such as building occupants, neighbourhood residents, green ambassadors, youth ambassadors). Varying levels of engagement can be used to channel citizens' competences and experiences towards the planning and development of CPCCs.

The **objectives** of this report are:

- to report the **developments in the LLs** in the six demo sites as well as
- to document **the barriers and drivers encountered** with the applied engagement methods in the first project period (M1-M18).

D3.3 is the output of the task 3.4 Monitoring and reporting of CPCC Living Labs in demo sites led by CVUT. There will be 2 more editions of this deliverable at months 36 and 48. It is planned that these updates will report on the periods M19-34 and M35-46. This report also constitutes Milestone 6.

The document is **structured** as follows:

- **Chapter 1-3** introduces the objectives, scope, and the structure of the report.
- **Chapter 4** presents the methodology adopted in our work and the logbook tool used for capturing the monitoring and reporting processes.
- **Chapter 5** is then dedicated to the Living Labs in each demo site, outlining the goals of each CPCC LL, the target groups, and overall schedule of engagement activities so far. This chapter also analyses the barriers encountered, lessons learned, and next steps planned for each engagement activity.
- **Chapter 6** then concludes and summarises the learnings from the LL reporting process so far.

---

[2] A Climate Positive Circular Community has been defined in the ARV report D2.1, and can be found here: https://greendeal-arv.eu/library/d2-1-assessment-framework-for-cpcc-2/. A Climate Positive Circular Community (**CPCC)** is an urban area, which aims to net zero greenhouse gas emissions, enable energy flexibility, and promotes a circular economy and social sustainability. The CPCC concept focuses strongly on the **interaction** and **integration between new and regenerated buildings, users,** and **energy systems, facilitated by ICT to provide attractive, resilient, and affordable solutions** for citizens**.**

[3] For more information on the types of LLs see D3.1 page 12.

- **Finally, chapter 7** outlines the foreseeable improvements for **the LL reporting process** we plan to implement in the next edition of this report in M36.

The key takeaways to sum up the report are:

- In the first project period, all the demo sites started developing their distinct LL engagement activities. The first months were concerned mainly with setting up of the activities, getting to know the community, and familiarizing the community with the ARV project and the planned LL engagement activities.
- The logbook is a useful tool for capturing the engagement activities. Adaptations will be necessary going forward as the context of each LL is very different and driven by different actors. The use of the logbook also needs to be complemented by 1on1 interviews to allow in-depth understanding of the LL activities, methods used, and barriers encountered.
- Two rounds (instead of one) of 1on1 interviews will be needed with LL coordinators for each reporting period.
- Reporting of the engagement activities can be better aligned with WP3-related innovations to prioritise collection of information and allow for a more structured way of presenting the diversity of engagement activities.
- Analysis of the engagement activities needs to be tied to target groups, as this influences the consideration for engagement methods and tools.

For the next edition of the report, we plan to implement the **following improvements** in collaboration with the respective Living Lab coordinators:

- The LL logbook will be adjusted so it is better aligned with the WP3-related innovations.
- First round of 1on1 interviews will be scheduled in Q1 2024 to communicate lessons learned and to identify how to modify the logbook to best capture relevant information for LL reporting.
- The LL Logbook will be adjusted after the discussions with the LL coordinators so it better fits to situations in each demo site.
- The LL logbook will include photos from respective engagement activities and a graphic summary of all activities across demos.
- Second round of 1on1 interviews will be scheduled in Q4 2024 to acheive more in-depth information about the activities reported and to allow feedback and clarifications between T3.4 and respective LL coordinators.

1. INTRODUCTION

Reporting of Living Lab activities is an important pillar of ARV's Living Lab approach to citizen engagement. It is part of the "Learn" phase of the S.M.I.L.E methodology (developed in D3.2). Whereas the "Implement" phase comprises of planning, organising and rolling out the citizen engagement activities (info-providing activities vs. co-creation activities) and deploying various citizen engagement methods and tools as well as communication channels associated with the activities, the "Learn" phase will evaluate and monitor the citizen engagement activities and the use of various methods and tools and other aspects such as Operations and Organisation of the Living Lab. The developments as well as the barriers and drivers for citizen engagement will be documented.

Scope of this report
In ARV, the work of enhancing citizen engagement, environment, and well-being has been broken down into four main tasks. This report focuses on the reporting of the progress of CPCC LLs running in each demo site and it is the output of task 3.4 Monitoring and reporting of CPCC Living Labs in demo sites (see Figure 1).

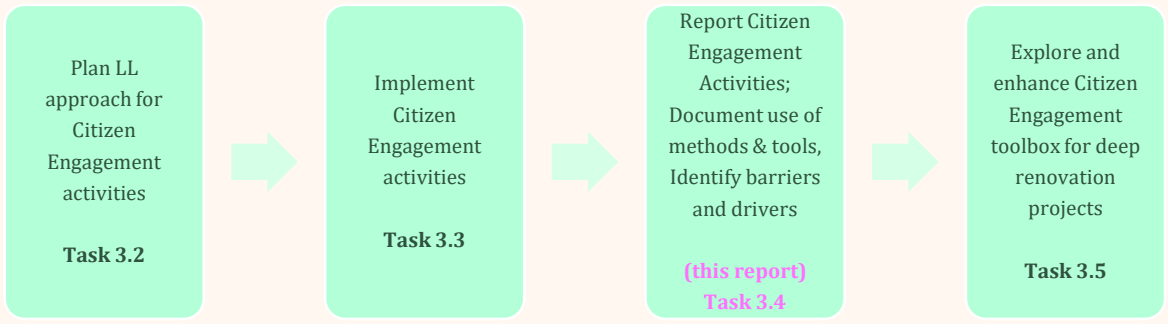


***Figure 1**. Scope of this report*

This deliverable was put together in close collaboration with all the Living Labs, the reporting itself was their task instructed by the task lead CVUT.

There will be 2 more editions of this deliverable at months 36 and 48. It is planned that these updates will report on the periods M19-34 and M35-46. This report also constitutes Milestone 6.

2. OBJECTIVES

The **objectives** of this report are:

- to report the developments in the LLs in the six demo sites as well as
- to document the barriers and drivers encountered with the applied engagement methods in the first project period (M1-M18).

D3.3 is the output of the task 3.4 Monitoring and reporting of CPCC Living Labs in demo sites led by CVUT.

3. STRUCTURE OF THE REPORT

The document is **structured** as follows:

- Chapter 1-3 introduces the objectives, scope and the structure of the report.
- Chapter 4 presents the methodology adopted in our work and the logbook tool used for capturing the monitoring and reporting process.
- Chapter 5 is then dedicated to the Living Labs in each demo site, outlining the goals of each CPCC LL, the target groups, and overall schedule of engagement activities so far. This chapter also analyses the barriers encountered, lessons learned, and next steps planned of each engagement activity.
- Chapter 6 then concludes and summarises the learnings from the LL reporting process so far.
- Finally, chapter 7 outlines the foreseeable improvements we plan to implement in the next edition of this report in M36.

4. METHODOLOGY

The monitoring and reporting in the initial phase of the ARV project consisted of two main parts – the LL logbook and the accompanying 1on1 interviews between the task lead CVUT and all the Living Labs.

4.1. LOGBOOK

The logbook serves as a tool to document Living Lab[4] (LL) activities within each demonstration. It consists of a chronological record of events, capturing a continuous account of the activities constituting the LL, along with reflections from the organizers. Each LL was provided with a logbook template. The primary objective of the logbook is to systematically accumulate information that will later contribute to the deliverable. It functions as a repository of information used in the creation of D3.3. Pertinent sections from the logbook were incorporated into the deliverable, supplemented by additional contextual information.

The logbook comprises two sections: one focused on general LL information and another dedicated to the ongoing record of LL activities. The first section was initiated at the outset of the reporting process in March 2023. The second section commenced simultaneously, with demonstrations retrospectively recalling information about past activities and continually adding new entries as they occurred. Detailed instructions are provided at the beginning of each section. It is recommended that notes be recorded as soon as possible after each LL activity to ensure accurate recollection and to capture personal observations and sentiments.

The responsibility for filling in the logbook rested with each LL Coordinator, with the flexibility to adapt the form to their specific needs, provided they adhered to the general structure. The logbook could vary slightly between demonstrations, allowing for the omission of irrelevant details and the inclusion of pertinent information specific to each demonstration. The logbook primarily serves as a tool for tracking each demonstration's LL activities, akin to a diary. While the logbook's format was suggested, the emphasis was on the importance of maintaining records of the activities.

[4] For more information on the types of LLs see D3.1 page 12.

Additionally, there was a section called "Methodological Notes" at the end of the logbook, designed to document any modifications made to the logbook's structure. Living Labs were encouraged to provide notes explaining changes and their rationale. These notes, along with feedback obtained during Work Package 3 online meetings and our own assessments, serve as sources of inspiration for adapting the logbook's structure in the coming years.

This approach drew inspiration from the methodology and the logbook structure from the Framework for Monitoring and Evaluation of the Looper Living Labs (Ravetz et al., 2018), developed as part of the Looper European research project (The LOOPER project consortium, 2020)[5], and incorporated some concepts defined in D3.1 of the ARV project.

Template of the logbook is included as Appendix A.

4.2. INTERVIEWS

A round of interviews between the task 3.4 leaders (CVUT) and each Living Lab were conducted to get more in-depth information about the activities listed in the logbooks and to keep in touch about the reporting process in the months 14 and 15. The whole reporting process and tools were also introduced during these interviews. Summaries of these interviews were also used as an informational source while conducting this deliverable.

An interview guide is included as Appendix B.

[5] Source: http://looperproject.eu/wp-content/uploads/2018/09/LOOPER_D4.2_Framework_for_monitoring_and_evaluation_Living_Labs.pdf, pg. 12

5. CPCC LIVING LAB ACTIVITIES

This chapter describes what engagement activities have been taking place in each demo site. It records the progress of the engagement activities, the target groups, the outcomes of the activities, the preliminary evaluation, and the future plans.

5.1. KARVINÁ

GOALS AND TARGET GROUPS OF THE KARVINÁ LL

Table 1 shows and overview of the goals and target groups of the Karviná LL, while Table 2 shows a schedule of the activities.

