

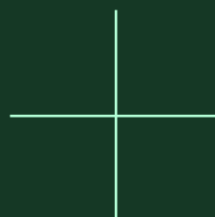
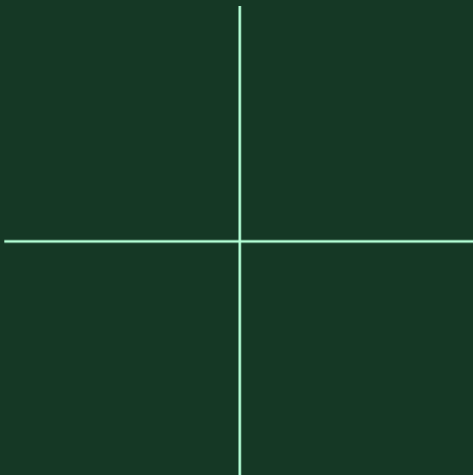
D3.3 CPCC LIVING LABS REPORTS (M36)

WP3 COMMUNITY ENGAGEMENT, ENVIRONMENT, AND WELLBEING

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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.

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ABOUT THE ARV PROJECT

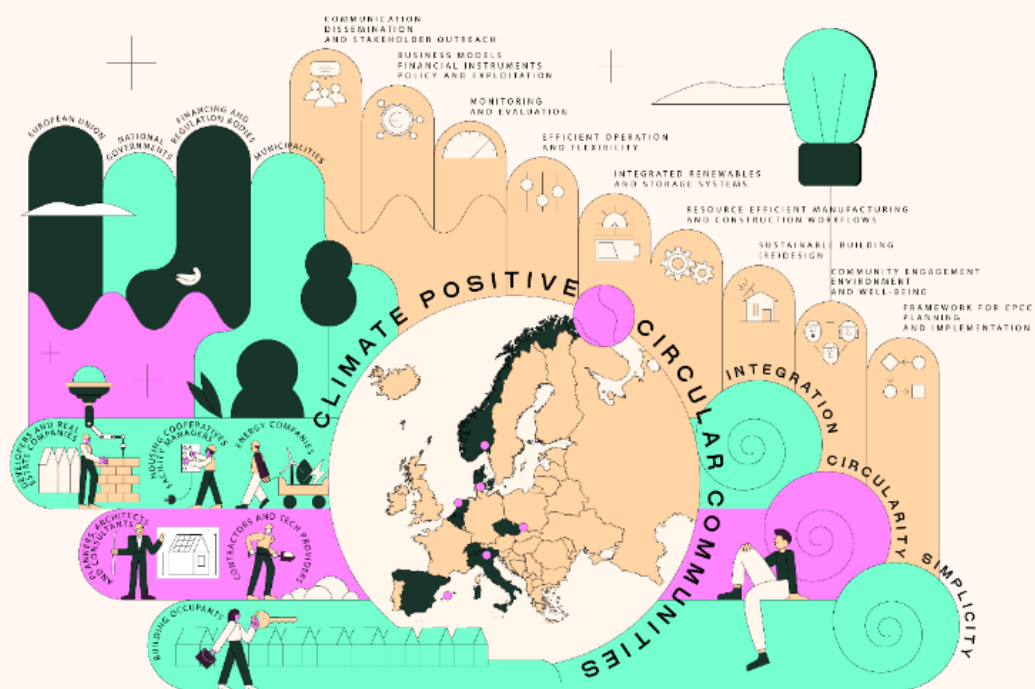
The vision of the ARV project is to contribute to speedy and wide scale implementation of Climate Positive Circular Communities² (CPCC) where people can thrive and prosper for generations to come. The overall aim is to demonstrate and validate attractive, resilient, and affordable solutions for CPCC 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.

² A Climate Positive Circular Community has been defined in D2.1. 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.



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) 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 Labs³ (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 from the beginning of the project up until M34.

D3.3 is the output of the **task 3.4 Monitoring and reporting of CPCC Living Labs** in demo sites led by CVUT. This is a **second edition of D3.3**. While the first edition from M24 focused on the period M1 - M18, this 2nd edition builds on it and includes **the engagement activities from M19 - M34**. There will be a final edition of this deliverable at the end of the project. It is planned that the last update will include the engagement activities from the final period of the project.

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, recapping the goals of each CPCC LL, the target groups, and overall schedule of engagement activities so far. This chapter 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 **for the LL reporting process** we plan to implement in the final edition of this report.

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

The key takeaways to sum up the report:

- **In the first project period (M1-18)**, 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. **Lessons learned from the first project period for the reporting and monitoring task leaders:**
 - Adaptations were necessary going forward as the context of each LL was very different and driven by different actors. The use of the logbook also needed to be complemented by 1on1 interviews to allow in-depth understanding of the LL activities, methods used, and barriers encountered.
 - The need for 2 rounds (instead of one) of 1on1 interviews with LL coordinators for each reporting period had emerged.
 - An opportunity for improvement was identified: the engagement activities to 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 needed to be tied to target groups, as this influences the consideration for engagement methods and tools.
- The **following improvements were introduced for the second project period (M19-M34)** in collaboration with the respective Living Lab coordinators:
- First round of 1on1 interviews was 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 was adjusted so it is better aligned with the WP3-related innovations.
 - The LL Logbook was adjusted after the discussions with the LL coordinators so it better fits to situations in each demo site.
 - The LL logbook now includes photos from respective engagement activities.
 - Second round of 1on1 interviews was scheduled for 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.
- **In the second project period (M19-34)**, Living Labs deepened previously established partnerships (with various stakeholders such as municipalities, schools, renovation companies or communities), and established new collaborations in some cities. For instance, **Palma LL** started the involvement with *the 64homes Project*, supporting residents' own activity to renovate their houses. **Oslo LL** and **Karviná LL** explored new ways of engaging pupils through creative activities such as designing a sustainability-themed board game, upcycling materials through group work or designing sustainable building renovation. **Sønderborg LL** continued the intensive 1on1 collaboration with the residents, introducing them to a digital tool for measuring energy consumption – the Brunata app. **Trento LL** focused on fostering citizen participation, testing novel technologies, and introducing the One Stop Shop approach for large-scale retrofitting. Over the reporting period, several key activities were conducted, including informative workshops, interactive sessions, and exhibition showcasing innovative solutions for building renovations. **Utrecht LL** has progressed its social renovation initiatives, focusing on community engagement and housing improvements. At the Brederoflats in Kanaleneiland, Bo-Ex and the municipality have coordinated efforts for implementing the Social Renovation Light approach, conducting resident assessments, and engaging advisory groups. Key activities included pre- and post-renovation surveys, in-depth interviews with residents and professionals, and preliminary action to address urgent housing issues.

- **Reflection:** The logbook is a useful tool for capturing the engagement activities. However, reporting on the activities using logbooks is more natural for Living Labs, which are run by professional researchers or municipal representatives. It turns out that for representatives with background in the private sector this descriptive method is not that common. Therefore, it is important to explain very well what the logbook tool is for, which parts will be used and are necessary for the reporting, and to what extent information sharing is expected. Giving enough freedom is crucial. Also, characterizing and categorizing activities based on more complex methodologies may discourage writers from completing the logbook if they do not understand it well.

1. Introduction	13
2. Objectives	13
3. Structure of the report	14
4. Methodology	14
4.1. Logbook	14
4.2. Interviews	15
5. CPCC Living Lab Activities	17
5.1. Karviná	17
Goals and Target groups of the Karviná LL	17
Overview of Karviná's LL engagement activities	19
Innovation #52 Engagement using educational Platform	21
Pupils workshops and seminars	21
Interviews with initially identified stakeholders	24
Events with public participation	26
Additional engagement activities in Karviná	28
Online Surveys with Tenants, Visitors and Construction workers	28
5.2. Oslo	30
Goals and Target groups of the Oslo LL	30
Overview of Oslo's LL engagement activities	32
Innovation #72 Raising climate awareness through education and local community engagement	34
Engagement using art workshop: The mosaic	34
Getting to know ARV: Voldsløkka pupils and teachers	36
Climate Bootcamps: engagement through research and creative workshops	38
Animation as a tool for citizen participation: El-Moose film	41
Engagement using creative workshop: Designing a boardgame	46
Additional engagement activities in Oslo	50
Meeting with leaders of a local welfare group	50
Engagement event for professional stakeholders (WP10)	51
5.3. Palma	51
Goals and Target groups of the Palma LL	51
Overview of Palma's LL engagement activities	53
Innovation #2 Engagement using Es Laboratori	55
Innovation #85 Engagement using One Stop Shop (tech assessment to building owners, info about funding)	63
Innovation #4 Engagement with formation of Citizen Energy Community (connected to WP9 Business models and WP2)	64
Innovation #12 Private Public Partnership for Large Scale Renovation mechanism (Retrofitting Management Entity)	66
Innovation #71 AR and VR Tools	67
Innovation #3 Post Occupancy Evaluation	68
Additional engagement activities at Palma	68
5.4. Sønderborg	71
Goals and Target groups of the Sønderborg LL	71
Overview of Sønderborg's LL engagement activities	72
Innovation #59 Tenants as green ambassadors (with focus on energy savings at home)	74
Engagement through direct contact with the residents	74
Additional Engagement activities in Sønderborg	81
5.5. Trento	83
Goals and Target groups of the Trento LL	83

Overview of Trento's LL engagement activities	85
Innovation #13 One-Stop Shop for CPCC refurbishment	86
Innovation #14 Local energy community approach	91
Innovation #15 Involvement of local stakeholders in co-design phase	92
5.6 Utrecht	99
Goals and Target groups of the Utrecht LL	99
Overview of Utrecht's LL engagement activities	101
Innovation #34 social renovation with housing tenants	102
Innovation #35 Together developing skills for circular buildings (Human Capital programme)	105
Innovation #36 Energy Coaching	107
Innovation #37 Physical Hub – Circular pavillion	108
6. Concluding remarks	110
<hr/>	
Demo specific concluding remarks: key engagement activities learnings and barriers	110
7. Future Updates	113
References	114
Acknowledgements and Disclaimer	114
Appendix A – LL Logbook Template (example for the city of Karviná)	115
Appendix B – 1on1 Interview GUIDE	126
Appendix C 1on1 Interviews in M26-27	126
Appendix D 1on1 Interviews in M33	127
Partner Logos	128

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).

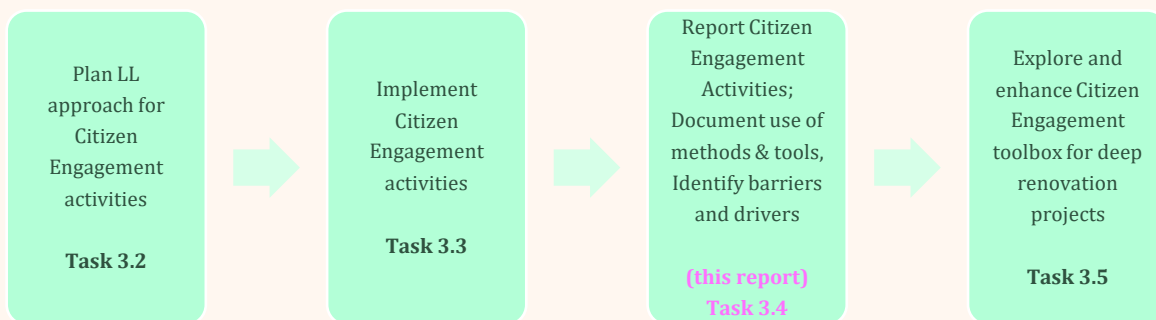


Figure 1. Scope of this report

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 1 more edition of this deliverable at month the end of the project. It is planned that the update will report on the period M35-end of project.

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 from the beginning of the project up until M34.

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 at the end of the project.

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 Lab⁴ (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 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

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

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.

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 for the methodology and mainly for 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

In the first project period, 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 month 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](#).

During the initial phase of the project, spanning until M19, it was agreed to arrange one bilateral interview per year between the leaders of Task T3.4 and the representatives of LLs as mentioned above. This arrangement sufficed for the project's initial stage. However, as the project progressed and the **complexity of LL activities intensified, a necessity arose for an additional 1-2 interviews per year** in subsequent periods. This was captured as one of the learnings in the first edition of D3.3 (submitted in M24).

It was then agreed to arrange **3 rounds of 101 interviews** during the upcoming period up to M36 with each of the Living Labs. The agenda for the 3 interviews was outlined as follows:

1st round (M26 – M27):

- Recapitulation and outcomes of the Task 3.4.
- Reflection on 2023 reporting process & learning from D3.3 (M24).
- Feedback on reporting and monitoring process and tools used in WP3: International Monthly meetings, Miro Calendar, Living Lab Logbooks.
- Timeline for the year and important dates to look out for.

2nd round (M33):

- Update on the ongoing citizen engagement activities from the LL representatives.

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

- Initial talks on the highlights, the key takeaways to report and lessons learned for the second edition of D3.3.

3rd round (M35):

- Discussion on the finalized reporting materials from the LLs for the second edition of D3.3 with focus on the highlights, the key takeaways to report and lessons learned.

The first round of the 1o1 interviews in M26-27 provided valuable insights and updates. The agenda focused mainly on acquiring feedback from the LL representatives on the Logbook as a reporting tool and the reporting process itself. Please find the organizational information such as the dates and the attendees as the [Appendix C](#).

CVUT introduced learnings and key findings from the first edition of the D3.3. Report. Key takeaways:

- The logbook structure does not necessarily need to change significantly. In more in-depth talks with the LL representatives 2 key enhancements were identified as beneficial:
 - **1] Clarifying instructions for more academic/methodological segments.** The logbook structure consists of the general information about the LL, a growing list of the activities and the description of each activity. The LL representatives are guided through the logbook by a set of questions:
 - a. **segments rich in context** (e.g. *What is the main topic, what are the challenges, location*),
 - b. **schematizing/streamlining segments.** Through this combination the logbook tells the story as well as provides systematic approach for analysing and comparing different engagement activities in a specific context with various target groups. As long as telling the story is easy for those who are managing and running the LL the other part turned out to be a more difficult task. Giving a simple answer to some methodological questions needs to be supported in a good knowledge of the methodology or a guidance provided by the researcher. Especially this question proved out to be a challenge for some *'What is the ambition level for citizen engagement?'* as understanding the methodology behind the ambition levels does not relate to their everyday reality. Two measures were applied to help with this issue: a clarification of the segments was added to the logbook and a possibility to fill this in cooperation with T3.4 leaders (CVUT).
 - **2] Giving authors more freedom within a given structure.**

During **the second round of the 1o1 interviews in M33**, we clarified the next steps to complete D3.3, as well as the links to D3.4 and D3.5. The LL coordinators walked the CVUT and SINTEF representatives through what has happened so far in the second project period and the progress of the engagement activities. Together we agreed on the way forward. Please find the organizational information such as the dates and the attendees as the [Appendix D](#).

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

Type of LL⁶	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 groups⁷	Socio-Cultural Actors: Heimstaden Czech, OKD Foundation, Initiative Dokořán, STaRS Karviná, Karviná Regional Library, Silesian university – Faculty of business and administration in Karviná, Gymnasium Karviná, Hospitals 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: public Technological Actors: Transdev Silesian, Technical services Karviná, Moravian-Silesian Energy Centre
Geographical Location of the Community	Series of events realized on municipal premises (workshops with pupils at schools, ARV presentation at public events, stakeholder interviews); demo building (Health care centre) is currently under construction.
Aims of the first project period (M1 – 18)	Plan the structure of future activities and to implement activities of two kinds – first two sustainability and energy seminars with pupils 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 second project period (M19 – 34)	Continue with the activities started in the first year, develop the work with institutional stakeholders through structured interviews. Actively participate in public thematic events to disseminate ARV project principles to a wider audience.
Aims for the next project period	Continue to implement pupils workshops focused on the themes of circularity and sustainability in the built environment. Involve more creative and less technological tasks.

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.

Explore the opinions of tenants in the demo building through a questionnaire survey (due to ongoing reconstruction postponed to this project period).

The outputs of the pupils creative workshops are now exhibited in the indoor space used to present the activities and projects of the city of Karviná on the city square (the Masaryk's square next to the City information centre). Future development of the physical space, in a form of the city IdeaLab – where Karviná will present municipal projects, is planned.

OVERVIEW OF KARVINÁ'S LL ENGAGEMENT ACTIVITIES

Table 1 Overview of Karviná's LL engagement activities

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 pupils	European Mobility Week Educational activity aimed at public	Energy and sustainability WS for schools Lecture on basics of energy, sustainability, and city planning	
2023											
1	2	3	4	5	6	7	8	9	10	11	12
Energy and sustainability WS for schools Work assignment – installation of PV on city buildings		Consultation hours Pupils were able to contact selected lectors to consult their assignments	Energy and sustainability WS for schools Presentations of assignments + Earth Day Educational activity aimed at public		Energy and sustainability WS for schools Evaluation of pupils works, awarding, gathering feedback						

2024											
1	2	3	4	5	6	7	8	9	10	11	12
				Interviews with local stakeholders							
<p>Pupils workshop 1: Sustainability, energy, NEB</p> <p>Work assignment 1 – propose a reconstruction of a city building using innovative, sustainable technology and solutions and material recycling</p>		<p>Pupils workshop 2: Circular economy, recycled materials WS for pupils</p> <p>Work assignment 1 proposal and consultation</p> <p>Work assignment 2 - use a discarded light cover from the demo building and remake it into something valuable.</p>	<p>Final workshop: Pupils presenting results of the assignment 1 and 2 + evaluation, rewards.</p> <p>+ Earth Day</p> <p>Educational activity aimed at public.</p>		<p>Participation in URBIS Smart City Fair in Brno</p>			<p>Participation in European week of mobility – CANCELLED due to flooding.</p>		<p><i>Events will be reported in the next edition of this report.</i></p>	

INNOVATION #52 ENGAGEMENT USING EDUCATIONAL PLATFORM

Living lab educational platform

The goal of the Living lab educational platform is to **educate citizens such as pupils, 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 pupils (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.

Living Lab is primarily run by the local government, its aim is to educate the general public and mainly involve young residents in the implementation of local projects in an effort to address the problem of the outflow of young people after finishing school.

PUPILS WORKSHOPS AND SEMINARS

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 pupils, consultations, and concluded with final feedback and announcement of the best projects.

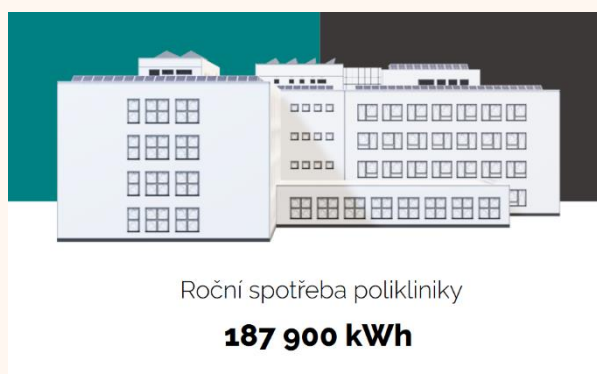


Image 1 Educational platform: Pupils designed the PV plant installation in an online tool. (Karviná, 2023).
Authors: pupils.

In the second year of the project, the workshops continued in the same format as in the previous year. It was a combination of lectures with two thematic assignments and consultations with experts and teachers (a total of 3 live meetings). Based on the feedback and observations of the pupils involved in the activities in the first year, **more creative and less technology-intensive tasks were included for independent group work.**

We collected feedback at the third workshop. We had a standardized questionnaire that pupils and teachers filled out at the end of the third workshop. According to the pupils and teachers, **the seminars were very interesting and extend the traditional teaching with knowledge that is both interesting and practical, also in relation to possible future employment.** Also, the practical works were fun, but a little bit time consuming.



Image 2 Educational platform: Pupils final presentations and creative outcomes (April 24, 2024 in Karviná). Photo: M. Sikora, Š. Kubicová, K. Starzyczna.

Target groups

The main target group are pupils aged 14-19.

Level of citizen engagement⁸

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

Pupils were put in the role of creators in the assignments, learning to perceive the space around them as an environment into which they can actively bring their ideas and solutions.

Barriers

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

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

Other identified issue was the time-consuming nature of the workshops both for pupils, teachers and for CTU experts.

Besides that, we did not encounter any other problems, everything else went as planned and the pupils mastered the assignment.

Lessons learned

From the first two phases of the ARV project that have just ended, we bring the following lessons to the last year:

Workshop content, group assignments

- Avoid more complex technical tasks, it is advisable to include creative tasks to increase the willingness to participate. Set clear instructions, constraints and expectations, but allow pupils the freedom to bring new ideas, solutions and forms.
- Include ample time and appropriate activities for introducing pupils from different schools.
- Involving pupils in the final peer assessment worked very well. Choose simple voting methods, give space for questions asked among pupils. They can be surprisingly critical and straightforward. In the future, consider also leaving space for "advocacy", self-assessment by groups.
- The involvement of subject matter experts and exposure to a different way of approaching the material and learning was also positively evaluated by teachers and ARV activities helped to establish and deepen collaboration with schools.

Practical matters

- Negotiate early with schools about time possibilities - the range of activities, possible dates, the time commitment of independent pupil work. Think about holidays and other class activities.
- If you will be moving around the city during the meeting, arrange transport in advance and inform the teacher.

Next steps

Workshops for schools are planned also for the next school year with a new group of pupils. But due to the time-consuming nature of workshops this year, we would like to change the format of the workshop and instead of seminars divided into 3 seminars, we will make 1 all-day seminar.

INTERVIEWS WITH INITIALLY IDENTIFIED STAKEHOLDERS

Interviews with local stakeholders

In the second project period a third main activity was introduced to involve and engage the local stakeholders in the ARV project and the topics of energy and sustainability.

The main goal of the interviews was to find out how do the local institutions perceive and deal with the energy and sustainability issues in their organization, what recommendations they have for the city of Karviná in the field of energy and sustainability, what they could cooperate on with the city of Karviná in these fields. The other goal was to inform them about the ARV project and find out the possibilities of their involvement in of this project. This activity belongs under Energy Transition topic.

Progress

The deputy of the city took over patronage over the interviews, so a cover letter with information about the ARV project and the purpose of the interviews was sent out to the stakeholders on his behalf. The letter was sent to 12 stakeholders (listed in Target groups section). All addressed stakeholders agreed with the interview. The individual meetings took place between May and July on the premises of the institutions. The meetings were conducted in the form of a semi-structured interview (see the interview structure below). After completing all of them, the information obtained were summarized into a final report, which was submitted to the Karviná City Council.

	List of interview questions
1	What is your role within your institution?
2	Do you implement any ecological and sustainable solutions within the operation? Do you use energy from RES (renewable energy sources)? Do you work with the internal environment of buildings (CO ₂ level control, temperature regulation, automatic ventilation)?
3	Do you take any measures to lower the energy consumption within your own operation?
4	Do you participate in any events or conferences on the topics of energy and sustainability? Are you interested in these topics within the operation of your institution?
5	What worries you about energy or sustainability in the city? What problems are you facing? Have you been affected by the high price of energy?
6	What recommendations would you give the city concerning energy and sustainability issues? What should the city focus on?
7	Are you interested in getting involved in smart solutions in the field of energy and sustainability within the city of Karviná? Would you like to participate in any projects?
8	What are the possibilities (financial, organizational, human resources, know-how) of your involvement in city projects and environmental initiatives in the city?
9	What format of communication with the city on these topics would suit you? a) Personal round table twice a year. b) Passive reception of information from the city's website with the option of filling out a feedback questionnaire. c) Larger conferences once a year. d) Regular personal meetings. e) Online environment with the possibility to fill in and evaluate individual city plans.

Target groups

The interviewed stakeholders are important organizations in the Karviná region; therefore, we decided to address them and start working with them within this project. The interviewees were selected by the LL coordinator in cooperation with a member of city council involved in ARV project.

	Organization	Position in the organization
1	Moravian-Silesian Energy Centre	Director
2	Hospital Karviná – Ráj	Manager of the director's department
3	Hospital Karviná – Nové město	Director
4	Gymnasium Karviná	Director
5	Silesian university – School of business and administration in Karviná	Head of the technical - operational department
6	Karviná Regional Library	Director
7	STaRS Karviná	Director
8	Technical services Karviná	Director
9	Initiative Dokořán	Chairman of the initiative
10	OKD Foundation	Director
11	Heimstaden Czech	Manager of energy projects
12	Transdev Silesian	Director of the Passenger Transport Division
		Director of the commercial and technical division

Level of citizen engagement⁹

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

Barriers

The only difficulty was finding an interview date and, in some cases, traveling to the location. Besides this no problems were encountered. Stakeholders were very helpful and interested in the project.

Lessons learned

The interviewed organizations are interested in getting involved in projects or smart solutions in the field of energy, but these aspects are especially important to them:

- Realistic and clearly defined content and goal of the project.
- Economic aspect of the project (feasibility of cost-effective solutions).
- Information on the time and human capacity needed for the project.
- The composition of the project participants.
- Intended long-term effect of the project (so that it is not a "one-time" action, but that the project has a clear concept, vision and long-term effect).

Interview outcomes:

Most of the interviewed organizations deal with reducing the energy demand of their buildings, and if the given solution is economically available and profitable for them, they try to use ecological and sustainable solutions. If they are based in rented buildings, they communicate on this topic with the owners of the building.

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

As far as renewable energy sources are concerned, the most frequently used or intended source of renewable energy are photovoltaic power plants (so-called PV plants) located on the roofs of buildings.

For monitoring the internal environment of buildings, some institutions use a system for monitoring and controlling the transfer of heat and air through air-conditioning and air-conditioning equipment.

Most of the interviewed organizations take a positive attitude towards the introduction of ecological and sustainable solutions in the framework of reducing energy consumption and expenditure, but all of them deal with investments in reducing it primarily from an economic point of view, from the point of view of the return on invested funds and from the point of view of the given operation (whether it has meaning, benefit, return, and it will not cause problems in the future in the operation of the organization, e.g. in terms of maintenance, fire protection, additional reconstructions, etc.).

The most common solutions for reducing energy consumption in interviewed organizations were:

- Insulation of the building, including roofs and basements.
- Replacement of old windows and doors with energy-saving windows and doors.
- Systems for monitoring and controlling the transfer of heat and air through air-conditioning and air-conditioning units.
- Heat pumps for economical heating and water heating.
- Sensors for measuring the temperature in the given room and remotely adjustable heating.
- Replacing old light bulbs with LED lighting.
- Motion sensors for automatic lighting on and off.
- Photovoltaic power plant on the roof or facade of the building.

Most of the organizations dealt with the introduction of a photovoltaic power plant, but for some organizations it was not financially available, or the technical condition of the building or, for example, the location of the building in a heritage zone prevented them from using the established PV power plant.

Next steps

The interviewees expressed interest in further cooperation, so we are now thinking about ways to involve them in the ARV project, possibly linking the cooperation to the school workshop next year.

In addition, the city has opened or deepened possible ways to further engage with institutions on energy and sustainability issues.

EVENTS WITH PUBLIC PARTICIPATION

Progress

The town of Karviná organised a series of public events in **2023**, 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 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 pupils to become more involved in local projects** and issues that are not often covered in school.

In the second project period M19 – M34 attended the **Earth Day** again with the similar content to engage some of the approx. 1000 visitors. The ARV project was also presented to both professional and lay public in June during **URBIS Smart City Fair in Brno** (approx. 3000 attendees). Unfortunately, due to a massive flooding in the region of Karviná in September 2024 the European week of mobility was cancelled.



Image 3 Public events: Municipality-organised Earth Day with activities for children that help engage the public. The ARV team was also present and actively communicating the project topics to the public.

The outcome of the activities was greater **involvement of primary school pupils** (not only selected pupils as in the case of the workshop activity, but whole classes). All 12 primary schools in Karviná were involved, with about 200 pupils.

The second output was the **involvement of the public**, which can be measured by the estimated number of visitors of about 1000 people on Earth Day and around 3000 people at the stand at the URBIS Smart City Fair. Furthermore, the number of interactions between organisers and visitors and the number of information materials provided. Feedback was also collected from the public regarding the environment in the city.

Events were documented in the form of **reportage and photo documentation by local media**.

Target groups

Target groups are **citizens and visitors of Karviná, youth**.