***Table 1**. Overview of the goals and target groups of the Karviná LL.*

Type of LL[6]	Municipality-driven (run by local government)
Goals and main topics of LL	Education of citizens with the emphasis on youth and their inclusion in municipal projects to foster the interest in sustainability issues and to reduce the outflow of young people from the region.
Target groups[7]	Socio-Cultural Actors: N/A Suppliers: N/A Financial Actors: N/A Living Lab Outsiders: schools and pupils, young generation Living Lab Insiders: tenants and visitors of the demo building Political/Regulatory Actors: municipality Citizens: general public Technological Actors: N/A
Geographical Location of the Community	A series of events realized on municipal premises (workshops with students at schools, ARV presentation at public events, stakeholder interviews); demo building (Health care centre) is currently under construction.
Aims of the first project period	Plan the structure of future activities and to implement activities of two kinds – first two sustainability and energy seminars with students and series of events for the public that present the city's projects and the topics of energy, sustainability, and environmental protection.
Aims for the next project periods	Continue with the activities started in the first year, develop the work with institutional stakeholders through structured interviews and find out the opinions of tenants in the demo building through a questionnaire survey. An ARV contact point is planned on the premises of city IdeaLab – a physical space where Karviná will present municipal projects. It will be a city office in the centre of Karviná open to citizens interested in the project.

[6] For more information on the types of LLs see D3.1 page 12.
[7] For more information on the categorisation see D3.1 page 25.

***Table 2**. Schedule of activities in Karviná's LL*

2022											
1	2	3	4	5	6	7	8	9	10	11	12
			Earth Day Educational activity aimed at general public					**Coordination workshop** with teachers and school directors on how to organize workshops with students	**European Mobility Week** Educational activity aimed at general public	**Energy and sustainability WS for schools** Lecture on basics of energy, sustainability, and city planning	

2023											
1	2	3	4	5	6						
Energy and sustainability WS for schools Work assignment – installation of PV on city buildings		**Consultation hours** Students were able to contact selected lectors to consult their assignments	**Energy and sustainability WS for schools** Presentations of assignments		**Energy and sustainability WS for schools** Evaluation of students works, awarding, gathering feedback						
			Earth Day Educational activity aimed at general public								

ENGAGEMENT USING EDUCATIONAL PLATFORM

Living lab educational platform

The goal of the Living lab educational platform is to educate citizens such as students, in an effective way, creating energy and resource efficient neighbourhoods that increase citizen and stakeholder awareness and engagement. Community engagement was focused primarily to young people in the school (14–19 years), exploring co-creation methods. It promoted user-friendly, innovative, and sustainable building solution through education and other communicational channels, implementing user-centred design of building systems.

Progress

In the first year, pilot workshops were held for schools, focusing on the use of alternative energy sources. The seminars consisted of lectures, independent work by students, consultations, and concluded with final feedback and announcement of the best projects.

Target groups

The main target group are students aged 14-19. Another group are tenants at the clinic, patients of clients, and people who move around the area. The information campaign should target the public.

Level of citizen engagement[8]

The second level: Citizens viewed as co-creators who contribute to designing and developing local services and urban artefacts.

Barriers

A challenge proved to be the quantity of school activities, so it was difficult to find common dates for workshops for several schools.

Lessons learned

The seminars for students were rated as beneficial in the feedback, with students acquiring information beyond the conventional lessons. In the future, we would like to focus more on practical matters, such as organizing transport for the final excursion, and give students more opportunity to get to know each other. Another issue that will need to be dealt with is the scheduling of individual meetings with regard to holidays and other school activities. Collaboration between teachers also emerged from the meeting. The involvement of subject matter experts in the design and delivery of the seminars worked well.

Next steps

The project is to be continued in the schools, another round of workshops in schools is scheduled to take place during the next school year. We are building on the feedback and contacts made in the first year. We plan to involve architects and focus primarily on building sustainability and circularity. Schools have expressed interest in continuing the collaboration.

[8] For more information see D3.1 pages 14-16.

ONLINE SURVEYS WITH TENANTS, VISITORS AND CONSTRUCTION WORKERS

Questionnaires for citizens about the reconstruction

A main activity was an online survey distributed among selected groups of citizens.

Progress

Selected groups of citizens were reached during the reconstruction through an online survey. The goal of the survey was to gather information that will be later used for the KPIs defined for each demo in work package 2 and to learn about the attitudes of citizens towards the former state of the health centre (demo) and towards its state during reconstruction. The survey was made by adapting the questionnaires from D8.1 Monitoring, Evaluation, and Impact Assessment Frameworks to the local context. We included questions that were linked to KPIs that are marked as mandatory for Karviná's demo in D8.1, we omitted some questions that were either not relevant to Karviná's context or when there was a better way of gathering information to assess a given KPI (e.g., directly measure through installed sensors). We discussed the selection of the questions in a multidisciplinary team including sociologists, architects, and electrical engineers who will be later responsible for evaluating the KPIs. The City of Karviná was also involved in the development of the questionnaire – the form was approved through the city's internal mechanisms. The online form was distributed in several ways based on the target group (described in next section). Tenants received a link in their email boxes, construction workers received them through their supervisor and was given to them during site progress meetings, and visitors could use a link through the city's social networks and information panels directly at the demo site. We received 17 responses from tenants and staff in the building. They mention problematic parking during the reconstruction and that they do not have enough information about the progress and purpose of the reconstruction. We collected 217 questionnaires from visitors to the clinic, they also mentioned problematic parking, although noise and dust were not a problem for most of them. Most tenants and members of the public perceived that they had been informed adequately about the refurbishment through various channels. We only got one response from a construction worker and that worker did not indicate increased dust or noise levels compared to other constructions.

Target groups

Three target groups were selected for this activity – tenants of the building, visitors, and construction workers. This decision was based on the instructions in D8.1.

Level of citizen engagement[9]

The first level: Utilize urban spaces for technology-driven research to gather extensive citizen feedback.

Barriers

The main obstacles were twofold. The first one was the lack of clear instructions on how to complete the requirements for work package 3, arising from work packages 2 and 8. However, we followed the instructions in the deliverables 2.1 and 8.1 and adapted the framework to Karviná's context. The second issue was the amount of time and resources needed to prepare the questionnaires and coordinate all involved parties – due to this we had to adapt the plan and reach the target groups not at three points in time (before, during and after the reconstruction as recommended in D8.1), but only during and after the reconstruction (yet to happen).

[9] For more information see D3.1 pages 14-16.

Lessons learned
It was difficult to get answers from the workers on site, next time we need to think of a different way of reaching out and communicating. Tenants, staff, and visitors to the clinic do not have enough information about the planned reconstruction, so it is necessary to provide them with this information.

Next steps
Three main activities are planned: a follow-up questionnaire gathering attitudes of citizens towards the health centre after the reconstruction and deepening the contact with tenants and selected institutional stakeholders. The considered form in case of tenants might be a community celebration when the reconstruction is completed. As for the institutional stakeholders, the plan involves contacting them through individual interviews with the goal to find common overlaps and open communication on possible future cooperation.

EVENTS WITH PUBLIC PARTICIPATION

Progress
The town of Karviná organised a series of public events in 2022, with the aim of communicating with the community and presenting local projects. The purpose of these events, which included Earth Day in April, Smokeman in September and October, and online SECAP (the municipal Sustainable Energy and Climate Action Plan) meetings where ARV was mentioned, was to present the city's projects and goals in a fun and engaging way. These initiatives aimed not only to inform residents about the city's sustainability efforts, but also to inspire students to become more involved in local projects and issues that are not often covered in school.

Target groups
Target groups are citizens and visitors of Karviná.

Level of citizen engagement[10]
The first level: Utilize urban spaces for technology-driven research to gather extensive citizen feedback.

Barriers
The public events were met with mixed reactions. Some citizens expressed interest, while others engaged in confrontationally in topics unrelated to the projects. One person was able to dominate the space and take up the organisers' time.

Lessons learned
Confrontational situations at public events were identified as a challenge. Different methods were attempted to defuse tensions and redirect conversations, for example asking questions and changing the topic. We need to try different communication styles and methods.

Next steps
More events for the public are planned, including Earth Day and events in the autumn. Efforts are being made to approach specific stakeholders, gather feedback through questionnaires and determine how to involve them in future projects. The biggest challenge is expected to be engaging these stakeholders. It is also proposed to set up a dedicated energy and climate site in Karviná, which may be funded by projects.

---

[10] For more information see D3.1 pages 14-16.

5.2. OSLO

GOALS AND TARGET GROUPS OF THE OSLO LL

Table 3 shows and overview of the goals and target groups of the Oslo LL, while Table 4 shows a schedule of the activities.

***Table 3**. Overview of the goals and target groups of the Oslo LL.*

Type of LL[11]	Research-driven (jointly driven by NTNU and SINTEF)
Goals and main topics of LL	The main themes are energy **transition** and **circularity** achieved through using digital visualisation tools and raising climate awareness among local school communities, while utilizing educational facilities, and engaging students in learning, co-creation, and youth ambassadorship activities.
Target groups[3]	Socio-Cultural Actors: The Voldsløkka School and Cultural School Living Lab Outsiders: Family of pupils, neighbours Living Lab Insiders: pupils, teachers, and school staff Political/Regulatory Actors: Oslo municipality Citizens: pupils from Voldsløkka School, teachers and other school staff, families and neighbours associated with the pupils Technological Actors: OsloBygg, technical management Voldsløkka school
Geographical Location of the Community	The Voldsløkka Secondary School and the Heidenreich building which houses the Cultural School
Aims of the first project period	The secondary school opened in August 2023. Preparatory work and collaboration with the school's principal
Aims for the next project periods	The primary objective was to engage prospective pupils in an art workshop focused on the reuse and redesign of building materials, enhancing their awareness of sustainability and the challenges of circularity.

[11] For more information on the types of LLs see D3.1 page 12.

***Table 4**. Schedule of activities in Oslo LL.*

2022											
1	2	3	4	5	6	7	8	9	10	11	12
									Introduce ARV to the principal.		
2023											
1	2	3	4	5	6						
Art Workshop Plan Preparation of art workshop for school pupils and local artists		**The Initial meeting** launched an art workshop for pupils and teachers using recycled tiles in a creative space located close to Voldsløkka		**Art Exhibition** on the pupils' work with recycled building materials. Vernissage for ARV consortium.							

ENGAGEMENT USING ART WORKSHOP

Living lab – Co-creation and art

The first activity in the Voldsløkka Living Lab utilized art as a medium to engage young minds in the dialogue around sustainability. In an immersive three-day art workshop, pupils from Bjølsen school were introduced to the concept of circularity and the importance of material reuse in the building sector. The workshop culminated in the creation of a decorative mosaic, composed of six pieces mounted on hardboard, each crafted by a different group of students using recycled tiles. The finished artwork is almost 2 meters in length. This artistic endeavour was not just a lesson in sustainability but also a testament to the school's ethos, embedding a narrative of environmental responsibility into its very infrastructure.

Progress

Voldsløkka school did not open until August 2023. The art workshop was a preparatory activity which was intended to establish initial contact with school staff and pupils. The structure of the workshop was carefully designed to maximize learning and participation. The first day laid the foundation with an introduction to sustainability, challenging pupils with a quiz that encapsulated themes of circularity. The following days saw the students deeply engaged in the creative process, from breaking tiles to designing the mosaic. This progression from theory to practice was instrumental in solidifying the students' understanding and appreciation of sustainable practices in a tangible and memorable way.

Target groups

The workshop engaged a group of 25 pupils from Bjølsen school, who will be pupils at the new Voldsløkka school. These included 10 pupils from a design-redesign class and an additional 15 chosen by the teaching staff based on interest in the art project and other social and cultural criteria. By focusing on these students and, by extension, their families, the project aimed to foster a community-wide embrace of sustainability concepts and practices.

Level of citizen engagement[12]

The first level: Utilize urban spaces for technology-driven research to gather extensive citizen feedback.
The second level: Engage citizens as co-designers of local services and urban infrastructure.
The third level: Implement strategies for vision planning to boost collective learning among stakeholders.

Barriers

The project's execution was not without its hurdles. The research staff lives in Trondheim, while the school is in Oslo. Geographic distance posed a significant challenge and demanded regular trips across the country, highlighting the logistical complexities of collaboration across regions. Additionally, the team faced the task of communicating complex sustainability and circularity concepts to a young audience. The communication activities had to be calibrated to the needs of a young audience, which was not straightforward because most of the team lacks experience with the targeted age group. This necessitated innovative educational strategies to ensure the message was not only delivered but also resonated with the students.

Lessons learned

The workshop provided valuable insights into the dynamics of educational engagement within a living lab context. It underscored the significance of preparatory work and the contextual understanding—social, cultural, and physical—in crafting activities that resonate with

[12] For more information see D3.1 pages 14-16.

participants. The experience also shed light on the intricate balance between the need for external expertise and the capabilities within the ARV team, suggesting a potential re-evaluation of roles and resources for future activities.

Next steps

As Voldsløkka school readies for its opening, a formal unveiling of the artwork is planned, which will mark a significant milestone in the school's journey towards integrating sustainability into its core values. The ARV team plans to continue this momentum with a presence at the school's introductory events in August 2023, aiming to build strong connections with the school community. The inaugural ARV week, scheduled for November, promises to expand on this foundation with a broad array of engaging and co-creative activities. The planned themes are energy efficiency in the home, and comfort and light at school. The themes are inspired by the plus-energy school building.

ENGAGEMENT USING SUPPLEMENTARY ACTIVITIES

Progress

The supplementary activities surrounding the main workshop revealed a keen interest from the pupils, evident in the overwhelming response during the recruitment phase. The selection of an external workshop venue (Bitraf maker's space, https://bitraf.no/) provided an environment conducive to creativity and hands-on learning, fostering a collaborative atmosphere for students and organizers alike.

Target groups

The recruitment drive at Bjølsen school was met with enthusiasm, particularly among the female pupils. This engagement reflects a broader interest in creative education and highlights the importance of targeted recruitment strategies to involve diverse student groups in sustainability focused activities.

Level of citizen engagement[13]

The second level: Engage citizens as co-designers of local services and urban infrastructure.

Barriers

Feedback from participants indicated a desire for a more balanced workshop schedule, with ample breaks and a greater degree of creative autonomy. These insights suggest an opportunity to refine the workshop structure, ensuring that future activities are attuned to the participants' needs and preferences.

Lessons learned

The hands-on nature of the workshop resonated strongly with the students, suggesting that educational activities outside the conventional academic framework can significantly enhance engagement. Pointing also to the potential in combining creative practices with sustainability issues. However, the need for efficient travel and activity planning emerged as a critical consideration, particularly given the distance between key organizers and the workshop location.

Next steps

The artwork's planned unveiling in September is just the beginning of its journey. The decision to display the mosaic within Voldsløkka school will not only celebrate the students' efforts but also serve as a focal point for ongoing community engagement, inspiring future projects and discussions around sustainability.

---

[13] For more information see D3.1 pages 14-16.

5.3. PALMA

GOALS AND TARGET GROUPS OF THE PALMA LL

Table 5 shows and overview of the goals and target groups of the Palma, while Table 6 shows a schedule of the activities.

***Table 5**. Overview of the goals and target groups of the Palma LL.*

Type of LL[14]	User community-driven (led by Palma municipality)
Goals and main topics of LL	Involve the local community of the district into the energy renovation, focusing on three topics: i. large scale renovation, ii. energy transition and iii. energy communities[15]. Map citizens' needs regarding neighbourhood improvement. Provide them with the capacity and knowledge to do so. Motivate them not only to participate, but also to lead some activities.
Target groups[16]	Stakeholders from all these groups are involved: socio-cultural actors, suppliers, financial actors, living lab outsiders, living lab insiders, political/regulatory actors, citizens, and technological actors.
Geographical Location of the Community	A series of events realised in different locations in the neighbourhood so far. Future plans to renovate one building (Es Laboratori) and use it as office, contact point and One Stop Shop for the promotion of housing renovation and energy transition.
Aims of the first project period	To get to know all groups of citizens and inform the neighbourhood about the existence of a LL. Build trust with the community, as distrust to public organizations is one of the main issues. Provide help and support to the community in activities connected to large scale renovation of the neighbourhood, energy transition and establishment of energy communities.
Aims for the next project periods	Support the establishment of first energy communities (Camilo José Cela school). Support the most active communities dealing with rehabilitation of the buildings to start their own projects. These communities have already voted to start the process and selected professionals as Rehabilitation Agents to advise them, by the end of the year the communities should already know what exactly they want to do and start thinking about business models they would like to use. Further education and informing of community members of the benefits of social renovation (e. g. the need to install sensors and monitoring systems necessary for the task).

[14] For more information on the types of LLs see D3.1 page 12.
[15] A crowd-funded innovative model to locally generate renewable energy for consumption of participants using available public and private roofs and other free surface in the area. The concept of Citizen Energy Communities is defined in Directive (EU) 2019/944.
[16] For more information on the categorisation see D3.1 page 25.

Table 6. *Overview of Palma's LL engagement activities*

2022											
1	2	3	4	5	6	7	8	9	10	11	12
Information point Can Ribes, **Homes data recap** – collection of environmental data through devices in the homes of residents											
										Workshop series on electricity bill and aids	

2023					
1	2	3	4	5	6
Information point Can Ribes, **Homes data recap**					
Workshop series on electricity bill and aids					
Energy Communities Briefing – Ibe	**Energy Communities Briefing – Amics de la Terra**	**Fair of entities**	**Vulnerability Survey**		

ENGAGEMENT USING ES LABORATORI

Es laboratori (Previous name: Energy Transition Centre/ CitiLab), ID 2

This innovation deals with preparing a physical location for citizen engagement. It should serve as an accessible contact, information point and meeting place for citizens interested in the topics of sustainable energy solutions and social rehabilitation. Other institutions will also use the building. Only the first floor will be used by the municipality due to accessibility for people with physical disabilities.

Progress

The place has been selected; it will be based on a retrofitted building, which formerly was a police station. However, the Living Lab has already been operating in the neighbourhood during the refurbishment. At the end of the first 18 months of the project, several activities were carried out in different points of the district such as schools, libraries, and community centres, working as a decentralised project.

Target group

Citizens of the neighbourhood La Soledad and Nou Llevant, mainly citizens with lower socio-economic status.

Level of citizen engagement[17]

The first level: activities with a low level of participation, such as one-time visits to One Stop Shop.

The second level: all the activities concerned with active participation of community members such as active and repeated engagement with the One Stop Shop.

Barriers

Retrofitting progress is currently uncertain due to political changes. This impacts on the entire process slowing down, as the new leaders needed to receive information on all the projects and establish their new priorities. Today, we have the approval of the new political leaders, and the tender continues its administrative course. It is expected that during the first half of 2024 the renovation works can begin.

Lessons learned

A Living Lab can operate without a physical office in the neighbourhood. However, a permanent space provides better accessibility to the citizens, who do not need to adapt to scheduled workshops and who can visit at any time during opening hours.

Next steps

Continue with the tender for the retrofitting works, resolving any incident to try to avoid new delays. It is expected that by the summer the works will be completed and the Es Laboratori offices will be able to open in September.

[17] For more information see D3.1 pages 14-16.

ENGAGEMENT USING PPP ONE STOP SHOP (TECH ASSESSMENT TO BUILDING OWNERS, INFO ABOUT FUNDING)

The aim of this innovation is to provide support to large-scale community-led retrofitting, mainly to explain benefits of retrofitting and available subsidies to the communities. It also provides information about topics such as climate change, thermal comfort, or energy savings. The currently operating one-stop shop in the Can Ribes Civic Centre is a temporary solution leading to the opening of Es Laboratori.

Progress

This One Stop Shop currently operates every week for 2 hours and serves 18 communities, 16 of multi-family buildings and 2 of single-family buildings. Two of them made more than one visit to the one-stop shop, organized their own information meetings about possible rehabilitation projects and have already started with the projects. Information about the existence of this point was distributed by means of posters in the different meeting points of the population in the neighbourhoods of La Soledad and Nou Llevant, such as schools, health centres, libraries, pharmacies, and civic centres, among others.

Target groups

The main target group of this innovation is citizens living in one of the surrounding communities. Prioritization was made of the buildings in the areas in which it was most urgent to act. The variables that were used to carry out this prioritization were: 1) the year of construction of the building; 2) the number of existing homes in the building; 3) state of conservation of the building.

Level of citizen engagement[18]

The first level: activities with a low level of participation, such as one-time visits to One Stop Shop. The second level: all the activities concerned with active participation of community members such as active and repeated engagement with the One Stop Shop.

Barriers

No main barriers were encountered – the space was provided by the Day Centre for the Elderly. The only thing that needs to be taken under consideration is the moderate time intensity of the activity – one day a week a trained professional needs to dedicate at least a quarter of their working day to be present at the contact point and communicate with the clients. Carrying out the renovation itself can be tricky – the majority of a given apartment building community needs to agree. Communities also need to be persuaded to agree with the installation of sensors and monitoring systems gathering data about temperature, humidity, energy consumption and other parameters.

Lessons learned

The foundation of this information point is considered a success. Communities find the information provided useful and some of them keep coming back.

Next steps

The opening hours might be extended to two days a week to be able to accommodate more clients at different times.

Implementation of VR tools in cooperation with IREC is also planned. These tools can help to visualise the results of large-scale retrofitting. Images of existing buildings are being introduced into the program with a demo version available.

---

[18] For more information see D3.1 pages 14-16.

ENGAGEMENT WITH FORMATION OF CITIZEN ENERGY COMMUNITY (WP9 BUSINESS MODELS, WP3, WP2), ID 4

The goal is to educate citizens about energy communities and support their establishment. Two activities heading towards this innovation have been carried out – Energy Communities Briefing – Ibe and Workshop on energy transition – Amics de la Terra. The first is a series of informative meetings on guidelines for the development of Energy Communities for the citizens, the second is a meeting for representatives of public administration covering the same topic.