URBIS Smart City Fair in Brno: professionals in energy, sustainability and smart cities as well as lay public.

Level of citizen engagement¹⁰

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.

Flooding in Karviná region in September 2024 made it impossible to organise the European week of mobility.

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.

During city-organised events public involvement was ensured by an attractive programme that touched on environmental issues in an entertaining way. **The combination with entertainment works as a proven method to arouse public interest.** Creative workshops for children, workshops and competitions were prepared for the visitors. The Smokeman event included various impressive science experiments to explain how certain chemical and physical processes work. Visitors were also offered various promotional materials on waste sorting, how to heat properly, how to save energy, etc.

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.

ADDITIONAL ENGAGEMENT ACTIVITIES IN KARVINÁ

ONLINE SURVEYS WITH TENANTS, VISITORS AND CONSTRUCTION WORKERS

Questionnaires for citizens about the reconstruction

The other main activity was an online survey distributed among selected groups of citizens in the first project period.

Progress

Selected groups of **citizens were reached during the reconstruction through 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 designed by adapting the questionnaires from D8.1 Monitoring, Evaluation and Impact**

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

Assessment Frameworks to the local context. Questions that were linked to KPIs that are marked as mandatory for Karviná's demo in D8.1⁶ were included, 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) were omitted. The selection of the questions was discussed 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 the next section). Tenants received a link in their email boxes, construction workers received them through their supervisor who was given them during site progress meetings and visitors could use a link through the city's social networks and information panels directly at the demo.

17 responses were obtained 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. **217 questionnaires** were collected **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. Only **one response from a construction worker** was received 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 engagement¹¹

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).

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 that information.

¹¹ For more information see D3.1 pages 14-16.

Next steps

A **follow-up questionnaire** survey gathering attitudes of citizens towards the health centre will be conducted **once the reconstruction is finished**. An attempt to deepen the contact with tenants might take a form of a community celebration when the reconstruction is completed.

5.2. OSLO

GOALS AND TARGET GROUPS OF THE OSLO LL

Type of LL¹²	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 pupils in learning, co-creation, and youth ambassadorship activities.
Target groups³	Socio-Cultural Actors: The Voldsløkka School and the Oslo 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 (M1-18)	The secondary school opened in August 2023. Preparatory work and collaboration with the school's principal. 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.
Aims of the second project period (M19-34)	The objective was to develop an educational platform relevant for the Voldsløkka school and the Oslo Cultural School within their everyday educational activities and at the same time raise awareness about the energy transition, circularity, and social sustainability with the goal to enhance pupils' involvement with sustainability transitions, particularly energy production and use.
Aims for the next project period	The long-term aim is to promote the relevance of citizen energy communities. An additional challenge is including

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

the neighbourhood around the school in these activities.
Families and neighbours being the target groups.

OVERVIEW OF OSLO'S LL ENGAGEMENT ACTIVITIES

Table 2 Overview of Oslo's LL engagement activities

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	7	8	9	10	11	12
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				Mosaic Vernissage: Official presentation and unveiling of the artwork made by pupils in March ARV presentation for pupils + workshop with teachers: pupils' and teachers' expectations from ARV			Climate Bootcamps: Pupils conducting research on energy consumption and energy efficiency in school and at home + creating mood boards

2024											
1	2	3	4	5	6	7	8	9	10	11	12
	El-Moose film pre-premier (discussion with NTNU) + El-Moose premier at Voldsløkka for 10th grade to collect feedback	El-Moose workshop (testing outside Voldsløkka) + Game workshop (testing with inexperienced players)	Workshop planning with Teachers Board game co-creation (6 days, 120 pupils, 32 games developed) Meeting with local welfare group leaders		Game Prototype testing with NTNU			Game prototype testing with pupils from 10th grade Voldsløkka	WP10 Engagement event organised by ACE in Oslo with field visit to Voldsløkka	<i>Events will be reported in the next edition of this report.</i>	

INNOVATION #72 RAISING CLIMATE AWARENESS THROUGH EDUCATION AND LOCAL COMMUNITY ENGAGEMENT

ENGAGEMENT USING ART WORKSHOP: THE MOSAIC

Living lab – Co-creation and art

In the first project period 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 pupils using recycled tiles. The finished artwork is almost 2 meters in length.

The mosaic that was made by pupils from Bjølsen school, some of them had become pupils in the 10th grade at Voldsløkka, has been mounted on the wall in a stairwell at the school. The vernissage was the official presentation of the artwork to the community in and around the school.

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 pupils deeply engaged in the creative process, from breaking tiles to designing the mosaic. This progression from theory to practice was instrumental in solidifying the pupils' understanding and appreciation of sustainable practices in a tangible and memorable way.

The artists and pupils who worked on the artwork **required recognition for their work**. A vernissage is the traditional form for **bringing artists and their public together**. **The vernissage was an opportunity to involve the wider public with an ARV activity and to officially complete the process** that started in the spring 2023. It took place in the main entrance of the school, starting at 6 PM and lasted approximately 2 hours. The programme included screening the film about the art project by SINTEF and short speeches by the artists and the school principal. The decision to display the mosaic within Voldsløkka school will not only celebrate the pupils' efforts but also serve as a reminder of ongoing community engagement, potentially inspiring future projects and discussions around sustainability.

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 pupils and, by extension, their families, the project aimed to foster a community-wide interest in sustainability concepts and practices.

Level of citizen engagement¹³

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

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

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 pupils.**

Concerning the vernissage only one family from the pupils participated. The school principal suggested that the pupils have moved on, but that they are proud of the mosaic. The process lost a bit of momentum when we were unable to organise the vernissage in May 2023 along with the consortium meeting (the school was not opened yet).

Lessons learned

The art 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—when creating activities that are relevant for participants. The experience also sheds light on the 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.**

The supplementary activities surrounding the main workshop revealed a keen interest from the pupils, evident in the overwhelming response during the recruitment phase. 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 pupil groups in sustainability focused activities.**

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 pupils and organizers alike.

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.

The **hands-on nature** of the workshop **resonated strongly** with the pupils, 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.

The art workshop was an engaging process that other members of the 10th grade at Voldsløkka school had heard about, and the project team was often recognised when it visited the new school. The film presents the creative process in a good way, and we learned a lot from developing it and documenting the process.

Next steps

The artwork activity is finished. However, the ARV team built on this momentum and continued to strengthen connections with the school community by bringing various activities with themes such as energy efficiency in the home, and comfort and light at school. The themes are inspired by the plus-energy school building.

GETTING TO KNOW ARV: VOLDSLØKKA PUPILS AND TEACHERS

ARV presentations and collecting ideas at the Voldsløkka school

The ARV project and plus-energy buildings were presented to pupils in 15-minute presentations, where the focus was on what kind of the building Voldsløkka school is and its role in the ARV project. Suggestions from pupils about what kinds of activities they would like to work with were gathered. 18 presentations about the school were organised over 2 days followed by the 40-minute workshop with 50 teachers at the of the second day.



Image 4 The Voldsløkka school building.

Progress

Recruitment took place through school. The Voldsløkka school opened in August 2023. **We were invited to present ourselves to the pupils at the start of the school year because ARV is both an organisation involved in the plus-energy building and a research project interested in the school.** The school principal supported the activity, and it was important to make the most of this opportunity. The aim was to involve as many actors from the school as possible, even if for some of them the meeting with ARV is brief.

from the school, but we could have been even clearer about - Why are we doing it, who will benefit, what will we learn, and what will the teachers and pupils gain from participation.

Another version would have been to be less open about activities. A set of possibilities would be presented. This would **avoid disappointment by pupils** and could have been used to **secure greater engagement among the teaching staff**.

The importance of timing. The teaching workshop was intense. We were given 40 minutes instead of 60 that we were initially promised, and the workshop started 30 minutes earlier than we expected. There was a lot of information to put across. The group work with post it notes was too short. There were 4 questions and only 10 minutes to go through them all.

We are dependent on the goodwill of the teaching staff, but their schedules are challenging and finding the time to get involved is difficult for them.

Next steps

The presentations in classrooms were followed-up by a workshop with the teaching staff. Following steps:

- An evaluation of the two events based on feedback gathered from both groups.
- Design and planning of new activities for the school supported by the teaching staff.
- Climate Bootcamps with the 10th grade: 21st – 22nd November 2023.

CLIMATE BOOTCAMPS: ENGAGEMENT THROUGH RESEARCH AND CREATIVE WORKSHOPS

Climate Bootcamps – research school

Voldsløkka school is a plus-energy building. The activity aimed to establish a relationship between the pupils and the physical context of the building.

Three aims were defined for the activity:

- **Increase awareness** and level of activity on the theme of the **sustainable transformation** of buildings (energy and circularity).
- **Ensure good cooperation between the school** (pupils and teachers) **and ARV**, through long-term work and the use of co-creation methods and democratic processes.
- Make ARV visible as a resource for the school.

We suggested **3 activities** (Research school, Games festival and Football tournament) that were based on the feedback from the get to know ARV event. The school (Principal and head of the 10th grade) chose the research school approach, later known as *the Climate Bootcamps*.

Progress

The activity was **the first large living lab activity and research school/bootcamp** required a wide range of competences from the ARV team. We chose therefore to send a large group from SINTEF and NTNU to Voldsløkka for the two bootcamp days. The team divided into 2 smaller thematic teams: a) Energy use in the community/at home, b) Energy use in the school. 2 days were spent with 4 groups of pupils with **approximately 5 hours per day for each group**. Short breaks were scheduled after each hour and a longer break for lunch.

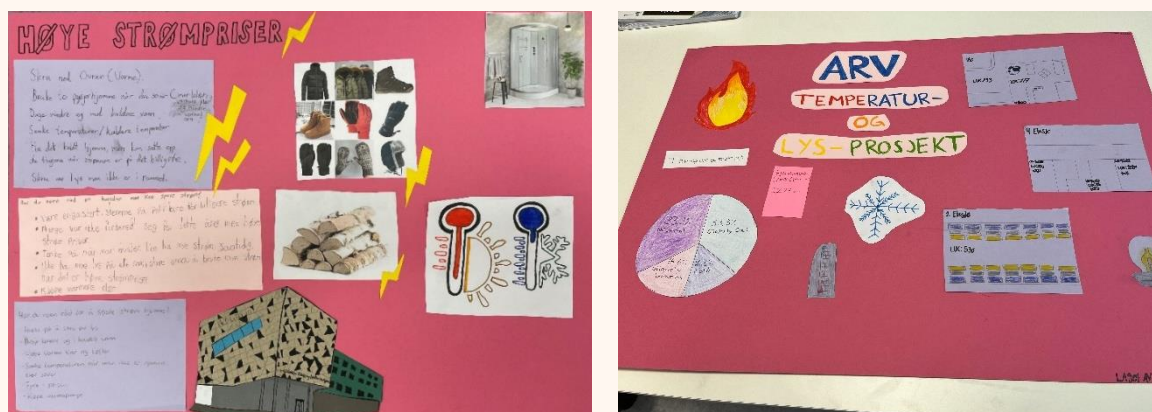


Image 6 The mood boards created by 10th grade pupils based on their own data collection. Photo: Marianne Skaar, Nicola Lolli.

Main outcomes:

- **The first Oslo LL activity with a whole grade** (10th grade). 80 pupils and their teachers were involved.
- The testing of methods that can engage with a large group of pupils.
- **Communicating knowledge** about energy production and consumption **to pupils**.
- **Pupils gathered data** about energy production and consumption.
- **16 mood boards** created by the pupils' presenting ideas about energy consumption.
- **10 grade presentations** about their mood boards.
- Data collected for the mood boards was developed into a storyline for **an animated film about EL-Moose** (see next chapter *Animation as a tool for citizen participation: El-Moose film*).

Target groups

10th grade pupils at Voldsløkka school.

Level of citizen engagement¹⁵

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

Barriers

The 2 bootcamp days were intensive and there was little time for an evaluation during the day. An evaluation was planned to take place during the same week as the bootcamp. A short 1-page evaluation form was provided that was similar to the evaluation form used in the spring 2023. The same form was also available through Microsoft forms. The head of the 10th grade was asked to follow this up. This was not a success. **We should have evaluated the bootcamps on the same day as the activities took place.** The evaluation form was forgotten, it was several months before the pupils filled out the form and they did not remember the activities so well. The feedback was not overly positive or critical – basically middle of the road.

Lessons learned

In general, the workshops went well. **The pupils pulled off both data collection and mood boards** in a good way. We were surprised and impressed by what they achieved. The introduction was long and there was a general lack of concentration. We offered the pupils a lot of information at once, but they listened enough, and the activities were interesting and not too difficult. Less time could have been spent on data collection and more time on the mood boards. The pupils collected enough data and although they were sometimes slow starting, they made interesting

¹⁵ For more information see D3.1 pages 14-16.

presentations. **They enjoyed the creative parts of the process** and would have spent more time on them. It was impressive to see the narrative and graphics of some groups, done in such a short time and with no preparation beforehand. Seeing the pupils engaged but having fun and still joking and laughing was a sign that they were comfortable with the process.

Practical challenges: we were a lot of people in the team from NTNU and SINTEF; it was difficult to estimate how many people we needed to facilitate each day.

The teachers should participate more actively in ARV activities. The school has regular project weeks that are planned well in advance, and we could cover parts of a topic that they want to work on. This would help **integrate ARV better into the curriculum** and be mutually beneficial. The teachers would have liked to have more insight into what was going on. Next time one or two teachers from the classes could be involved in the planning, instead of the school leadership.

On the one hand spending more time in the school would be challenging for us and the pupils. Two days seems enough. On the other hand, a bigger assignment that takes place over more than two days would be useful. It would have been nice to have **more time to do a common reflection** with the pupils **before letting them start the mood board assignment**. One of the pupils mentioned that they did not understand the reason for the bootcamp, but that “they were in school to learn”. A longer assignment will **give them time to reflect and learn**. We should have clarified what the purpose of the bootcamp was. Because we did not implicitly explain it. We did not emphasize what they were supposed to get out of the bootcamp.

One of the **main challenges** was **having two topics and groups running in parallel**. Although there was support from the research team and the teachers, the message from the dissemination process could get misdirected. This is not necessarily negative because it is more authentic and gives more freedom to pupils but requires more effort from us to keep a similar language in the results.