Progress

The main purpose of the first series of events was to explain the concept of energy communities. More specifically, the shared self-consumption model was explained to the public, and they were given the opportunity to express their doubts. The main purpose of the second event was to raise awareness about energy communities among public employees from different levels and departments, and to establish communication among themselves. There are ongoing negotiations with two entities interested in establishing an energy community (Camilo José Cela school and Patronato Obrero NGO) as a result of these activities.

Target groups

The target groups of Energy Communities Briefing – Ibe were citizens potentially interested in participating in energy communities. To reach potential users, it has been disseminated in the media, social networks and among neighbourhood entities.
The target group of Workshop about energy transition – Amics de la Terra were different parts of the public administration. To attract attendees to the Workshop, dissemination has been done through social networks, the Municipal Training School of Palma city council (for the workers of the Palma city council) and mailing to all the municipalities of Mallorca (for the rest of the public workers of Mallorca and political leaders).

Level of citizen engagement[19]

The third level: co-creating activities aimed at developing new business models connected to energy communities, or the ideas of communities concerning the renovation of their buildings. In these activities the population is in the centre, while the public and private entities, the resources, and the municipality are only a guide that accompanies and learns from the process.

Barriers

The level of understanding of energy communities and the energy shared self-consumption model is very low in the neighbourhood as well as the socioeconomic situation of the citizens. People do not clearly see benefits of these solutions. Socioeconomical issues need to be addressed, and trust needs to be built among citizens, as this will increase their willingness to participate and get involved.

Lessons learned

The public meetings and also the workshop for public administration are considered successful. Some citizens asked for further support to fill out the application to be part of the shared self-consumption model after the meeting. Public administration departments also found the possibility to learn about ARV project useful, and new ways of collaboration were established. Next time the participants should be informed more in advance, as earlier notification can increase participation.

[19] For more information see D3.1 pages 14-16.

Next steps

The meeting with citizens will be repeated a couple of times after M18. Due to the described barriers, the focus will be on building energy communities including public buildings and sharing energy with vulnerable households.
There are currently discussions to use AR technologies to support this innovation, however, specific use of this tool is yet to be determined.

ADDITIONAL ENGAGEMENT ACTIVITIES AT PALMA

There have been a couple of other activities not belonging to any given innovation, these support all of them. These activities include a series of workshops about assistance in the payment of electricity bills, participation in the 'Fair of entities', vulnerability survey, and several in-depth interviews with young people, tenants or owners of deteriorated homes and schools. There were six interviews with tenants, data recapturing in several houses, interviews with schools regarding installation of weather station, and support for the World Robotic Olympiad/Codatie architecture event. Young people participated in social housing workshops (with Ibavi support) and efficient building workshops (with University support).

Progress

The series of workshops was meant to give citizens information about their energy bills and possibilities of energy consumption reductions. It was organised in cooperation with various entities such as schools, library, or medical centre, and held directly on their premises in relation to their activities.

Representatives of the demo activities also participated on an event called 'Fair of entities'. They attended a conference and following networking activities aiming to find new connections.
All the rehabilitation counselling clients were also surveyed to understand the population profile and learn whether these citizens are suitable to apply for support for vulnerable people (Next Generation grants). The purpose was to be able to advise the community correctly. The anonymous questionnaires were distributed in paper form directly to the households and later collected.

Target groups

The target population of the series of workshops were the owners and tenants of the district. Particular attention was given to economically vulnerable owners and tenant who might need assistance with accessing the available support.
The target population of 'Fair of Entities' were neighbourhood organizations and citizens.
The questionnaire was aimed at the citizens and clients of the rehabilitation centre, as this will help to define further target groups.

Level of citizen engagement[20]

The first level of engagement: at the workshop series on electricity bill and aids citizens are on the receiving end of information and knowledge transfer, these are therefore considered activities with a low level of participation.

Barriers

The level of vulnerability of the workshop attendees was much higher than expected – some of them did not have access to their electricity bill, therefore, not knowing information about their contract and consumption. They were not able to change their contract or join energy

[20] For more information see D3.1 pages 14-16.

communities. Many of them were only renting a room. The activity is also quite time demanding since it is a series of events. The organizers also encountered reluctance to attend the workshops. The 'Fair of entities' required three people for the whole workday, so it was a time-consuming activity.

A professional is needed to be able to analyse the data collected in the surveys.

Some planned activities such as Sustainable Constructions Workshop IES Aurora Picornell/UIB for adolescents or Modifying the Schoolyard with Green Solutions were not developed due to political change. They have not been endorsed by the new leadership of the city council's urban planning department.

Lessons learned

The participants of the series of workshops were very satisfied with the content of the activity. They commented the activity as useful and beneficial. The organizers tried to overcome the reluctance to attend the workshops with labelling them as *Information Point to apply for help with the electricity bill*, but the level of attendance remained low.
Participation in the 'Fair of Entities' was considered to have been a non-productive event, as no new citizens were contacted.
The anonymous questionnaires seem to be functioning well in this setting.

Next steps

The next steps consist of surveying communities that have not been reached yet.
Preparation for the Sustainable Constructions Workshop IES Aurora Picornell/UIB for adolescents and Modifying the Schoolyard with Green Solutions has been planned. These activities will be carried out in the year 2024.

5.4. SONDERBORG

GOALS AND TARGET GROUPS OF THE SONDERBORG LL

Table 7 shows and overview of the goals and target groups of the Sonderborg LL, while Table 8 shows a schedule of the activities.

***Table 7**. Overview of the goals and target groups of the Sonderborg LL.*

Type of LL[21]	Housing Association-driven / Company-driven
Goals and main topics of LL	Focus on energy transition, emphasizing tenant/citizen involvement for energy savings and aim to raise resident awareness and foster engagement through various programs directed at the residents.
Target groups[22]	Socio-Cultural Actors: N/A Suppliers: ProjectZero Financial Actors: SAB organisation Living Lab Outsiders: N/A Living Lab Insiders: N/A Political/Regulatory Actors: The municipality Citizens: Citizens of SAB dept. 22 and the rest of the housing association SAB/SALUS Technological Actors: Brunata, Danfoss
Geographical Location of the Community	No physical office; active engagement through targeted physical events and online communication in two demo blocks of SAB dept. 22.
Aims of the first project period	Create awareness about the project in the housing association, e.g., we have held an event in the housing association Sønderborg Andelsboligforening dept. 22. Investigating the residents' energy consumption and own perception of their energy habits via survey and resident interviews.
Aims for the next project periods	Based on the qualitative studies we have carried out and the quantitative data we have analysed, we prepare physical behavioural regulatory elements and use existing digital tools which must/can be used by the residents of the apartments, with the aim of reducing energy consumption.

[21] For more information on the types of LLs see D3.1 page 12.
[22] For more information on the categorisation see D3.1 page 25.

Table 8. *Overview of Sonderborg's LL engagement activities*

2022											
1	2	3	4	5	6	7	8	9	10	11	12
	Public Meeting: An informative session for tenants focusing on energy-efficient behaviours, heating, and technical installations.									**Tenant Training**: fostering good energy habits in apartments, tenants' education on energy-efficient consumption	
2023											
1	2	3	4	5	6						
	Investigating and **analysing** data on tenant behaviour in apartments to better understand energy consumption patterns. → Ongoing **Green Ambassadors** Recruitment	**Survey** to carry out a baseline of knowledge residents of energy transition. Introducing the **digital tool** to monitor energy consumption		**Survey**: Demo Blocks							

ENGAGEMENT USING GREEN (RESIDENT) AMBASSADORS

The Sønderborg Living Lab is a company-driven initiative focused on energy transition, aimed at boosting tenant and citizen engagement in energy savings. Its objectives include raising awareness among residents about their role in energy transition and leveraging a green ambassador program to increase tenant participation. The lab confronts the low interest in energy management (heat and electricity) by promoting better daily energy practices in two demo buildings using a digital tool, nudging techniques etc. Without a physical office, the lab engages with tenants of SAB department 22 and the broader housing association primarily through events and online communication. A special emphasis is placed on two demo blocks for enhanced one-on-one tenant dialogue and behavioural change towards more efficient energy and heat consumption.

Sonderborg's demo site is all about reducing the return temperature from the buildings to the district heating, as this can provide a financial gain for the housing association and tenants. This is done via two parallel efforts:

- The first: a technical solution implemented by our other demo partner, Danfoss. This takes place in the basement of the buildings.
- The second (also the Living Lab): a behavior-driven solution aimed at residents, which is about getting residents to optimize their energy consumption, including their heat consumption. Here we use digital tools and behavioral learning tools to reach the residents and to influence their behavior.

Progress

Significant progress has been made in encouraging energy transition among residents.

- The technical solution has been implemented by our other demo partner, Danfoss, in the basement of two building blocks.
- All the buildings in the SAB housing association have been retrofitted for near self-sufficiency with solar panels and batteries.
- The project utilizes a blend of user surveys and energy consumption data to foster energy-efficient practices within the community (this living lab).
- The initial meeting marked an educational milestone, introducing the ARV project and sustainable energy practices to the residents. This event was part of a series of efforts designed to inform and motivate the community towards energy conservation.

Target Groups

The primary focus is on the residents of SAB department 22, along with the wider SAB/SALUS housing association. Engaging diverse stakeholders, including socio-cultural, supplier, financial, political, and regulatory actors, is central to the initiative. This approach ensures a broad, inclusive effort in the energy transition, leveraging various perspectives and expertise. The engagement strategies, tailored to resonate with this multifaceted audience, aim to create a comprehensive community impact, fostering collaboration and shared commitment to sustainability goals.

Level of citizen engagement[23]

The third level: Facilitate stakeholder learning, assess tenant energy engagement and digital tool effectiveness for behaviour change and energy reduction.

[23] For more information see D3.1 pages 14-16.

Barriers

Generating interest in low-engagement areas like energy optimization remains a significant challenge. Convincing residents to alter their behaviour in terms of energy and heat consumption is complex and requires more than just informational outreach. Additionally, attracting residents to events continues to be difficult, despite well-planned and strategic efforts. These challenges underscore the necessity for innovative strategies to effectively engage and educate the community on the importance and benefits of energy conservation.

Lessons Learned

Effective incentives, including competitions and food, have proven crucial for boosting event attendance. We have learned that the energy theme must connect to residents' personal interests, particularly emphasizing benefits like cost savings, to garner engagement. There is a recognized need for more targeted and impactful initiatives that directly appeal to residents, ensuring that the programs resonate with their specific needs and interests, and thereby fostering greater participation and interest in energy-saving measures.

Next Steps

Focused sessions on energy savings, tailored to the immediate interests of residents, are planned for implementation. To gain a deeper understanding of residents' knowledge and behaviours regarding energy use, a survey is being developed. Exploring new strategies to better connect with the community, particularly through existing community groups, is also underway. These steps are directed towards enhancing resident engagement and promoting a more energy-conscious approach within the Sønderborg community.

OTHER ENGAGEMENT ACTIVITIES AT SONDERBORG LL

Progress

A public meeting was conducted to raise awareness about sustainable energy usage and to introduce the ARV project. This event was instrumental in educating residents about the importance of energy efficiency. Additionally, demonstrations were provided on heating systems and technical installations, offering practical knowledge to the attendees. These activities were part of a broader effort to engage the community and promote sustainable practices in energy management.

Target Groups

The focus of these activities was primarily on engaging the residents of SAB department 22. Key participants in these initiatives included ProjectZero, SAB, and Danfoss. This targeted approach ensured that the activities were relevant and impactful for the specific demographic of the department, while leveraging the expertise and resources of the involved organizations to maximize effectiveness.

Level of citizen engagement[24]

The first level: Urban context as a technology-assisted research environment: Collect as much citizen and user feedback as possible.

Barriers

Despite extensive outreach efforts, there was a notable challenge in attracting significant attendance at events, particularly from families. This low turnout persisted as a barrier, highlighting the difficulty in engaging this specific group and ensuring their substantial presence

[24] For more information see D3.1 pages 14-16.

at various events. This indicates a need for more effective strategies to connect with and motivate families to participate in these initiatives.

Lessons Learned

The experience has underscored the importance of attractive incentives in enhancing participant engagement at events. To successfully engage residents, the conversations around energy need to be directly linked to their personal interests, emphasizing the practical benefits in their daily lives. Moreover, there is a recognition of the need for more innovative and directly impactful engagement strategies, ensuring that these initiatives resonate more profoundly with the residents' immediate concerns and lifestyles.

Next Steps

In response to the rising energy prices, there is a plan to organize events that align with residents' immediate financial concerns, aiming to capture a broader spectrum of resident interest. To encourage active participation in energy-saving behaviours, the promotion of the Brunata app is prioritized, enabling residents to monitor their daily energy consumption easily. Additionally, there is a focus on implementing brief and efficient event formats. These formats are designed to communicate essential messages effectively and facilitate straightforward information dissemination, making it easier for residents to grasp and apply the knowledge in their daily energy usage.

5.5. TRENTO

GOALS AND TARGET GROUPS OF THE TRENTO LL

Table 9 shows and overview of the goals and target groups of the Trento LL, while Table 10 shows a schedule of the activities.

***Table 9**. Overview of the goals and target groups of the Trento LL.*

Type of LL[25]	Company-driven
Goals and main topics of LL	All the LL activities are designed to show technical innovations and products and to connect market-oriented entities with the local community. They are linked to 2 topics – social innovation in the construction/renovation and energy transition. The first topic mainly refers to the deployment of a mechanism to aggregate the demand and supply of large-scale sustainable retrofitting (the so-called One Stop Shop). The second topic is connected to raising awareness of sustainable energy solutions and energy communities. The LL also intends to establish a multi-stakeholder approach involving all concerned stakeholders from the beginning. There are 4 main demo activities that the LL connects to, including renovating an apartment building using innovative technologies; designing a new positive energy building– the prototype timber-based building serving as multi-functional hub for commuters' needs (EV charging stations, co-working space, tourist infopoint); installing geothermal prototypes in former tunnels (which also host an art gallery); and establishing a One Stop Shop supporting large-scale district renovation.
Target groups[26]	The target groups of the LL activities are mainly citizens and the community who live in Piedicastello, but also in other areas of Trento (such as Povo district). Some of the citizens joined in a local association called Piedicastello Committee that deals with long lasting urban regeneration concerns and issues on the district level. Others are organised in a District Board/Council consisting of citizens of Piedicastello often interested in the political level of the city. They collect concerns of the district's citizens and deliver them to the municipality. Other important stakeholders include the municipality of Trento, namely the administrative (municipal officers, e.g., Department of Mobility and Urban Renovation Service) and political persons (city councillors in charge of green transition, territorial planning and social housing). Additional important groups consist of the director and managerial staff from the art gallery and representatives of

[25] For more information on the types of LLs see D3.1 page 12.
[26] For more information on the categorisation see D3.1 page 25.

	building managers in Trento (i.e. people in charge of condominium administration and residential building management).
Geographical Location of the Community	The Living Lab is mainly located in the Piedicastello neighbourhood. The main venue is the district meeting centre managed by Piedicastello district council in cooperation with the Municipality of Trento. A potential second venue could be the museum and exhibition area called "Le Gallerie di Piedicastello", which has been established in the two former highway tunnels to be used as a testing site for the geothermal prototype. The apartment building to be renovated is situated in the Povo district.
Aims of the first project period	Introduce the project and the planned activities to the community and to relevant stakeholders at the district and city level, raise awareness among different stakeholder groups, gather their feedback and expectations and ensure their cooperation.
Aims for the next project periods	Start implementing the LL activities in the following domains: on-site visits and inspections, periodic informative sessions, One Stop Shop and dedicated workshops.

Table 10. *Overview of Trento's LL engagement activities*

2022											
1	2	3	4	5	6	7	8	9	10	11	12
					ARV kick-off meeting for the Piedicastello community						
2023											
1	2	3	4	5	6						
			Informative session for the “Povo demo” homeowners	**On site inspection** with the “Povo demo” homeowners							

ONE STOP SHOP FOR CPCC REFURBISHMENT

Most of the activities that happened in the initial phase of the LL are linked to the One Stop Shop (e.g. the kick-off meeting for Piedicastello community).

One Stop Shop for CPCC refurbishment, ID 13

Two activities that could be considered a part of the One Stop Shop took place – an informative session for Povo demo homeowners and an on-site inspection of the Povo demo building with the homeowners.

Progress

The main goal of the informative session was to explain the planned works and obtain approval from the homeowners. It focused on explaining the properties of the "Renew Wall" technology which is an innovative and non-intrusive retrofit kit based on timber panels to be installed on two facades of the building. The homeowners were informed about the monitoring system to be implemented in parallel with the installation of Renew Wall. The meeting addressed the technical and financial aspects of the overall renovation package, including the timeline of the works.
The goal of the on-site visit was mainly to present and discuss the monitoring sensor system to be deployed and to introduce the timeline of the monitoring and innovation to the homeowners.

Target groups

Main target group of the informative session included the homeowners of the building to be renovated. Other groups involved were the general contractor of the renovation, DTTN third party in ARV, and a firm called "Fanti Legnami" which participated as the main technology provider for the innovative part of the renovation. Also, UNITN gave its scientific contribution to the meeting.
The on-site visit included the homeowners of the "Povo demo" building, the building manager and all the technical partners in the working group, including the manufacturer of the wooden façade system, the general contractor, and researchers from UNITN and EURAC in charge of the monitoring architecture.

Level of citizen engagement[27]

Trento Living Lab's ambition for citizen engagement can be placed in between the first level: Urban context as a technology-assisted research environment: Collect as much citizen and user' feedback as possible and the Second level: Citizens viewed as co-creators who contribute to designing and developing local services and urban artefacts. The first level is particularly significant for the renovation demo and for the configuration of the prototype timber building. The second level is important for Trento Living Lab and the One Stop Shop approach for the large-scale retrofitting.

Barriers

The renovation demo was moved from Piedicastello to the District of Povo in Spring 2023 due to the withdrawal of social housing association from offering a renovation site. The schedule of the informative session felt tight, and the time was limited.
A shortcoming occurred in regard to the introduction of the site visit. The working group could better clarify the aim of the site visit in advance and create better connections between the single activity and the overall project. Also, the next steps and wrap-up could be more detailed.
Both the informative session and the on-site visit were slightly time intensive.

Lessons learned

During the informative session, homeowners were interested in the innovative technology which can reduce renovation time and impacts on the inhabitants. Furthermore, they seemed keen to

[27] For more information see D3.1 pages 14-16.

provide the testing site of a larger EU project. The clear and concise presentation using understandable vocabulary encouraged the homeowners to be on board as a project demo site. Participants of the on-site visit also had a positive attitude during the activity. They were active and addressed ARV working group members with questions when something was unclear. Nevertheless, they seemed not fully comfortable when it emerged that some sensor installations could affect their dwellings and requested further explanations that were provided. The presence of all working group members was beneficial to the activity implementation. They clarified the missing or unclear points to the residents and were generally at disposal.

Next steps

Next steps in the next project period include more site visits, collection of homeowners' feedback for the renovation process through qualitative and quantitative surveys, interviews, and the renovation itself. One of them is a "user requirements" survey prepared by DTTN focused on mapping the retrofitting needs in Piedicastello. It will be delivered to participants at the next public event on t the One Stop Shop launching.

LOCAL ENERGY COMMUNITY APPROACH, ID14

This innovation mainly includes the installation of geothermal prototype into former tunnels that might serve as an energy source for future energy community.

Progress

The location has been selected. Communication with the representatives of the art gallery located in the tunnels has been established and the community and selected stakeholders have also been informed about the plans.

Target groups

Main target groups are residents in Piedicastello who would like to join an energy community approach. Selected stakeholders from the municipality and private companies will be the key for the development of this plan together with high school and university students who might take on the role of energy transition ambassadors.

Lessons learned

One of the successes was obtaining the cooperation with the director of the art gallery. The commitment of this person might be a key success factor for some of the plans.

Next steps

The demo leads would also like to involve the director of the gallery and the managing staff more closely (e. g. design of some joint activities mainly concerned with sustainability and sustainable energy by using geothermal power). Installation of a performance monitoring system and further involvement of young people are also expected. Unfortunately, all these activities are still pending and not planned yet, as the design and implementation of the geothermal prototype in the tunnels are facing some administrative and technical delays.

INVOLVEMENT OF LOCAL STAKEHOLDERS IN CO-DESIGN, ID15

The first event supporting this innovation was the ARV kick-off meeting for the Piedicastello community. In-depth interviews were also conducted.

Progress

During the kick-off meeting, the ARV project was presented at the Trento demo areas. Connections between the demo site and the larger urban regeneration plan of Piedicastello planned by the municipality were also introduced. Furthermore, comments on the renovation plan of Trento, the use of renewable energy sources and the One Stop Shop approach were gathered.

In-depth interviews with selected stakeholders were administrated in close cooperation with Eurac Research to spread the information and verify that the partners are interested in the cooperation. The interviews involved some municipal officers, the President of Comitato Piedicastello, the Director of the art gallery located in the former tunnels, and one representative of the local association of "condominium" managers (i.e., professionals in charge of managing administrative issues for residential buildings in Italy).