The gift cards helped with motivation, but there is a **worry that this will become the main thing**. That the pupils will always expect big prizes and not participate because they are interested or think ARV organizes good activities.

A summary of **what the pupils liked** about *the research school*:

- The pupils liked that there were prizes to be won (cinema tickets), but some thought it was unfair that not everyone won something.
- The pupils enjoyed making measurements of light and temperature, it was exciting to try new equipment.
- Most pupils liked that the *Climate Bootcamp* provided a break from normal school life.
- The pupils liked that they were given a lot of freedom.
- The pupils enjoyed working creatively with making mood boards.
- Many people think it was fun to interview people on the street.

A summary of **what did the pupils like least** about *the research school*:

- Long presentation, too much talking.
- The scheme was experienced as unclear and difficult to understand by some pupils.
- It was too much work.
- Some felt that there was too much time, others too little.
- Some pupils thought the questions were boring.

- Some felt that the program at school had no connection with the homework they were given beforehand.
- Some did not understand the purpose of doing the task.

Next steps

Planning the next set of activities for April 2024. These were based on the Getting to know ARV sessions and experiences from *the Climate Bootcamps*.

El-Moose film development (already finished at the time of the 2nd edition of the D3.3 submission).

ANIMATION AS A TOOL FOR CITIZEN PARTICIPATION: EL-MOOSE FILM

El-Moose film co-creation

The El-Moose animation, a product of the ARV team's *Climate Bootcamp* at Voldsløkka School in Oslo, which **encapsulates ideas and suggestions from 10th grade pupils for reducing energy consumption**. During *the Climate Bootcamps* a large amount of interesting information was generated and visualised in the final mood boards. Jesus Daniel Garcia Melo and Anna-Laila Danielsen from NTNU developed a storyline and transformed it into a script based on this that became the El-Moose animation¹⁶.

¹⁶ **Methodological note:** The making of the film is not described as a living lab activity because it took place behind the scenes at NTNU and only involved the living lab team at NTNU. Making a film/animation has the potential to include pupils or other members of the community in Voldsløkka, but distance from the community meant that this became an “academic” exercise, where the aim was to create something concrete from the mood boards as a thank you the pupils and teachers at Voldsløkka.

El-Moose Film co-creation timeline



Image 7 El-Moose animation co-creation process visualisation. Author: CVUT.

Progress

The first version of the animation was screened at NTNU to collect first feedback from university colleagues with focus on the scientific quality of the El-moose, its relevance for the target group (teenagers inside and outside Voldslokka) and the potential for improvement. The pupils in the 9th and 10th grades have seen a version of the film. A new version was then completed in June 2024. The film has been sent to the school and can be presented on their webpage or digital information screen. The film is also available via ARV and social media.



Image 8 The main character of the animation *El Moose*. Author: Jesus Daniel Garcia Melo, NTNU.

The school organised a digital premier for the film. The 10th grade and their teachers were invited. The same classes were involved in *the Climate Bootcamps*. The film was presented in the school auditorium at Voldsløkka. The ARV team from NTNU participated online. There is not space for the whole 10th grade at once and the film was shown 3 times. **We gathered feedback** after presenting the film for the first time to pupils. We also **used the film premier as an opportunity to gather feedback from *the Climate Bootcamps*.**

In a separate workshop, **pupils from the 1st grade at Trondheim international school were introduced to the plus-energy building and some characteristics of it, emphasising the solar panels, energy production and materiality.** They were also **introduced to the El-Moose animation.** It is useful to test ARV co-creation activities and processes outside Voldsløkka to see if they can have wider application. The school was interested in collaboration with NTNU, and the **film was considered useful for this age group.**



Image 9 1st graders inspired by the El-Moose animation creating their own superheroes for sustainability.
 Photo: Patricia Schneider-Marin.

The workshop aimed to gather feedback about the animation's content, storyline, and production from a different pupil audience (5 – 6 years old). Additionally, we gathered reactions to energy conservation ideas and an understanding of children's perspectives through a post-viewing drawing activity. The pupils mostly focused on the animation and the idea of a climate superhero rather than the broader topics such as architecture or energy.

Target groups

Teenagers.

Testing audience:

- NTNU university colleagues (as a testing public audience that is easily accessible for first feedback)
- 10th grade pupils at Voldsløkka that attended *the Climate Bootcamps*.
- 1st grade Trondheim international school pupils (as a testing audience from a different region, age group and not involved in *the Climate Bootcamps*)

Level of citizen engagement¹⁷

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

Barriers

Adding voices to the film (voice recordings were made with the 9th grade, but adding voices was cancelled due to the **complicated process of producing good sound quality**).

The film is presented on the school website. This has proved to be **difficult to follow up**, there is **no one at the school who has the responsibility for ARV** and can follow up the process internally.

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

Lessons learned

Researcher colleagues, when asked for input about the animation, inquired if there had been enough room for the pupil's ideas left. The film was based on ideas from the mood boards, but the comments show that a distance was established from the pupils and the school through NTNU's creative process. **Closer collaboration would have been more suitable.**

Comments about moral content of the story were important to reflect upon, and some changes to the storyline were made.

The living lab lead **first introduced the film at NTNU** and lead the discussion among university colleagues. **Notes were taken** by a member of the living lab team. Examples are included below.

- The message is clear, maybe too clear? Add any paradoxes or conflicts? For example, fire danger from candles?
- Too much input from researcher side in the documentation of the pupil's ideas? But a fun way of documenting it. Might be a good idea to feature the mood boards themselves.
- Too much moralism and easy solutions? Too much responsibility on the kids?
- Would be interesting to see El-moose getting into trouble.
- Good graphics and ideas, nice way to capture regional ideas and values -> interesting to see how different regions would react to it? (a school in Spain is involved, could show it there)
- A tool to capture regional identities, could serve as a framework for other regions to use.
- It would be interesting to connect the pupils in different countries to learn about each other's energy situations and school buildings. This could help facilitate the knowledge they need to understand e.g. a plus energy building. They can learn from local situations.
- The moose is a way to tell a 'neutral' the story without focusing too much on the identity of pupils.
- It could also be used as a reflection tool about what's not there. Use it as a tool to discuss society and find new tasks for it to solve.
- Have you left enough room for the pupils' ideas?

The activity with 1st graders successfully engaged the pupils, eliciting diverse reactions and **sparking creativity** during the drawing session. However, while the animation captivated the children's attention, **the sustainability message seemed to be somewhat overshadowed** by the visual and auditory elements. The El Moose animation was primarily targeted at older audience of teenagers (10th grade). This highlights the importance of ensuring clarity and the prominence of sustainability themes in future educational materials that are targeted at younger audiences.

Next steps

The film is published on the ARV webpage¹⁸. It was presented on LinkedIn through the Oslo living lab lead's account and in the department newsletter. It is also published on the Voldsløkka school webpage. A possibility is to create a series of printed and framed images from the animation to be hung as art in a school corridor.

¹⁸ The animation was published in November 2024 See the film: https://www.youtube.com/watch?v=XiF0j93_S8g.

ENGAGEMENT USING CREATIVE WORKSHOP: DESIGNING A BOARDGAME

Climate Bootcamp: Inventing a sustainability themed boardgame

In September 2023 we carried an event, that included almost all the pupils from Voldsløkka school, where we asked pupils for ideas for activities that they would like the ARV team to organise. Based on the feedback that was gathered **we suggested 3 activities to the school**, a research school (took place in November 2023, *the Climate Bootcamps*), a games festival and football tournament. The football tournament was not considered interesting by the school staff. **The games festival idea was redeveloped into designing a board game with the 9th grade**¹⁹. The aims were:

- **To develop a co-creation** exercise relevant for teenagers and young adults.
- To highlight CO2 production and reduction on a neighbourhood scale.
- **To develop a tool** that can be used by young people to engage with climate change and sustainable development in an educational and entertaining manner.

Topics covered during the co-creation process ranged from sustainability transitions in neighbourhood contexts, CO2 reduction, UN sustainable development goals, sustainable practices, board games, design processes and creative methods.

Progress

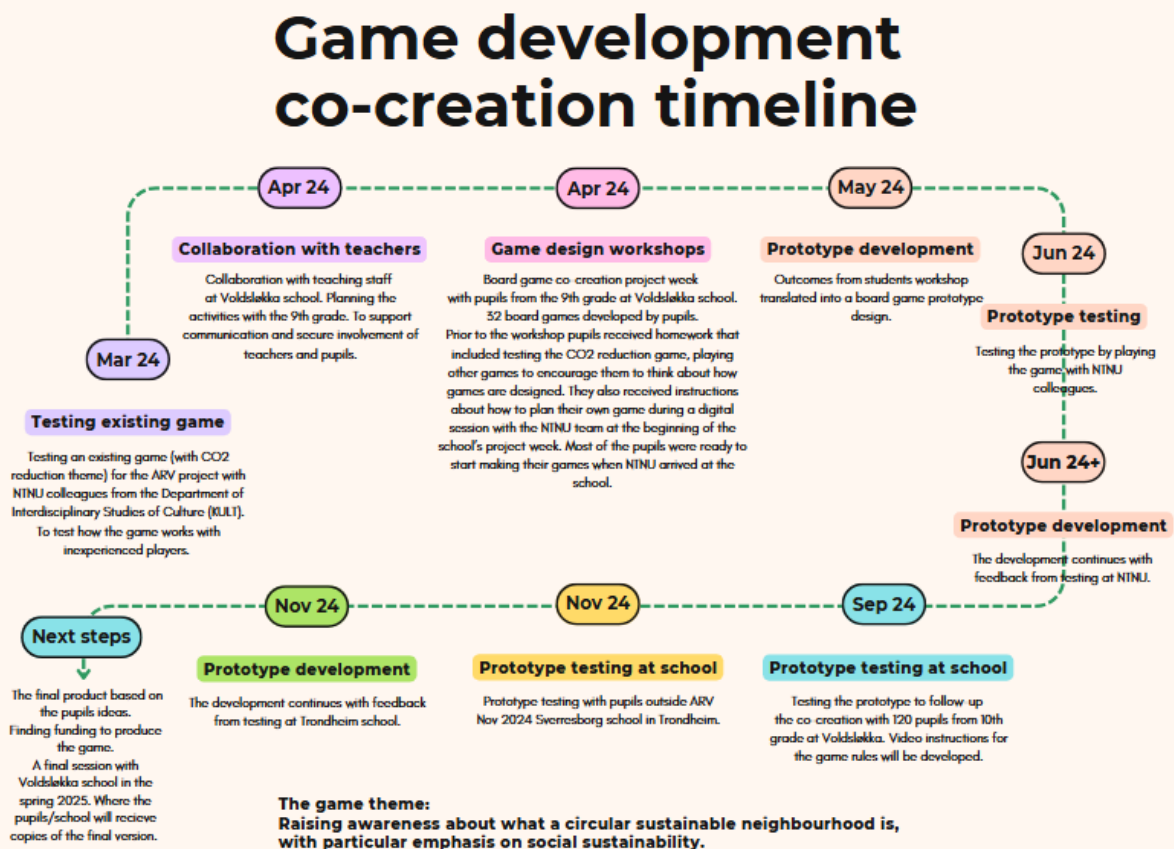


Image 10 The sustainability-themed board game designing process visualisation. Author: CVUT.

¹⁹ The 9th grade at Voldsløkka school participated. We recruited pupils through the school. The 10th grade participated in *the Climate Bootcamps* in November 2023. A natural progression from this was working with the 9th grade. 120 pupils participated in the workshops.

- **Testing an existing game** (with CO₂ reduction theme) for the ARV project with NTNU²⁰ colleagues.²¹
- **Collaboration with teaching staff** at Voldsløkka school.
- **Game design workshops** with pupils from the 9th grade at Voldsløkka school in April 2024.
- **Prototype development** by NTNU.
- **Prototype testing** at NTNU June 2024.
- **Prototype development** continues.
- **Prototype testing at school** in Trondheim November 2024.
- **Prototype development** continues.
- **Prototype testing at school** Voldsløkka school September 2024.

ARV weeks were organised during the school's Project week. A project week is organised each semester for each grade in school. Project week includes **activities** that are **outside the usual school curriculum**, there is often **more collaboration and group work**. Project weeks are more flexible and are more suitable for ARV activities than an average school week. The events organised in the school during the ARV week (boardgame design) used approx. 2 hours per group per day.

The ARV week was preceded by NTNU testing an existing board game with sustainability theme that was later introduced to pupils. During the ARV week **pupils were asked to play board games in their free time** and they got to decide on how much time to spend on this. On Monday NTNU team **introduced the upcoming activities** to the pupils. On Tuesday pupils with support from their teachers **tested several games**, filled out the evaluation forms about them and **started ideas for their own games**. On Wednesday and Thursday each class spent 2 hours on **designing and developing new board games** in groups. On Friday the developed games were **cross tested by pupils**, the ARV week was evaluated by them.

The ARV week was preceded by NTNU testing an existing board game with sustainability theme that was later introduced to pupils.

Main outcomes:

- 32 board games designed by the pupils from the 9th grade.
- Most of the games had some kind of sustainability theme.
- Feedback from pupils about the design and development process.

Target groups

Teenagers.

Level of citizen engagement²²

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

²⁰ Colleagues from the Department of Interdisciplinary Studies of Culture (KULT).

²¹ The Carbon Zero City game. <https://www.laurenceking.com/products/carbon-city-zero>

²² For more information see D3.1 pages 14-16.

Barriers

We lacked the classroom control skills, but the teachers were more involved during this ARV week and were mostly around when things got out of hand. **When some pupils disappeared into group rooms on the first day, we lost them.** Little work got done, they didn't see the progress being made by the rest of the group. **We learned from that and kept them in the same classroom during the rest of the week.** Teachers were helpful with the organisation of the class and groups.

Lessons learned

In general, it was a tough week. Spending 3 days in a classroom is hard when you are not used to it. **The noise level is intense** (teachers deal with this all the time). Overall, the activity was planned in a way that was not too rigid and allowed flexibility in the pupils' schedule. The first **two days, without the ARV team's physical presence, gave space to for the pupils to think without much pressure.** They were well informed about their tasks, and **only a short introduction was necessary** on the Wednesday. When they gathered in groups to start their work, they had clear goals and ideas for their work.