Target groups

The kick-off meeting was aimed at citizens and relevant community leaders such as members of the local association called Comitato Piedicastello that historically deals with urban transformation on the district level. District political representatives and city officers in charge of topical issues for large-scale urban regeneration (i.e., land management, green transition, citizen participation) were also present. These include members of the District Council and a couple of City Councillors. Their relevance is linked to their political and decision-making role in the community and at the city level. Their presence makes the event more attractive and legitimized. Citizens are usually more used to attend events where political bodies are involved, especially when a brand-new initiative is launched.

Barriers

Some minor organisational and communication issues during the public events were encountered such as the use of technical jargon which sometimes is not fully clear to members of the community. For instance, the One Stop Shop is not a very tangible concept, and some participants did not understand what it is at first glance.
The event was also slightly time consuming.

Lessons learned

The topic that resonated the strongest among the stakeholders were the next steps of the district regeneration plan and the One Stop Shop approach. Few questions were also raised regarding the sustainable technologies which will be deployed in the renovation demo.
During the following events the organisation and communication should be slightly better. The main lesson learnt for the next time is to keep the ARV activities more understandable and to make tangible examples related to the technologies deployed, as well as their functioning and advantages.
A strong point was the combination of both ARV activities and the regeneration plan of the District. This combination kept the audience quite active and engaged during the kick-off. It is something to consider for future informative sessions in the district.

Next steps

During the first public meeting some contact details were collected, now the demo can broaden the communication and don't have to rely fully on district Councils and similar organisations in the future. It is also planned to move from the level of the whole project to more practical real-life examples (e.g. prototypes, installations). Therefore, informative sessions dedicated to specific topics (e.g. technologies, demo areas) are planned. One could be dedicated to the renovations; one to the new building and its features; and the other to the geothermal prototype. The demo leads would like to collect some feedback to the preliminary design of the new construction and discuss it with the community during these sessions.
Site visits are also planned for the following months, so the community could directly see the progress of the new development that should start in the summer or of the geothermal prototype which also start this year in cooperation with the ARV partner Politecnico of Torino.

5.6 UTRECHT

GOALS AND TARGET GROUPS OF THE UTRECHT LL

Table 11 shows and overview of the goals and target groups of the Utrecht LL, while Table 12 shows a schedule of the activities.

***Table 11**. Overview of the goals and target groups of the Utrecht LL.*

Type of LL[28]	The Living Lab is municipality- and social housing corporation-driven.
Goals and main topics of LL	The overarching goal of the Utrecht LL is to engage the tenants of the social housing corporations and the citizens of the LL districts to enable more positive outcomes in their energy consumption, their social wellbeing and to create jobs & internships for youngsters and people in the building sector by using a skills-based approach.
Target groups[29]	The Utrecht LL consists of four interventions targeting different social aspects of the retrofitting program in Utrecht. The interventions have overlapping but also different stakeholder's groups. In this phase of the project, the main focus of development is on social renovation, energy coaching, and human capital program. Target group of social renovation activities are the tenants living in the Woonin apartment buildings. Target group of the Energy coaching are social housing tenants. Target group of human capital are teachers working for education companies offering vocational education and ultimately the students of these disciplines, however, they are not actively involved in this phase of the project.
Geographical Location of the Community	The main locations of the Living Lab are the 2 social housing buildings of Woonin in Overvecht ("Strooys" buildings) and the 4 social housing buildings of Bo-Ex in Kanaleneiland-Zuid district ("Bredero" buildings).
Aims of the first project period	Setting up and implementing the LL activities in Utrecht: - Social renovation: start phase 1 of social renovation by Woonin and social partner Dock. Initiate academic evaluation research by Utrecht University. - Energy coaching: subcontracting energy coaches. Run first batch of energy coaching meetings. - Human Capital: start up and finish workshops around circular skills.
Aims for the next project periods	- Social Renovation: first complete the technical renovation of the building and allow time for tenants to return to new daily live. After this focus on phase 2 of social renovation for Wooning tenants in Strooys buildings. - Energy coaching: evaluate first batch of energy coaching and prepare next batch of energy coaching including the learnings from the first round. - Human capital: finalize recommendations to future curriculum and finish this innovation. - Physical hub in the district: identify and plan relevant activities.

[28] For more information on the types of LLs see D3.1 page 12.
[29] For more information on the categorisation see D3.1 page 25.

Table 12. *Overview of Utrecht's LL engagement*

2022											
1	2	3	4	5	6	7	8	9	10	11	12
					Start of Social renovation						
2023											
1	2	3	4	5	6						
Start of Energy coaching			Human Capital “Stakeholder workshop for circular skills”		Human Capital “Stakeholder workshop for circular skills”						

SOCIAL RENOVATION WITH HOUSING TENANTS

Social Renovation

Social renovation combines a physical renovation with social support. Two main purposes are helping tenants where necessary during renovation and beyond and improving liveability in the neighbourhood. The ambition is to empower tenants of the social housing projects in improving their social wellbeing with the support of social welfare organisations.

Progress

Social Renovation conversations were carried out with tenants of Social Housing Association (Woonin) to discuss the upcoming renovation. The aim of the meetings was to get acquainted and build trust between tenant and social housing corporation, to explain the renovation process, to collect questions and concerns with the renovation (planning, what needs to be done for renovation, issues concerning temporarily move to other apartment during renovation, etc.) and to identify broader questions concerning wellbeing that can be forwarded to partner organisations. This was followed by linking tenants (if needed) to social welfare organisations. Specifically, the following organisations were cooperating with Dock for all social cohesion question, activities in neighbourhood or language lessons; Work & Income (municipality) for all financial, job-related, education and training questions; and District team (municipality) for all questions concerning help with the renovation. 247 one-on-one meetings with tenants were held and 78 tenants were forwarded to one of the partner organisations for further follow-up. Duration of each conversation was approximately 1 hour. Initially, all tenants were contacted by letter, followed by door-to-door visits.

Target groups

Target group of Social renovation are tenants living in one of the Woonin apartment buildings that is part of the social renovation project. Tenants who are suffering from financial or social problems or complications related to reconstruction are the target group for further assistance from social renovation partner organisations.

Level of citizen engagement[30]

The Utrecht Living Lab ambition level for citizen engagement is the first and second level.
The ARV activities in in WP4, 5, 6 and 7 are aimed at developing, testing, and evaluating the "technical" innovations #38 to #48 (see D1.4 Innovation Register) in real-life circumstances at the social housing apartment buildings of Woonin and Bo-Ex. For these activities, the first level of citizen engagement applies, to collect as much citizen and user feedback on these innovations.
The ARV activities in WP3 are aimed at developing, testing, and evaluating "social" innovations #35 to #37 (see D1.4 Innovation Register). For these activities, the second level of citizen engagement applies, as the ambition is to empower tenants of the social housing projects in improving their social wellbeing with the support of wellbeing organisations (#35 Social Renovation), to explore with citizens/job seekers how their skills fit with the circular construction company needs (#36 Human Capital) and to involve tenants in improving their energy performance/usage (#36 Energy coaching of residents). Although it must be noted that the expectation towards citizens/tenants is limited in terms of designing "new" services or urban artefacts as the ARV activities are targeted at implementing the proposed innovations.

[30] For more information see D3.1 pages 14-16.

Barriers

The activity was very time- and cost intensive. It involved many organisations and personal contacts with tenants.

Lessons learned

It is important to give greater emphasis to residents' interests. Provide residents with a permanent role in consultations with the social housing corporations regarding renovation and related activities, ensuring that their voices are directly heard. The joint goals, roles, and expectations need to be clarified. Social renovation requires a firm commitment from all those involved, and at the moment there are still several questions about purpose and commitment. Current uncertainties align with the development of a new approach, such as social renovation, and the ongoing phase of current projects. Now is the convenient time to address these issues.

It is recommended to postpone the planned citywide implementation of social renovation. Several learning elements and uncertainties still exist. Social renovation demands a strong commitment from all stakeholders, and questions persist regarding purpose and dedication. Anticipate that insights from the IGLO research and the forthcoming 'Satisfaction Ratio' will offer guidance for a targeted and broader implementation in due course.

It should be allowed for 'different allocation' where feasible. The municipality of Utrecht actively advocates for this by bringing the need to the attention of the Ministry of the Interior and Kingdom Relations. Incorporate as much flexibility as possible within the housing ordinance; for instance, starting January 1st, 2022, the 'housekeeper interest' was included in the Utrecht housing ordinance.

It is recommended to examine the long-term effects and extend the IGLO research to investigate the enduring impacts of social renovation.

Next steps

In 2023, the partners involved in social renovation want to ensure good cooperation among social renovation partners to swiftly and effectively assist residents through the appropriate channels. This is facilitated through various means, including a monthly case meeting conducted in an anonymized manner. They also want to continue the academic research by Utrecht University on social renovation, drawing insights from the outcomes of the previous study on Nigerdreef (anticipated research report releases in mid-2023). Based on the research findings, make enhancements to the approach wherever feasible. It is also necessary to document the practical working method by establishing an assessment framework for determining the initiation of social renovation. This includes an elaboration of the work process, tips and tricks, insights into the benefits of social renovation for residents, and an understanding of the commitment required from all involved parties. During the renovation works, the social renovation approach towards tenants is more reactive, only following up on specific cases that present themselves. After the renovation works (in 2024/2025), a final one-on-one meeting with the tenants is scheduled by the social housing corporation. These meetings will always be joined by one of the partner organisations. This will ensure a warm hand-over from the social housing corporation to the partner organisation. After these meetings, the role of the social housing corporation becomes more limited, and the follow-up is in the hands of the partner organisation.

HUMAN CAPITAL PROGRAMME

The goal of Human Capital program is to test how schools and companies around existing topical projects can collect and bring input for an up to date (dynamic) curriculum for circular

construction education programs. As part of this program, workshops were held with ARV partners Inside-Out and Bo-Ex.

Progress

Through the municipality of Utrecht the consortia of two initiatives of the city were connected. First, the consortium “Together developing skills for circular building” of which city of Utrecht is partner and aims to match vocational education programs better to market needs and job seeker or student skills. Second, the ARV consortium that develops concrete energy and circular renovation systems. More specifically the ARV partners Bo-Ex and Inside-Out/Bos were involved. Two workshops were held, first was aimed to identify required skills for circular retrofitting system (Inside-Out) and second to translate required to education program (Inside-Out).

Target groups

Main target group are teachers working for education companies offering vocational education and internship positions for jobs in the energy installation and construction sector. While the end-users of this activity are students from Utrecht that enroll in a technical vocational study, they are not directly involved in the Living Lab activity.

Barriers

There was an omission in the absence from secondary vocational schools and the representation of teachers was insufficient, because of lack of priority for circular skills by educational institutes, insufficient prioritization of reflective sessions by teacher managers, the need for more advanced scheduling in agendas and limited capacity at schools.

Lessons learned

The participants perceived working on tangible activities and projects that ARV partners brought in as positive. The activities offer opportunities for education institutes to better connect to market parties in order to better prepare circular construction curriculum for prospected students and job seekers. The activity was slightly time intensive due to organisational effort in bringing LL stakeholders together, but it was not cost intensive since this was covered by two existing consortia working together. We would have liked to have more teachers present at the workshop however they have limited availability or didn’t receive “time” from their managers to participate. Teachers and companies expressed enthusiasm for the field visit and pilot workshops offered valuable perspectives for both teachers and students.

Next steps

It is currently under discussion within the consortium "Together developing skills for circular buildings" how the follow-up will look like. Next steps could include additional testing and refining the workshop methodology, ensuring involvement from a broader group of participants. The plan is to increase engagement with primary and secondary vocational schools (VMBO) to enhance their involvement in the pilot program and foster greater collaboration with companies, building on the insights gained from the pilot projects. There should be focus on preparing more tailored education programs for circular construction projects, aligning with the skills of prospective students and job seekers. The pilot needs to be extended and repeated to gain more input and attention and must be made more accessible for the teachers.

ENERGY COACHING SESSIONS

Social housing tenants were invited to participate in an energy coaching session to inform and support energy efficiency behavior.

Progress

Woonin/Mitros has contracted local energy cooperative Energie-U to perform Energy Coaching one-on-one sessions for tenants of social housing apartments in the Overvecht district of Utrecht. The energy coaches were recruited from a pool of students doing energy coaching. The tenants were contacted through a letter of Woonin/Mitros to inform on energy coaching. Subsequently, the tenants were called by an energy-coach. As a result, 82 meeting invites were accepted and held, 156 meeting invites were declined, 194 meeting invites were not replied to and 25 meeting invites were accepted but led to no-show. Evaluation report was prepared by Energie-U for Woonin/Mitros after the meetings. During the energy coaching sessions, the following topics were discussed: the relationship between energy and behaviour clearer, possibility of a temporary energy display for more insight into e-consumption and each participant got an Energy-box with practical solutions for lower energy use like draught strips, LED lamps and radiator foil.

Target groups

The target group for this program are social housing tenants.

Barriers

Reaching the tenants posed challenges, as approximately half of them were not reached due to practical issues (e.g., wrong phone numbers) or lack of interest. This challenge is also observed on a broader scale in the Netherlands. Some tenants did not show up for scheduled visits.

Lessons learned

One-on-one meetings organisation takes time and significant resources, but the reactions were in general positive. People learned more about the impact of their behaviour and appliances on the energy use.

Energy coaches made effective efforts to personally contact the tenants through various communication modes. The collaboration between Woonin and Energie-U in communication was successful. The conversation piece, a picture of the energy system in the house, proved to be effective in meetings. The Energy-box, containing practical solutions for lower energy use such as draught strips, LED lamps, and radiator foil, received positive feedback from tenants. For the visits that were conducted, tenants expressed positivity and gratitude.

Next steps

Evaluation of energy coaching between Woonin/Mitros and the energy cooperative will be written. The energy coaching sessions were held at four previously renovated buildings in the Overvecht districts. The energy coaching session for the two apartment buildings that are currently renovated it will be explored but not yet confirmed, if energy coaching will take place.

6. CONCLUDING REMARKS

In the first project period, all the Living Labs started developing their distinct LL activities, the first months were concerned mainly with setting up of the activities, getting to know the community and relevant, familiarizing the community with the ARV project and the planned LL activities. First activities were carried out, first lessons learned were identified and further plans considering what has already been learned were developed.

DEMO SPECIFIC CONCLUDING REMARKS: KEY ENGAGEMENT ACTIVITIES LEARNINGS AND BARRIERS

Karviná

The Living lab educational platform has proven to be well received by schools and participants. The practical side of the organisation proved to be a challenge, especially the scheduling of the workshops in relation to school holidays and other events. The design of the workshops worked well and will be used as a basis for the next round of workshops.

The questionnaires for citizens about the reconstruction were adapted to the case of Karviná and a lot of information was obtained from tenants and visitors, but it was not possible to get the opinions of the construction workers because they were not interested in the survey.

Oslo

Engagement using art workshop brought new perspectives on the role of art in education and engagement activities. The identified barriers were the physical distance between the researchers and the school where the activities took place and the researchers' lack of experience of working with a group of young audiences.

The students appreciated the workshop-style teaching, the linking of art and environmental topics worked well. Next time the structure of the workshop should be better thought out so that students feel a greater degree of creative autonomy.

Going forward, engagements activities will include using the developed AR and VR applications targeted toward several distinct stakeholders (city planners and policy makers) and citizen user group types (e.g. school children, common public, inhabitants and infrastructure users, service personnel). Contact will be also be initiated with the Cultural School actors.

Palma

Workshops and public meetings regarding the citizen energy communities worked well, helping to engage citizens. They have also led to new collaborations. The main goal is to build trust among citizens. Next time, there is a need to focus on more timely planning of events to allow enough time for promotion.

Due to political changes, there is uncertainty whether it will be possible to proceed to retrofitting. It would be more convenient for citizens if there was a physical Living Lab office. PPP One Stop Shop was established in Day Centre for the Elderly. This has made it easier for people in the community to access information and with some returning, it is considered a success.

Sonderborg

Engaging citizens with the help of green ambassadors has proven to be a challenge. There is a need to link the topic of energy consumption with the concrete interests of citizens to participate in the

programmes. There is a need to develop a strategy to activate, motivate and involve citizens and, ideally, entire families.

Trento

The informative session for the homeowners was well perceived by the participants. The clear and concise presentation using understandable vocabulary encouraged the homeowners to be on board as a project demo site. The presence of all working group members was beneficial to the activity implementation as they could address the questions and unclear points instantly. The aim of the site visit and its' connection to the overall project should have been clarified better and in advance.

The public events worked well especially with the combination of both ARV activities and the regeneration plan of the District. The topic that resonated the strongest among the stakeholders were the next steps of the district regeneration plan and the One Stop Shop approach. The main lesson learnt for the next time is to keep the ARV activities more understandable and to make tangible examples related to the technologies deployed, as well as their functioning and advantages.

Utrecht

The participants of the human capital programme perceived working on tangible activities and projects that ARV partners brought in as positive. The activities offer opportunities for education institutes to better connect to market parties in order to better prepare circular construction curriculum for prospected students and job seekers. The activity was slightly time intensive due to organisational effort in bringing LL stakeholders (especially teachers) together, but it was not cost intensive since this was covered by two existing consortia working together.

One-on-one energy coaching meetings organisation take time and significant resources, but the reactions were in general positive. People learned more about the impact of their behaviour and appliances on the energy use. Reaching the tenants posed challenges, as approximately half of them were not reached due to practical issues (e.g., wrong phone numbers) or lack of interest.

Social renovation approach activities faced uncertainties and barriers such as a lack of purpose and commitment that is crucial from all the actors involved. That kind of uncertainty aligns with the development of a new approach. Now is the convenient time to address these issues. Anticipation is that the insights from the IGLO research and the forthcoming 'Satisfaction Ratio' will offer guidance for a targeted and broader implementation in due course.

7. FUTURE UPDATES

This deliverable will be updated in Month 36 (December 2024, second edition) and in Month 48 (December 2025, final edition). The second edition will include reporting up to months 34 and the final edition will include reporting up to months 46.

For the next edition of the report, we plan to implement the **following improvements in the reporting process** in collaboration with the respective Living Lab coordinators:

- The LL logbook will be adjusted so it is better aligned with the WP3 related innovations.
- First round of 1on1 interviews will be scheduled in Q1 2024 to communicate lessons learned and to identify how to modify the logbook to best capture relevant information for LL reporting.
- The LL Logbook will be adjusted after the discussions with the LL coordinators so it better fits to situations in each demo site.
- The LL logbook will include photos from respective engagement activities and a graphic summary of all activities across demos.
- Second round of 1on1 interviews will be scheduled in Q4 2024 to learn more in-depth information about the activities reported and to allow feedback and clarifications between T3.4 and respective LL coordinators.

REFERENCES

Ravetz, J., Wiegmann, M., Astbury, J., Scanagatta, C., & Evans, J. (2018). *Framework for Monitoring and Evaluation of the LOOPER Living Labs* (p. 55). University of Manchester.

The LOOPER project consortium. (2020). *LOOPER*. LOOPER: Learning Loops in the Public Realm. https://looperproject.eu/

ACKNOWLEDGEMENTS AND DISCLAIMER

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101036723.

APPENDIX A – LL LOGBOOK TEMPLATE (EXAMPLE FOR THE CITY OF KARVINÁ)