Image 11 The board game co-creation process. Photo: Jesus Daniel Garcia Melo.

Playing the Carbon Zero Cities game was not as helpful as expected. Their game mechanics and topics chosen by pupils were far from the Carbon Zero Cities game. Many pupils found it **difficult and confusing.**

Most of the pupils worked well with all the activities. The variety of activities that developing a board game includes, meant that **there was something for everyone** during the 3 days. You didn't have to be a brilliant drawer, but if you were good then that worked for you. Pupils could be good at numbers, good at facts, good at design or teamwork or just enjoy playing games or working in a group.

There were **long periods of intense activity** when the noise level was low and there were **rowdy times when we lost control and little got done** in some groups. There were, however, always one or two groups that worked throughout the day, often more than that. **The time spent creating the games, seemed sufficient.**

The last day, the process when the different groups of pupils played each other games, could be chaotic, and it allowed pupils to be distracted, **they seemed at times tired of explaining their game and engaging in other games.** There were good periods when pupils obviously enjoyed engaging with each other's games. Organising these sessions depended on the teachers' planning sessions so that we could avoid certain groups from clashing with each other.

In the future the research team needs to know beforehand how the groups are formed to enable better planning of interactive activities between pupils. **The pupils often seemed to work better by themselves** instead of getting told constantly what to do and how to do it. **With all the material and ideas gathered it was possible to start developing the game prototype.**

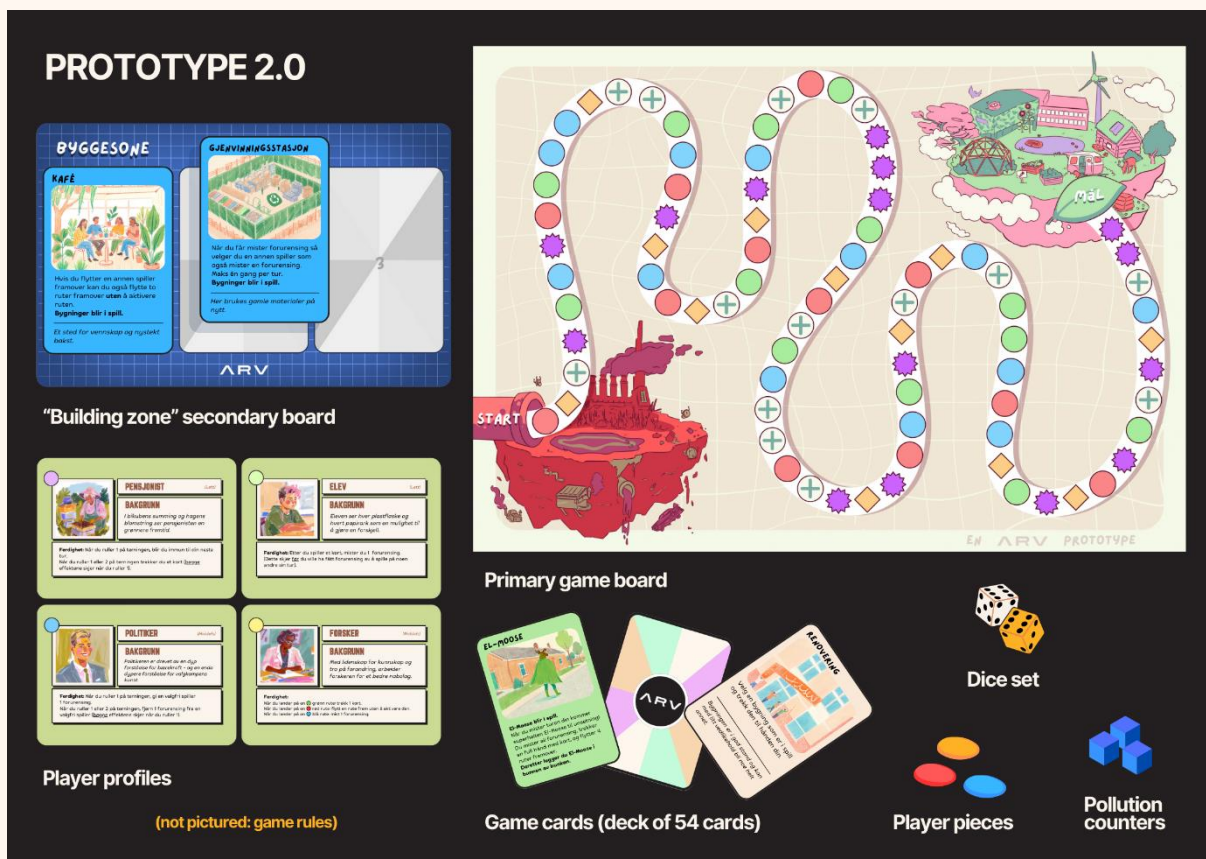


Image 12 Game prototype. Photo: Nienke Bruijning.



Image 13 Testing the prototype at NTNU and playing the game with pupils. Photo: Nienke Bruijning.

A meeting with the school principal was organised during the ARV week. The feedback from the principal was based on her own experiences (she has been involved with the living lab from the start of the project) and from staff involved with the 10th grade. The feedback was that the **school**

leadership was no longer so pleased with the ARV collaboration. The first workshop that used recycled materials and developed a mosaic (now mounted on a wall at the school) is considered **the best activity**. **The rest of the activities have taken place at a critical time for the school**, the opening and start-up of a new school building and working with a new group of more than 800 pupils. Collaborating with ARV has proved a time-consuming activity that came in addition to other necessary activities, such as preparing for exams. The school has received no resources from the project, and it is critical to the partner Oslo, OBF, because of its lack of involvement with the school. NTNU was not criticised directly but our choices regarding what kinds of activities, the themes we have focused on, timing and use of school time were criticised. The feedback from the school principal about the Oslo Living lab placed pressure on the activities taking place with the 9th grade in April, but the feedback is important. **The key message was that we should have made the activities more about the school and the neighbourhood around the school.** The choices that we offered the school and the pupils, could have been more focused from the start. Co-creation is a bottom-up process but perhaps we should have been more strategic in our choices of themes and activities. The ARV team are not pedagogues but researchers (although 2 of the NTNU team from April 2024 have teaching training). It should therefore be expected that something different will come out of ARV being in the school.

Next steps

We made a short film about the workshop as a thank you to the school. The activity was presented in the monthly newsletter at the department of interdisciplinary studies at NTNU. The short article was shared with the ARV leadership and reported as a communication action.

As research resources are limited, the next steps are not clear yet. Possible scenarios include testing the prototype again in Trondheim with the same age group (9th and 10th grade) to see the engagement level in a different location and different context (Nov24). Other activities will be continued depending on financial possibilities.

ADDITIONAL ENGAGEMENT ACTIVITIES IN OSLO

MEETING WITH LEADERS OF A LOCAL WELFARE GROUP

Progress

Housing Europe were interested in collaborating with a social housing project, but the Voldsløkka neighbourhood has a broad social mix. This represents a challenge for the school and is interesting for the project. We have **not been able to contact any housing cooperatives that house low-income groups.**

The Voldsløkka **school principal suggested the contact with a local welfare group.** For a community project like ARV, it offers a way to get in touch with local residents.

By working with this welfare group, **we hoped to establish a local network where we could contact other welfare groups in the neighbourhood.** However, **following this up has not been in focus** because the work with the school is time consuming, human resources in the Oslo living lab are limited and these are based in Trondheim. In addition, negative feedback during the meeting from the welfare group lead makes interaction between the living lab lead and the welfare group unlikely.

ENGAGEMENT EVENT FOR PROFESSIONAL STAKEHOLDERS (WP10)

Engagement event for professional stakeholders (architects) with field visit to Voldsløkka. This awareness-raising event aimed to inform professional stakeholders on a wide range of replicable solutions for designing Plus Energy Buildings, and therefore the event was planned with presentations held by professionals and field visit to showcase examples of replicable solutions at Voldsløkka. Title: *Architects as facilitators of the energy transition - insights on two Plus Energy Buildings in Oslo*. The event was hosted by Oslobygg, NTNU and the Architects' Council of Europe. The event was organised in the framework of ARV with the support of the EU-funded project Cultural-E23. The **Voldsløkka Living Lab was introduced** to professional actors to set the stage for further engagement activities.

5.3. PALMA

GOALS AND TARGET GROUPS OF THE PALMA LL

Type of LL²⁴	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 ²⁵ . 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 groups²⁶	Socio-Cultural Actors: Neighbourhood Association of Nou Llevant, Group of friends from La Soledat neighbourhood - Foraporta, Nou Llevant Library Suppliers: Metrovacesa Financial Actors: Banks, Funding Agencies, Investors Living Lab Outsiders: Nou Llevant Highschool, Aurora Picornell Highschool, Antoni Maura high school, Joan Miró Highschool, Borja Moll Professional Formation integrated Center, Camilo José Cela School, Patronat Obrer Foundation, Consortium of Entities, Patronat Obrer Foundation Living Lab Insiders: Official college of technical architects, Official College of Property managers, IBAVI Social Housing Political/Regulatory Actors: IBISEC, IBE, PALMA ACTIVA, Urban Model Strategic Plans area Citizens: Senior Citizens, Owners, Tenants, Youngsters, Neighbours Technological Actors: Santa Coloma de Gramanet Town Hall, Barcelona Metropolitan Consortium, Citilab of Cornellà, Balearic Islands University, Escola Politècnica de Balears

²³ Cultural-E is building three new Plus Energy Buildings in Germany, Italy and Norway and retrofitting one existing building in France by taking into account climate and cultural differences in the use of residential buildings around Europe.

²⁴ For more information on the types of LLs see D3.1 page 12.

²⁵ 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.

²⁶ For more information on the categorisation see D3.1 page 25.

<p>Geographical Location of the Community</p>	<p>Series of events realised in different locations in the neighbourhood – all in the area of Nou Llevant and La Soledad (east of the city of Palma). Future plans to renovate one building Carrer de Fornaris 65 (Es Laboratori) and use it as office, contact point and One Stop Shop for the promotion of housing renovation and energy transition. Until the renovation is finished, most activities are carried out from Carrer de Ànimes 2.</p> <p>Interventions at specific locations:</p> <ul style="list-style-type: none"> • Gesa's solar panels on a historic building (see map) • Metrovacesa buildings (see map) • The IBAVI social housing developments (see map) <p>Other locations emerge once candidates for these 2 interventions are selected: <i>Energy rehabilitation of buildings in the neighbourhood, The promotion of energy communities.</i></p>
<p>Aims of the first project period (M1-18)</p>	<p>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.</p>
<p>Aims of the second project period (M19-34)</p>	<p>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.</p>
<p>Aims for the next project period</p>	<p>Support the establishment of first energy communities (Camilo José Cela school). 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).</p>

OVERVIEW OF PALMA'S LL ENGAGEMENT ACTIVITIES

Table 3 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 (reducing consumption and costs) and support in the application for financial help (social bonus).
2023											
1	2	3	4	5	6	7	8	9	10	11	12
Information point Can Ribes, Homes data recap											
Workshop series on electricity bill (reducing consumption and costs) and support in the application for financial help (social bonus).						Briefing communities on renovation benefits and next generation of financial aid			Briefing communities on renovation benefits and next generation of financial aid		
	Energy Communities Briefing – lbe	Energy Communities Briefing – Amics de la Terra	Fair of entities	Vulnerability Survey			Support to Aurora Picornell Playground renaturalisation				

2024											
1	2	3	4	5	6	7	8	9	10	11	12
Supporting the initiative '64 homes project': the building situation analysis and documentation, vulnerability surveys, financial aid documentation, identifying different possible financial sources, other support.											
Homes data recapturing						Homes data recapturing					
Briefing communities on renovation benefits and next generation of financial aid + Creation of the informative videos (in progress)		Informative meeting on guidelines for the development of Energy Communities.		Participation in the exhibition day for organisations in the Nou Llevant neighbourhood				Awareness-raising event for architects + Best practices day "Case Orcasitas"		<i>Events will be reported in the next edition of this report.</i>	
Environmental awareness workshop focusing on renewable energies and the city – El Temple						Retrofitting management entity (ongoing)		Retrofitting management entity (ongoing)			

INNOVATION #2 ENGAGEMENT USING ES LABORATORI

Es Laboratori (Previous name: Energy Transition Centre/ CitiLab)

This innovation was originally focused on preparing a **physical location for citizen engagement**.²⁷ It should have served as an accessible contact, information point and meeting place for citizens interested in the topics of **sustainable energy solutions and social rehabilitation**. Other institutions would also use the building. Only the first floor would be used by the municipality due to problems with accessibility for people with physical disabilities.

Initially, it was planned for both innovations Laboratori #2, and the One Stop Shop #85 to be co-located at one place, given their closely related objectives. The **location has been selected**: a building that was formerly a police station (Carrer de Fornaris 2). Although the renovation of this main space is still underway, the Living Lab has already been active in the neighbourhood, operating in a **decentralized manner**.

Progress

Over the 36 months of the project, various activities took place across the district in venues such as schools, libraries, and community centres, leveraging a networked approach. **Under the umbrella of Es Laboratori innovation several new collaborations with the community were developed**, multiple informative meetings were organised, and the household energy consumption data was collected with analysis and recommendations as the outcome of the measuring. The following are the developments broken down by activity.

*Renovation briefings for the communities + informative video creation*²⁸

In order to explain to the communities, the benefits, phases and costs of the energy renovation, the ARV team members are **contacting different communities of neighbours to hold talks in each one of them and clarify doubts**.

The Palma demo have detected that **the neighbours needed a tool to be able to consult the information on the rehabilitation very clearly** with a simple language, one that the target audience could review whenever they wished. As the written documents have always been too complex for the participants, it was decided to develop **a series of explanatory videos to provide better information**. It was opted for an explanatory video in the first person, as it is considered more attractive and comprehensive. **It has been very useful for people to understand the message**.

²⁷ The creation of Es laboratori as a physical location is preceded by conducting a variety of activities to support the local community in all the goals mentioned above. Please see also chapter on Innovation #85 for more information.

²⁸ Also connected with the Innovation #85 One Stop Shop.



Image 14 A screenshot from the explanatory video created by ARV team in Palma for delivering the message on rehabilitation processes in a simple way. Author: Palma LL team.

Please find the videos linked in the ARV channels:

[First video](#), about Rehabilitation process.

[Second video](#), Rehabilitation, step by step.

[Third video](#), Next generation economical aids.

Shared self-consumption solar panels briefing²⁹

In April 2024, IBE (El Institut Balear de l'Energia - the energy company of the Government of Balearic Islands) installed **two solar panels on public buildings** in La Soledad and Nou Llevant to allow residents within a 2 km radius access to shared self-consumption energy. The goal of this activity was to promote the possibility of **community self-consumption** among the population of the neighbourhood. An information session at Camilo José Cela School introduced around **25 local participants** to this initiative, explaining the benefits of joining the scheme. Attendees were recruited through personal invitations, posters, and social media outreach. Although attendance was limited, the event highlighted the need for targeted engagement in building trust and awareness. Feedback indicated that personalized calls should be intensified, and **future steps will focus on strengthening neighbourhood relationships**.

²⁹ Also connected with the Innovation #4 (Citizen Energy Community).



Image 15 Shared self-consumption solar panels briefing. Photo: ARV Palma team.

School environment workshop: El temple

Two training sessions were held around the concepts such as: climate change, adaptation, mitigation, city. Theoretical exposition and several practical activities were carried out: sustainability analysis of the institute itself, *Kahoot!* activity, viewing of the videos, evaluation of one's own daily habits regarding sustainability.

Surveying households: Indoor environment data collection, analysis, and recommendations³⁰

Installing measuring devices for the indoor environment and energy consumption (e.g. CO₂, humidity, temperature) initiates the collaboration with the household. These are kept in the home for a fortnight and then removed. **A consumer profile survey is conducted** on the day of the installation. An **analysis on the energy behaviour** and consumption of the household is then made, and a report is drawn up with **conclusions and recommendations**. The ideal process would be to be able to **re-evaluate the same dwellings** once they have been refurbished.

Six out of 11 households that have been monitored have joined self-consumption. All 11 of them have promoted the energy refurbishment of their home in front of the community of neighbours.

Aurora Picornell Playground renaturalisation

This activity **could not be carried out due to a lack of economic resources**. But it should be reflected as it has been an activity that has taken two of the workers of the ARV project some hours, and that although it has been stopped in 2023, it might be carried out in the future if the opportunity arises for multi-stakeholder cooperation.

The activity focuses on **the renaturalisation of the courtyard area**, carrying out interventions **to improve the climate in the outdoor area**, as well as providing **shade inside the building and improving comfort and energy consumption**. The communication towards the city council was initiated by the school management team. The ARV team considers it very important to

³⁰ Also connected with the Innovation #85 One Stop Shop.

support this initiative as it comes from the heart of the educational and the neighbourhood community. Although it is not strictly energy rehabilitation, the aim is that the renaturalisation of the playground will greatly improve the thermal comfort of the pupils and will also help to lower the level of CO₂ in the area due to the introduction of many natural species.

Developing this activity has been very complicated. Each area involved has its own regulations and conditions, and it has been difficult to bring them all together. Even being able to arrange meetings to reach agreements on competences has been difficult. Finally, it has been the economic aspect that has put the brakes on the whole thing. We could not have developed this activity in any other way, because there is no other way to do it. It cannot be carried out without the agreement of all the entities convened and the chronology is the one set by the calls. So, we believe that on our part we have made the greatest possible effort, even if in the end it was not possible to achieve it.

The 64homes Project

The first **contact between the ARV team and the 64homes Project initiative** was facilitated by a neighbourhood association. This association explained the situation of a community of neighbours who the association is supporting to join the four staircases of the building and get the building renovated for free. As living lab one of **the methodological possibilities is accompaniment.** In this case we considered that this was the best way to support the rehabilitation process because **the neighbours wanted to lead the process and they themselves found the support of the volunteer architects**, so taking over the baton and leading the process as the city council did not seem right. On the other hand, **providing the necessary support to bring the process to a successful conclusion seemed to us to be much better**, as we trusted in the capacities of the residents.



Image 16 *The 64homes Project. Photo: ARV Palma team.*

Several alternatives for subsidies were given and processes that could be followed were explained to the association with no response. By contacting the neighbours directly, it was discovered that the association was not communicating all the information correctly but rather was selecting those considered most favourable for the association itself. The community of **neighbours decided by vote to separate themselves from the association** and only keep in

contact with specific people they had met through the association and to **continue the process with the support of ARV.**

The main goal of **supporting this initiative is to enable them to rehabilitate the building so that the neighbours must pay as little as possible.**

The neighbours have the **voluntary support of a group of architects**, and what has been worked on is a series of meetings and follow-up with them to help them carry out all the documentary phases of the project; the application for grants; and above all support with the neighbours so that they understand the importance of the rehabilitation, the grants and all the phases of the process.

The supporting activities include:

- **A biweekly follow-up** (person or online), with the members of the volunteer technical team who assist the community to solve problems and provide follow-up.
- **Attention to all the neighbours who have come to the point of attention in Can Ribes** to solve doubts, or in cases where it has been needed, **home visits** have been made.
- **A vulnerability survey** to all the neighbours, **in person or by telephone** depending on the possibilities of the neighbours.
- **Establishing a connection with the CAIB**, the body that manages the Next Generation aid at the level of the Balearic Islands, to transfer doubts, or specific situations of some casuistry of the neighbours, accompanying to the office for the delivery or modification of the documentation to be submitted by the team of volunteer architects.



Best practices day 'Case Orcasitas'³¹

On September 26, 2024, an outreach event was held at the Nou Llevant Civic Centre to promote **energy retrofitting** for residents of La Soledat and Nou Llevant. Participants included technicians from the ARV project, representatives from Palma City Council, technicians from **Tramiteco** (Retrofitting Management Entity) and representatives from **Baumit** (the company that participated in the rehabilitation of Orcasitas). Tramiteco was introduced as the retrofitting management entity, and **Next Generation grants** and a successful retrofit case in Orcasitas, Madrid, were presented. The event, organized by the ARV project with Tramiteco and Baumit, included presentations, a Q&A session, and informal discussions over refreshments. Attended by around **80 residents**, the event effectively raised interest in retrofitting, underscoring the benefits of community-centred outreach. Moving forward, personalized retrofitting guidance will be offered to interested residents.



Image 17 Best practices day. Photo: ARV Palma team.

Awareness-raising event for architects³²

An event organized to raise awareness about the ARV project was organized by task lead Gloria Oddo. She coordinated planning with the demo team and the College of Architects, securing a date for the event. Promotion utilized media contacts, social networks, posters, and the College of Architects' own channels. Topics covered included **engagement and Living Lab initiatives, energy rehabilitation, social housing developments by IBAVI, solar panel projects by IREC-**

³¹ Also connected with the Innovations #85 One Stop Shop and #12 Private Public Partnership for Large Scale Renovation mechanism.

³² Also connected with the Innovations #85 One Stop Shop.

GESA, and sustainable housing by Metrovacesa. This event effectively shared technical expertise with the public, focusing on architects, and highlighted the commitment to energy transition and social renovation. The activity required minimal time and financial resources yet achieved broad outreach. Approximately 30 architects attended this event.



Image 18 Awareness raising event for architects. Photo: ARV Palma team.

Target group

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

Technical actors: the architects.

Level of citizen engagement³³

The first level: activities with a low level of participation, such as one-time visits to One Stop Shop or data collection in the households, community briefings.

³³ For more information see D3.1 pages 14-16.

The second level: all the activities concerned with active participation of community members such as active and repeated engagement with the One Stop Shop. Also, the awareness-raising event for the architects where they engaged through the workshop with the ambition to discover replicable solutions for sustainable building design in the context of ARV project. This is not possible without their active involvement and ideas.

The third level: the emerging social innovation of communities that want to renovate their buildings but have never been organised. In these activities the population is the centre, the public and private entities provide the resources, and the municipality serves only as a guide that accompanies and learns from the process. E.g. the cooperation with the 64home Project.

Barriers

The essential challenge is that the people living in this neighbourhood have such a **high degree of vulnerability** that it is very difficult for them to focus their attention on climate change or energy rehabilitation.

In addition, another important challenge, closely linked to the level of vulnerability, is that the economic aid for the Next Generation energy transition is only collected once the works have started and does not cover all the costs. Most of the residents do not have sufficient economic capacity to either advance the money or to pay the margin not covered by the subsidies. Finding alternatives or banks willing to collaborate by granting financing is the other great challenge.

In some cases, it is **difficult to get back in touch with the owners to collect the monitoring devices** for data collection in households for the return report. Several attempts had to be made to collect the devices.

Due to lack of economic resources the **Aurora Picornell Project was stopped**.

Retrofitting progress was uncertain due to political changes. This impacted the entire process and slowed it down, as the new leaders needed to receive information on all the projects and establish their new priorities. The approval from the new political leaders was obtained, and the tender continues its administrative course. It is expected that during the first half of 2025 the renovation will be finished.

Lessons learned

What we have learned in the informative community meetings above all is **the need to transfer information in a very simple way**, just the most necessary message, **like a seed**. So that later the participants can access the support service or go to the service point and expand the information as much as they need and resolve doubts. If we try to give too much information in the meeting, what we get is to stun people with too much information and lower the engagement. Less is more.

Supporting **the 64home Project** initiative has been a complicated task. It is very nice to help people in need, but we have learned that this task has a **much more difficult side** that is not considered, and that is **the involvement of the population**. There are some very proactive and involved neighbours, but within the neighbourhood there are many circumstances that make achieving the LL goals very challenging: occurrence of mental illnesses; serious degenerative diseases; dependence on different toxic substances; very old age; disabilities and social exclusion for different reasons. All these circumstances have made the adherence to the project by a large part of the neighbours to be very superficial, or changeable. This fact has been a **learning**

experience that has made us see that **no matter how good the project or the intentions are, it is not easy for all people to see it in the same way, to appreciate it, or to have constancy in the process.**

The data recapturing in households proved to be **one of the best ways to make families aware of the need for housing rehabilitation.** It also provides information on energy consumption before and after renovation.

Next steps

Briefings about renovation for the community: Continue to carry out activities of this type, although from now on it will be carried out jointly with the rehabilitation support entity. Use and disseminate the videos as much as possible.

Aurora Picornell Project: Unfortunately, no funding alternatives were found before the Ibe's September 2024 deadline for the project, so it had to be abandoned.

Data collection in households: Get more houses to be evaluated – various types of households: single-family houses, or flats in different locations. Carry out the evaluation after the renovation works, so that a pre-post comparison of the renovation can be made.

64homes Project: Continue the process as long as possible until it is rehabilitated and the neighbours do not have to pay for the work, if possible.

Physical location: Continue with the tender for the retrofitting works, resolve any incident to try to avoid new delays. It is expected that the Es Laboratori offices will be able to open in January 2025.

INNOVATION #85 ENGAGEMENT USING ONE STOP SHOP (TECH ASSESSMENT TO BUILDING OWNERS, INFO ABOUT FUNDING)³⁴

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 4 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

³⁴ Various engagement activities such as *the communities' briefings, 'best practices' day or awareness-raising event for architects* are closely connected to the concept of the Innovation #2 Es laboratori. Please see the respective chapter for more information.

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 engagement³⁵

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 later prolonged to 2 days a week (2 hours each time) the trained professionals need 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

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.

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

Implementation of VR tools in cooperation with IREC is 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.

INNOVATION #4 ENGAGEMENT WITH FORMATION OF CITIZEN ENERGY COMMUNITY (CONNECTED TO WP9 BUSINESS MODELS AND WP2)

The goal is to **educate citizens about energy communities and support their establishment**. Three activities heading towards this innovation have been carried out – Energy Communities Briefing – Ibe and Workshop on energy transition – Amics de la Terra and Shared self-consumption solar panels briefing³⁶. 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 them**. There are

³⁵ For more information see D3.1 pages 14-16.

³⁶ See chapter on Innovation #2 Es laboratori.

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 engagement³⁷

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 the centre, 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. Since people have a low level of understanding and do not see the benefits of the interventions more educational/informative workshops or events are needed.

Lessons learned

Both the public meetings and 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 advanced, as earlier notification can increase participation.

Next steps

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. (The first test was carried out for the application of energy rehabilitation in November 2024. More details will be reported in the next edition of this report.)

³⁷ For more information see D3.1 pages 14-16.

INNOVATION #12 PRIVATE PUBLIC PARTNERSHIP FOR LARGE SCALE RENOVATION MECHANISM (RETROFITTING MANAGEMENT ENTITY)³⁸

Made up of technical (architects and engineers) and administrative (property managers) professionals, **the Retrofitting Management Entity** has been commissioned by the Palma City Council to advise owners of buildings in La Soledad and Nou Llevant who are interested in renovating their buildings in terms of energy efficiency, on the existing Next Generation subsidies and the procedures to follow to obtain them.

The methodology consists of contacting the residents of the neighbourhood **and holding information sessions, referring them to professionals in the sector who can prepare the documents and renovation projects and clear up any doubts that may arise, and accompanying them throughout the process until they apply for the Next Generation grant.**

Progress

The service contract was signed on May 28th, 2024. During the first few months, **information was exchanged between the City Council and the Retrofitting Management Entity**, and in July, meetings began between the Retrofitting Management Entity's technicians and the residents of the neighbourhood.

Until the end of M36 **three meetings have been held** (in July, September, and October 2024) with the **participation of around 80 residents from around 15 different buildings**. To ensure the service smooth operation, technicians from the city council's ARV team and technicians from Tramiteco are involved.



Image 19 Retrofitting management entity - the fieldwork. Photo: ARV Palma team.

³⁸ This Innovation is closely connected to the Innovation #2 Es laboratoris as it is about maintaining contact with people living in the neighbourhood to facilitate the energy rehabilitation process (see information on Best practices day 'Case Orcasitas').

In most cases, the target group is reached through **personalized invitations to the residents** of each building, telephone calls and posters on the doorsteps of all the buildings. The meetings are held in the courtyards of the buildings so that residents do not have to travel to attend.

Target groups

The main target group of this innovation is **citizens living in the surrounding communities**.

Level of citizen engagement³⁹

The second level: The ARV team is putting in contact different public and private entities, and the population, to make possible the encounter and innovation.