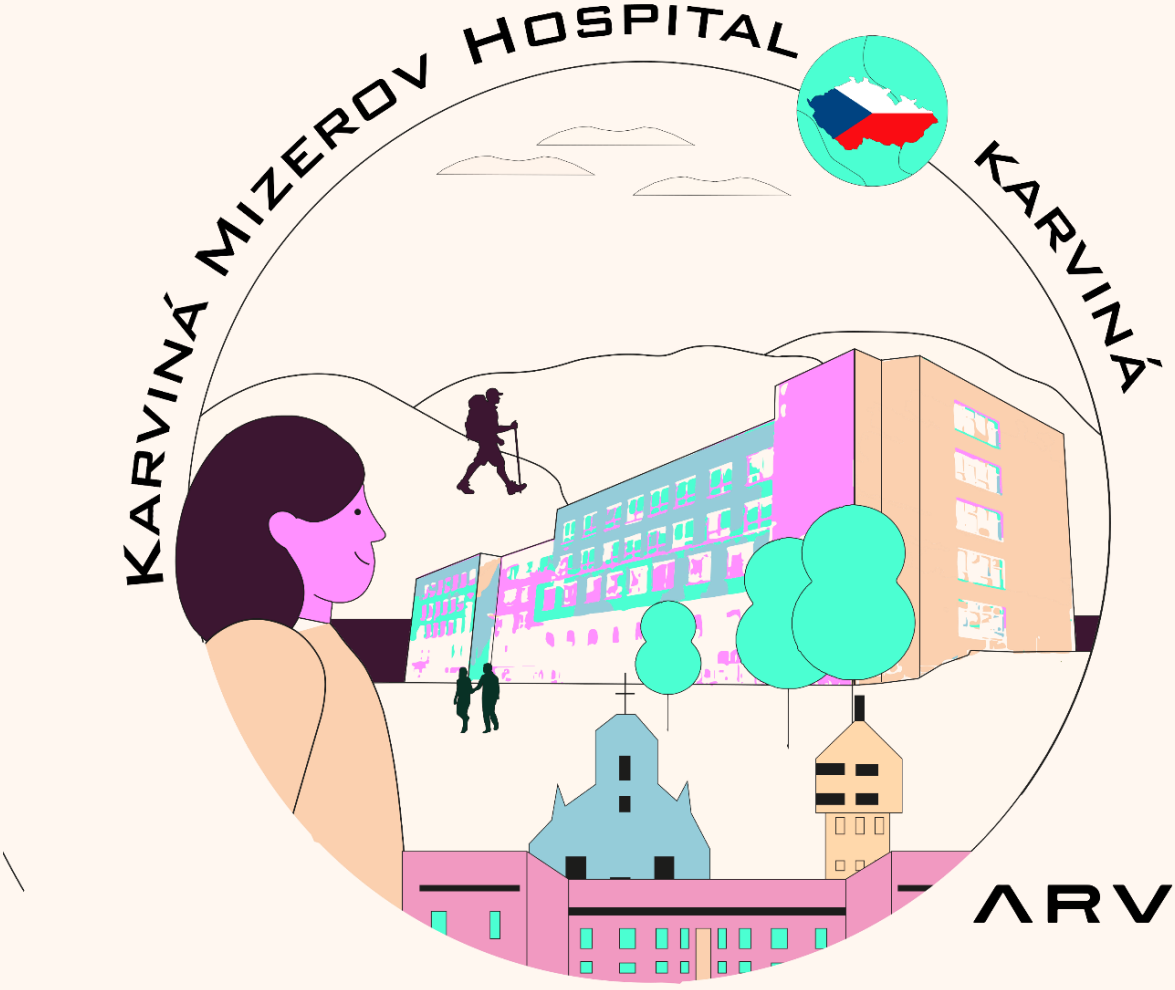
ARV LIVING LAB LOGBOOK FOR KARVINÁ DEMO

WP3, T3.4 MONITORING AND REPORTING OF CPCC LIVING LABS IN DEMO SITES

Authors: CVUT UCEEB, Karviná Demo Representatives

22 March 2023

Not a deliverable



INTRODUCTION

The whole reporting process (task 3.4 Monitoring and reporting of CPCC Living Labs in demo sites) consists of a **Living Lab (LL) logbook**, **follow-up interviews** and **submitting a deliverable 3.3 CPCC Living Labs reports (LL reports)** in months 24. Deliverable 3.3 has two additional editions in months 36 and 48.

The logbook is a tool to report LL activities in each demo. It is a report of events dated and arranged chronologically, a continuous record of the events that form the LL and the organizers' reflections on these events. Each demo is provided with one template of the logbook. The goal of the logbook is to continuously gather information that will later form the LL reports, it will serve as a bank of information that will be used to put the LL reports together. When it is time for one of the project reports to be submitted, the relevant sections from the logbook can be copied and pasted into the report while introduction and conclusion can be added to go with it.[31]

Round of interviews between the task 3.4 leaders (CVUT) and each demo will be conducted approx. once a year to get more in-depth information about the activities listed in the logbooks and to keep in touch about the reporting process. More information about the Table of Contents of LL reports will be provided later.

INSTRUCTIONS

The logbook consists of two sections – general information about the LL and continuous record of the LL activities. The first section should be filled as soon as you start the whole reporting process (March 2023). You should start with the second section at the same time, first you retrospectively by memory fill info about the activities that had already happened and continuously add more as you continue. There are more detailed instructions in the beginning of every section. Just keep in mind that the notes should be entered as soon as possible after each LL activity was carried out so that details can be recalled, and feelings and observations captured. You might need a link to your reporting folder and D3.1 while filling the LL logbook.

It is a responsibility of each demo to fill the information in. However, it is possible to slightly **adapt the form** according to your demo's needs. You can omit some irrelevant information or include some more that are important to you. Just try to stick with the general structure. The logbook should mainly serve you as a tool to keep track of your LL activities, it should be your diary. Each demo can have a slightly different logbook. Consider the form of the logbook to be a suggestion, however, it is important to fill something in and keep track of the activities.

If you make any changes, please try to keep track of them as well, a short note on what you changed and why is sufficient. You can do this in the comments, or at the end of the document, there is a chapter called Methodological Notes for this purpose. This is not a vital part of the reporting process, but these methodological notes will serve us (CVUT) to adapt the logbook in the following years and learn what was working and what wasn't.

Filling the logbook will be accompanied by a round of interviews between the task 3.4 leader (CVUT) and each demo to discuss the events listed in the logbook and gather more in-depth information in the 4th quarter of each year (before the reports will be submitted, around M22). Round of interviews will also happen in the beginning of the year 2023 to go through the first year's activities. The results

[31] Source: http://looperproject.eu/wp-content/uploads/2018/09/LOOPER_D4.2_Framework_for_monitoring_and_evaluation_Living_Labs.pdf, pg. 12

of the interviews will also be provided to each demo to help them fill the LL reports. Instruction how to fill the LL reports will be provided later.

1. GENERAL INFORMATION ABOUT THE LIVING LAB

Fill only once in the beginning, it is possible to reference D3.1 if nothing major has changed compared to the info there.

1. What type of Living Lab is it?
Please chose one or more and comment. For more information on the types see D3.1 page 12.

2. What is the Living Lab main theme or topic?
Shortly describe.

Raising the amount of involved public and specifically the students at Karvina schools.

3. What are the main challenges the Living Lab wants to address?
Shortly describe.

4. What is the Living Lab's main location? Is there a physical location?
Shortly describe the venue. You can add photos to your reporting folder.

5. Who are the primary target groups you want to involve in the Living Lab?
The demographics description in D3.1 can be helpful. Please use the typology of the stakeholders described in D3.1 page 25. Please fill in specific stakeholders into each group and shortly comment if needed.

Socio-Cultural Actors:
Suppliers:
Financial Actors:
Living Lab Outsiders:
Living Lab Insiders:
Political/Regulatory Actors:
Citizens:
Technological Actors:

6. What is the ambition level for citizen engagement?
Please see D3.1 pages 14-16. Select what is your intended level and comment shortly.

First level: Urban context as a technology-assisted research environment: Collect as much citizen and user feedback as possible

Second level: Citizens viewed as co-creators who contribute to designing and developing local services and urban artefacts

Third level: Plan procedures and facilitate vision planning, leading to increased mutual learning of various stakeholders, including citizens

7. Write any additional comments and thoughts that describe your LL.

2. ACTIVITIES OF THE LL

1. **Were there any specific goals that you tried to achieve in the first year?**

Please shortly describe.

2. **Are there any specific goals that you would like to achieve in the second year?**

Please shortly describe.

2.1. OVERVIEW OF THE ACTIVITIES

List all the LL activities that happened so far, add new activities once they take place.

Identification number (ID)	Name of the activity	Date of start	Duration	One-time or repeating activity	No. of participants		Short description	Key results
					Attendees	Organizers / Task force		
K22_1	Series of workshops with students	9th Nov 13th Jan 19th Apr 21st Apr 9th Jun	1,5 hours 2 hours 2 hours 2 hours 1,5 hours	Repeating activity	30	3	Participatory workshop focused on presentation of sustainability topics, city projects and student work	Student works on installation of PVs on city buildings
Etc.								

Table 1: Overview of the activities

2.2. DESCRIPTION OF THE ACTIVITIES

Fill for all the activities listed in Table 1; it is ok to provide short answers (especially for the activities that already happened in the first year since you must recall the info from memory).

3. **ID and name of the activity:**
4. **Please outline the steps of the whole process of delivering this activity.**
5. **What engagement methods did you use?**
6. **What were the topics covered/discussed?**
7. **Describe the agenda/timeline of the event.**
8. **What were the main outcomes and results?**
9. **Why did you choose this activity to achieve the defined goal?**
10. **Which category did this activity belong to the most?**

Please pick one and shortly explain your answer. See D3.1 pages 19-21.

Social Rennovation / Energy Transition / Circularity / Large-scale Retrofitting

11. **Did you consider this activity to be time and cost intensive (including hours of preparation, execution, wrap-up)?**

Please pick one option in each row and shortly explain your answer.

a. Very time intensive / slightly time intensive / not time intensive
b. Very cost intensive / slightly cost intensive / not cost intensive

12. **Describe the premises of the event and needed material resources.**
13. **List the task force / team of organizers and their roles.**
14. **Were there any physical materials made or data gathered during the event? Were photos or videos made? Are these materials, data, photos, or videos saved and well documented?**

Please describe. You can add these materials in your reporting folder.

15. **List the target groups of participants and provide an explanation of their relevance for this event / for the LL.**

Please use the typology of the stakeholders described in D3.1 page 25. Please fill in specific stakeholders into each group and shortly comment if needed.

Socio-Cultural Actors:
Suppliers:
Financial Actors:
Living Lab Outsiders:
Living Lab Insiders:
Political/Regulatory Actors:
Citizens:
Technological Actors:

16. **How did you recruit the participants? Did you manage to reach the target groups you intended? Who else would you have liked to involve and why? What are the challenges in reaching out to them?**
17. **Was there any feedback from the participants?**

Shortly describe.

18. **Summarize the lessons learnt from the activity. What went well? What would you do differently next time?**

Please don't forget to also mention the issues and problems you encountered.

19. **What are the next steps?**
20. **Write any additional notes or comments.**

Copy and repeat this structure for each of the activities listed in Table 1.

METHODOLOGICAL NOTES

Please include any notes on the changes you made to the logbook, reasons for them and any other comments and thoughts on the reporting process.

APPENDIX B – INTERVIEW GUIDE

Interview About the First Year and Following LL Activities

Can you briefly describe what had happened in your LL so far?
What was the goal of the first year's activities?
Which group of stakeholders did you include?
What were the main results of your activities?
Did you get any feedback from the participants?
Summarize the lessons learned from each activity. What went well? What would you do differently next time?
Did you encounter something unexpected so far?
What are you working on right now considering the LL activities? What are the next steps?
What would you like to achieve in the second year?
Which groups of stakeholders would you like to include in the second year?
Would you like to discuss anything else?

The Dates of Interviews

All interviews were conducted online, and each interview lasted approximately two hours.

Demo site	With whom	Date
Trento	Marcello Curci	24.2.2023
Oslo	Ruth Woods	3.3.2023
Utrecht	Roel Massink	6.3.2023
Sonderborg	Anne Branderup	8.3.2023
Palma	Marta Nicolau	13.3.2023
Karviná	Michal Sikora	13.3.2023

PARTNER LOGOS

WWW.GREENDEAL-ARV.EU