Barriers and lessons learned

To be successful, it is important to **establish at least a minimum level of trust** with the neighbours and to send them personal invitations. Anonymous general invitations do not work. People need to feel personally involved. It is also important that the location of the meetings is convenient for them, that it does not involve a lot of travelling. It should be easy for them to attend.

Next steps

Continue to provide information sessions and guidance to residents so that as many as possible can benefit from the Next Generation grants for energy efficiency improvements.

INNOVATION #71 AR AND VR TOOLS

Progress

This tool is a **transversal work to support the different initiatives**:

- The VR helps to disseminate the work done in GESA, Metrovacesa, Ibavi, and to help neighbours to visualize the rehabilitation of their homes. It focuses on aesthetics aspects of the building facades.
- The AR helps to disseminate the technical improvements that involve energy rehabilitation among the academic community (institutes and universities) and among the community of neighbours the improvements in comfort and energy consumption that involves the intervention in the building. It focuses on reduction in carbon emissions, energy savings, and costs.

Short videos visualising its functionalities and features were published in [ARV YouTube channel](#).

Barriers

The googles are not working yet, for now the team is working with computer.

Next steps

The current plan is to start using the tools more extensively with the community. As mentioned earlier in the text, the first test was carried out for the application of energy rehabilitation in November 2024. More details will be reported in the next edition of this report.

³⁹ For more information see D3.1 pages 14-16.

INNOVATION #3 POST OCCUPANCY EVALUATION

A post-occupancy evaluation (POE) for assessment of occupant satisfaction by private developer MET and IREC encouraged customers to participate in an environmental comfort monitoring campaign that is part of a research on the perception of thermal and environmental comfort. From February to September 2023 the POE was **carried out in a new residential building of Jardins the Llevant**: a monitoring campaign of indoor environmental parameters and a survey to know the user perception. The activity resulted in **13 monitored households and their environmental comfort assessment**. Analysing the monitoring data and the surveys, it is possible to conclude that the indoor environmental comfort of the inhabitants is satisfactory.

ADDITIONAL ENGAGEMENT ACTIVITIES AT PALMA

Although there have been a couple of other activities not belonging to any given innovation, these support all of them. All these activities were carried out to contribute to the initial Living lab objective *to live in the neighbourhood, to have a closer connection with the population, to be better known and to be more familiar with the neighbourhood*. These activities include **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, 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 in the first project period 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.

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.

Participation in the Entity fair

The Entity Fair was **organised by the network of socio-educational entities of the neighbourhood**, which includes all the schools and institutes, the health centre, the neighbourhood associations, the library, and other social entities. Each of these institutions took part in the fair by organising activities and involving their users in their own and other activities. The dissemination was therefore carried out by the institutions themselves.

In 2023 representatives of the demo activities participated on the event by attending the conference and following networking activities aiming to find new connections. The next year (2024) the ARV team participated in the fair together with the Instituto Balear de la Energi (IBE) **conducting workshops** together. This option was chosen to give visibility to this entity that is materializing shared self-consumption in the neighbourhood so the neighbours can join.

In the morning the 3 workshop parts were conducted, with small groups of pupils rotating:

- The first was a **memory game**, where they had to match appliances with their degree of consumption.
- The second was a workshop where “**solar ovens**” were created and pieces of chocolate were melted only with the heat power of the sun using different tools: a magnifying glass, a mirror, and silver paper in a box.
- And finally, there was a comic workshop on the floor, where each group that passed by **drew a part of the story**, identifying the repercussions of climate change in the city.



Image 20 ARV Palma team participating at the Entity Fair. Photo: ARV Palma team.

In the afternoon, a tent was set up **where information on shared self-consumption was provided by IBE, the Virtual Reality tool was displayed by ARV and information was given on energy rehabilitation** in the neighbourhood. At the same time, the social educator entertained the children who came with their parents with a game of construction parts for sustainable vehicles.

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 tenants who might need assistance with accessing the available support.

The target population of 'Fair of Entities' were **neighbourhood organizations and citizens with focus on youth in 2024**.

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 engagement⁴⁰

⁴⁰ For more information see D3.1 pages 14-16.

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 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 reasons behind this are difficult to find out, the ARV team is continuously seeking solutions to make these events more attractive for the residents.

The 'Fair of entities' required three people for the whole workday, so it was a time-consuming activity.

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

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 in 2023, as no new citizens were contacted. The second year (2024) the activities were targeted mainly at youth as this type of activity is a great way to get the message across to pupils. In the school environment they are predisposed to receive theoretical information, much more than if they receive it in an informal environment, and **with participatory activities the information received is put into practice and internalized much better. That is why workshops in this format work very well for school-aged people.** Within the lines of work of social change, circularity, and energy transition, the ARV team believes this activity raises awareness among young people well.

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.

5.4. SØNDERBORG

GOALS AND TARGET GROUPS OF THE SØNDERBORG LL

Type of LL⁴¹	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 groups⁴²	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 (M1-18)	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 of the second project period (M19-34)	Explore how to create a better basis for behavioural changes in relation to the resident's energy/heat consumption (by using digital consumption tools, campaign material, events and through 1on1 dialogue).
Aims for the next project period	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.

⁴¹ For more information on the types of LLs see D3.1 page 12.

⁴² For more information on the categorisation see D3.1 page 25.

OVERVIEW OF SØNDERBORG'S LL ENGAGEMENT ACTIVITIES

Table 4 Overview of Sønderborg'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	7	8	9	10	11	12	
	Investigating and analysing data on tenant behaviour in apartments to better understand energy consumption patterns. (Ongoing)	Survey to carry out a baseline of knowledge residents of energy transition. Introducing the digital tool to monitor energy consumption.		Survey: Demo Blocks							Tenants home meetings (3 days) – introducing thermometers and Brunata app for real-time data (11 tenants)	

2024											
1	2	3	4	5	6	7	8	9	10	11	12
								Green Afternoon (with Housing Europe) A festival in housing unit 22 for residents: information about energy consumption and ways to save energy.		<i>Events will be reported in the next edition of this report.</i>	

INNOVATION #59 TENANTS AS GREEN AMBASSADORS (WITH FOCUS ON ENERGY SAVINGS AT HOME)

ENGAGEMENT THROUGH DIRECT CONTACT WITH THE RESIDENTS

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 programme to increase tenant participation. During the project the green ambassador strategy developed into an approach **focusing on direct contact with the residents**. The reason behind this shift was a low interest in the energy related topics and a lack of tenants' motivation for the personal involvement in the ambassador role.

Sønderborg's demo site is focused on **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** the other demo partner, **Danfoss**. This takes place in the basement of the buildings.
- The second (also the Living Lab): **a behaviour-driven solution aimed at residents**, which is about getting residents to **optimize their energy consumption**, including their heat consumption. Various **digital tools and behavioural learning tools** are used to reach the residents and to influence their behaviour.



Image 21 Brunata is an online tool aimed at residents, allowing them to monitor their energy consumption, including electricity, water, and heating.

The administration in SAB knows that **not all residents are fully informed about the most optimal use of heat in the apartments**, e.g. correct setting of radiators, the need for ventilation etc. Sønderborg LL explores how to create a better basis for encouraging behavioural changes in relation to the resident's energy/heat consumption.

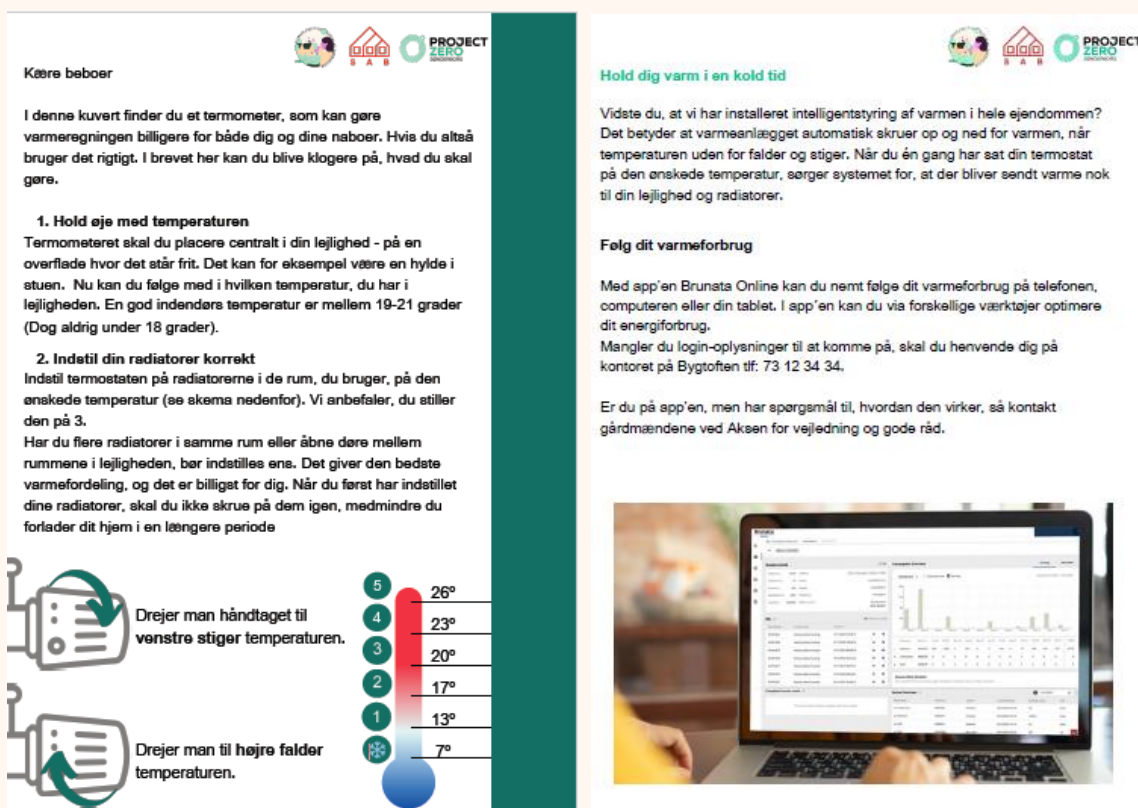


Image 22 An example of an initiative the ARV team carried out in the fall of 2023 involved residents in the two demo blocks receiving a letter. The letter provided guidance on how to ensure the correct settings for their radiators to achieve optimal heat distribution in their apartments. Author: ProjectZero.

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 consumption tool and nudging techniques. Without a physical office, the lab engages with tenants of SAB department 22 and the broader housing association primarily through **events, campaign materials and online communication**. A special emphasis is placed on two demo blocks for **enhanced one-on-one (1o1) tenant dialogue and behavioural change** towards more efficient energy and heat consumption. The **1o1 meetings in the residents' own homes/apartments** were carried out by a Christian Petersen, facility manager at SAB dept. 22, and Anne Branderup, senior consultant at ProjectZero, to get insight into the residents' behaviour patterns when it comes to energy transition.

The LL team discovered that the **1o1 meetings with residents in their own home are much more appreciated by the residents** and serve as a great opportunity to talk about the ideal usage of radiators and other energy related behaviour patterns.

Progress

Significant progress has been made in encouraging energy transition among residents. **The initial meeting in 2022 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.

- 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).

In October 2023 Center Demark started building a platform to display the collected indoor energy data from Brunata for the 45 apartments in the two demo blocks. Working with the data should help the ARV team to better explain how everyone can save on energy through change of everyday habits.

Home visits – 1on1 dialogue with the residents

One-on-one meetings in the residents' own homes/apartments were organised and attended by the ARV project team. The purpose was to observe how the resident adjusts the heat on the radiators (thermostats) and to interview the residents regarding their everyday energy behaviour.



Image 23 Residents in their apartments during the home visits by ARV team (ProjectZero and SAB housing department's inspector). Photo: ARV Sønderborg team.

Home visit agenda:

- Brief introduction.
 - Introduction to ARV, including SAB and ProjectZero roles.
1. **How do you use your radiators** in the apartment? (*Refer to the form and fill it out in collaboration with the resident.*)
 - Thermostat regulation.
 2. **Introduction to the Brunata app** and login to the resident's account + brief review of the resident's data:
 - How do you regulate the heat in your apartment?
 - How does heating work in a residential building? Technical ventilation and Leanheat.
 3. Ask about **the resident's daily habits** to identify pitfalls and challenges.
 4. How would the resident prefer us **to maintain contact and dialogue** over the coming years?

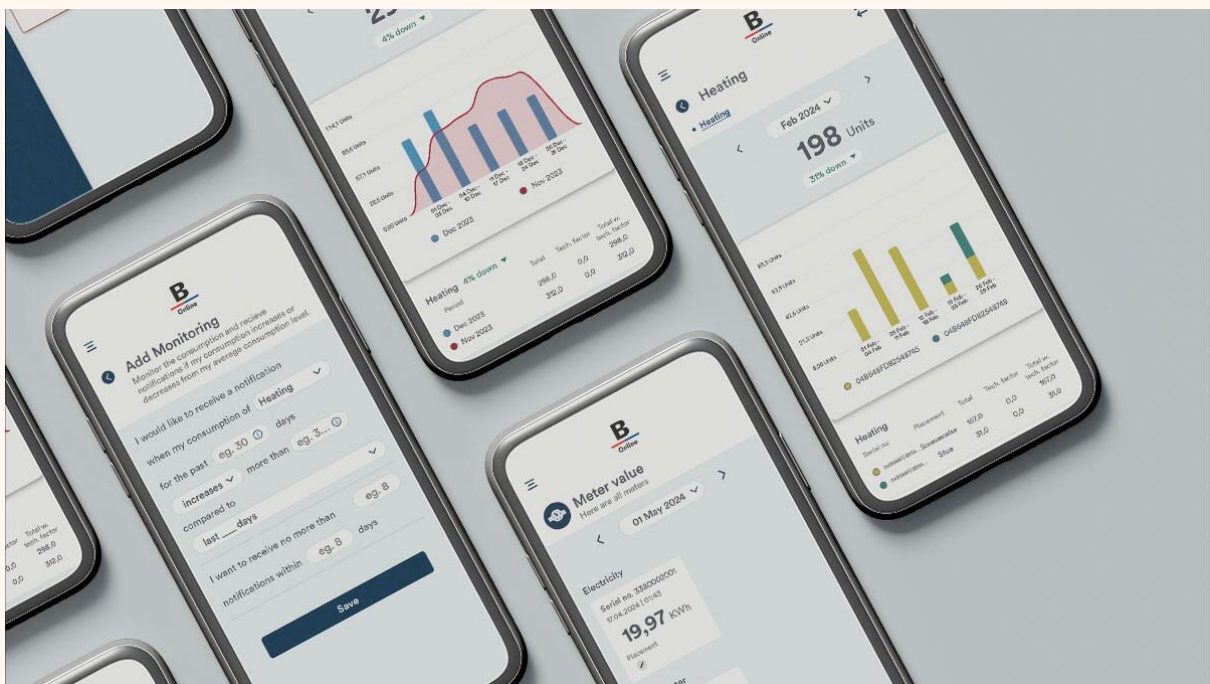


Image 24 Brunata app: Energy consumption tracking digital tool. Photo: Brunata web.

Conducting one-on-one interviews with residents in this way is time-consuming. However, it is probably also the best way to gain the insights we needed. An interview or **conversation at a location other than the resident's home would not have yielded the same results.**

Green Afternoon – a public event

The primary goal of the event was **to ensure that residents were well-informed about the project they are directly involved in** as members of a housing association in Denmark. This aligns with the principles of resident democracy that the associations are committed to upholding in Denmark. To achieve this, the team decided to organize a large-scale event in cooperation with Housing Europe, inviting all residents, and enhancing the experience with free coffee and ice cream for the children. Participation was voluntary and the invitation was promoted via poster adds in the department, social media-adds and newspaper adds.

The aim of the Green Afternoon festival was **to help the participants gain a better understanding of at least three points:**

- What benefits does the department get out of participating in a project like ARV.
- What are the energy products such as solar cells and batteries and what benefits it brings to the residents.
- What can the residents themselves do to save energy without compromising comfort.

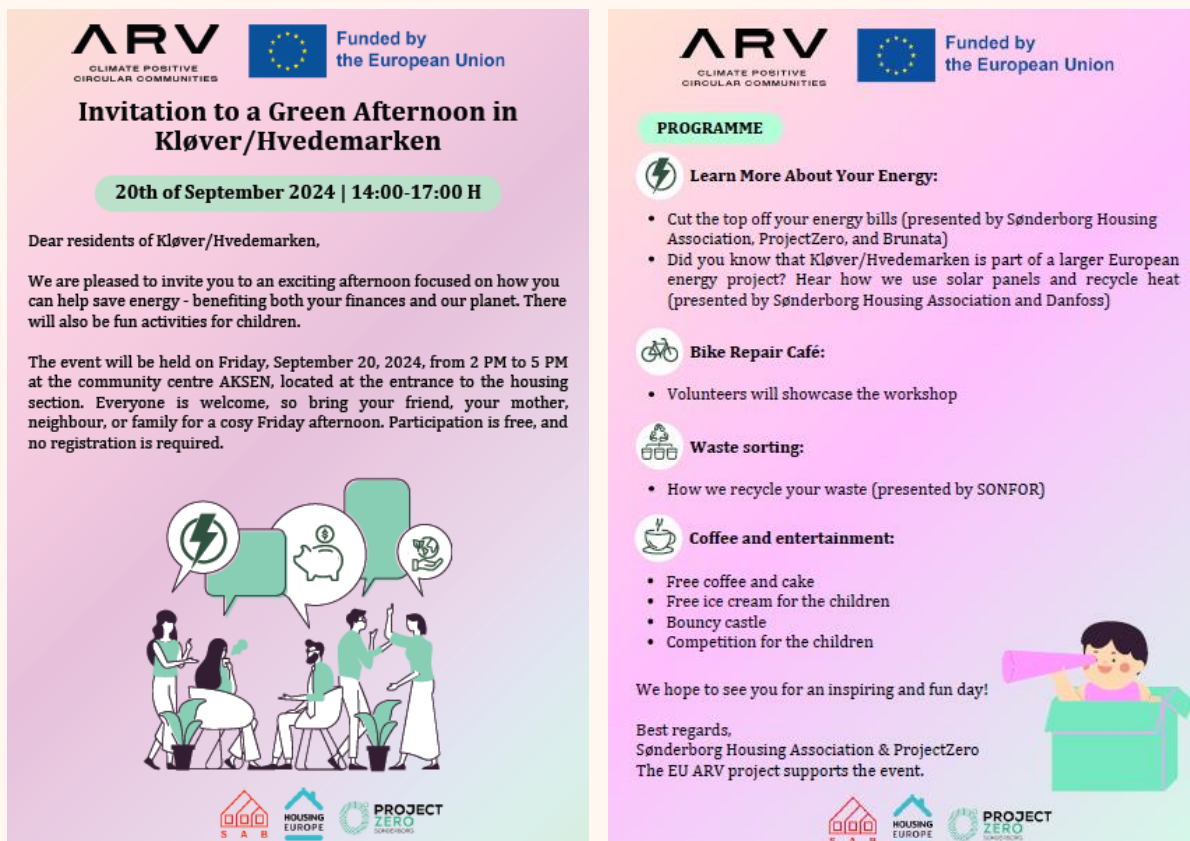


Image 25 Green Afternoon - the festival invitation was distributed in Danish, English, and Arabic. Author: Sønderborg LL team.

The festival activities:

- **Learn more about your energy**, energy savings, the ARV project (retrofitting of the department buildings).
- Learn **how to set your thermostat** correctly and to gain more comfort and save energy.
- Keep an eye on your consumption in the Brunata App – and change your behaviour.
- **Waste sorting**, what the waste is used for.
- The social activities and activities for children.



Image 26 Green Afternoon: the 2-day ARV workshop on feasible energy efficient measures in housing associations and district heating networks. Organised in cooperation with SAB, ProjectZero and Housing Europe Photo: ARV website⁴³.

The Sønderborg ARV team is highly satisfied with the success of the event and the smooth progression of the day's activities. Over the course of three hours, the festival welcomed **approximately 130 visitors**. Organizing an event of this nature can be challenging, particularly as the relevance of such topics may not always be immediately clear to residents. Additionally, it has been recognized during the project that energy-related issues are not currently a high-priority topic for many.

Despite this, there was **considerable interest in the ARV project**. Visitors were particularly **curious about initiatives such as the housing association's efforts to reduce return heat, optimize the use of solar panels, and encourage behavioural changes among residents to improve energy consumption**.

The evaluation of the event indicates that **the setup was highly effective for fostering the kind of dialogue the ARV team aimed to achieve**. Hosting the event outdoors played a key role in its success, and the festival organisers were fortunate to have sunny weather throughout the day.

Although it is difficult to measure the immediate aftereffects, the event succeeded in raising awareness about the demo project and our ongoing initiatives. **This increased awareness should make future steps easier, as residents are now more familiar with our work and objectives**.

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

⁴³ For more information see: <https://greendeal-arv.eu/2024/10/14/workshop-in-sonderborg-explores-the-feasible-energy-efficient-measures-in-housing-associations-and-district-heating-networks-20-september-2024/>.

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 engagement⁴⁴

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

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

Residents have minimal to no understanding of how a thermostat functions. Most of them have a behaviour pattern of turning the radiator on when it's cold and heat is needed and then turning it off again when it's 'warm enough'. There is a lack of knowledge and understanding regarding how a thermostat functions, specifically that it regulates radiator heat automatically without the need for making any manual adjustment.

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.

Any message the ARV team wants to share with the tenants must be carefully prepared and **translated into the most basic language** so that is comprehensible even for the least technically educated people. Otherwise, their interest is lost swiftly. **Using graphics** is a good idea (e.g. when explaining how to use the radiators most effectively as some people have never lived in a house with central heating).

The home 1o1 visits were appreciated by the residents. They were happy both to help us gain insight and with the visit from the housing association—**they felt seen.** They are **willing to participate again.** All residents also expressed appreciation for gaining a deeper understanding of how their equipment (radiator/thermostat) at home functions and can be best used to their economic advantage and for the benefit of the housing association.

Effective incentives, including competitions and food, have proven crucial for boosting event attendance.

Timing is crucial. To get people interested in the topic of reducing energy consumption and the associated savings, the best time for **starting the communication is the beginning of the heating season.** Residents are more motivated and the behavioural change we encourage can be

⁴⁴ For more information see D3.1 pages 14-16.

put into practice straight away. These workshops would have a limited impact if held in spring as the participants would forget most of it by wintertime.

Next Steps

The gained knowledge will be used to **tailor the communication to the residents**. Following the meetings, the ARV team initiated an effort **to purchase thermometers** and **drafted a letter to the residents** in the two demo blocks.

There is no doubt that residents' individual ways of managing their energy and heating are very different and deeply habit-based, making them challenging to change. **There is an ambition to visit more residents in the five stairwells** in the demo blocks. It is difficult to get people to participate and open their homes. This activity is time-consuming to carry out, but **the results are highly useful**.

A survey regarding residents' knowledge and energy use behaviours **will be conducted in the upcoming project stages**.

ADDITIONAL ENGAGEMENT ACTIVITIES IN SØNDERBORG

Progress

In the beginning of the project **in 2022 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 engagement⁴⁵

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 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

⁴⁵ For more information see D3.1 pages 14-16.

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. These findings were useful in organising another public event called Green Afternoon in September 2024 (described above).

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

Type of LL⁴⁶	Company-driven
Goals and main topics of LL	<p>Trento Living Lab intends to address the main challenge of a district-scale transformation, by involving primarily the citizens and the community who live in Piedicastello, but also people located in other areas of Trento (like the Povo District) and nearby the main ARV demo site. 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 and to familiarizing the residents with the available circular and sustainable technologies for the construction and renovation of buildings, and on the multiple advantages of these solutions. The LL also intends to establish a multi-stakeholder approach involving all concerned stakeholders from the beginning. Another goal is to inform policy making and the regeneration scenario of the “ex-Italcementi” brownfield in Piedicastello (demo area 1) with the sustainable construction solutions and technologies which will be applied and monitored in demo area 4.</p> <p>There are 4 main demo activities that the LL connects to, including renovating an apartment building using innovative technologies in the Povo District; 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.</p>
Target groups⁴⁷	<p>The target groups of the LL activities are mainly homeowners, tenants, 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.</p> <p>Other important stakeholders include the municipality of Trento, namely the administrative (municipal officers, e.g., Department of Mobility and Urban Renovation Service) and other political persons</p>

⁴⁶ For more information on the types of LLs see D3.1 page 12.

⁴⁷ For more information on the categorisation see D3.1 page 25.

	<p>(city councillors in charge of green transition, territorial planning and private housing).</p> <p>Additional important groups consist of the director and managerial staff from the art gallery (“Le Gallerie” museum) and representatives of building managers in Trento (i.e. people in charge of condominium administration and residential building management).</p> <p>From Industry field main stakeholders are DTTNs LTPs, Dolomiti Energia (Energy supply) and One Stop Shop associated companies.</p>
Geographical Location of the Community	<p>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. The second venue is the museum and exhibition area called “Le Gallerie di Piedicastello”, which has been established in the two former highway tunnels planned to be used as a testing site for the geothermal prototype. So far “Le Gallerie” has been used to gather technical meetings, a public workshop and ARV consortium meeting in Spring 2024. Finally, in 2023 a second city district, called Povo, emerged as a crucial location for the Living Lab. The building renovation activities were shifted here from Piedicastello, and a medium-rise residential building was involved in ARV as a demo site.</p>
Aims of the first project period (M1-18)	<p>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.</p>
Aims of the second project period (M19-34)	<p>Start implementing the LL activities in the following domains: on-site visits and inspections, periodic informative sessions, One Stop Shop and dedicated workshops. In addition, collection of feedback from end-users/homeowners through surveys and questionnaires.</p>
Aims for the next project period	<p>In the next project period, the aim is to analyse the collected data and produce a detailed report to evaluate the success and areas for improvement of the ARV update meetings. More informative events will be organized additional to keep the local community regularly updated on ARV progress. Furthermore, more focused sessions on the One Stop Shop (OSS) will be conducted, deploying it through targeted informative sessions on specific technologies or services. These sessions will include matchmaking opportunities, allowing participants to connect with businesses and suppliers to explore suitable solutions for their building renovations.</p>

OVERVIEW OF TRENTO'S LL ENGAGEMENT ACTIVITIES

Table 5: 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	7	8	9	10	11	12
		Informative session for the "Povo demo" homeowners		On site inspection with the "Povo demo" homeowners				Surveys on noise and dust perception during renovation works in the Povo demo	ARV Update Meeting with the local community	Surveys on noise and dust perception during renovation works in the Povo demo	
2024											
1	2	3	4	5	6	7	8	9	10	11	12
				Engagement workshop for homeowners and technology suppliers							Events will be reported in the next edition of this report.

INNOVATION #13 ONE-STOP SHOP FOR CPCC REFURBISHMENT

One Stop Shop for CPCC refurbishment (OSS) is an **innovative refurbishment approach** which intends to match both sides of the market (**demand and supply of renovations**) by facilitating and providing **support potentially at all stages of the design and construction works**.

An informative session for “Povo demo” homeowners and an on-site inspection of the Povo demo building with the homeowners.

The informative session was held in **March 2023**. Main goal of the informative session was to **explain the planned works and obtain approval** from the homeowners. The **on-site inspection** was held in **May 2023**.

Progress

The session 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, and a company called **‘Fanti Legnami’**, [DTTN](#) third party in ARV, 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 engagement⁴⁸

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.

⁴⁸ For more information see D3.1 pages 14-16.

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 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 the One Stop Shop launching.

Engagement workshop for homeowners and suppliers

The activity was arranged in **May 2024** as part of WP10 engagement workshops in the 6 demos. Close cooperation between ARV partners **Housing Europe** (task lead) and **DTTN** (Trento demo lead) was therefore crucial for the success of the initiative.

Progress

Pre-planning of the workshop started in late 2023, when the main topics for the workshop were identified. One Stop Shops for integrated home renovations based on the use of sustainable, circular solutions – like those tested in ARV – emerged as the main topic. The workshop was therefore organized around two main blocks: i) **High-level conference on OSS policy aspects, sustainable circular solutions for renovation and case studies, including a panel discussion** between representatives from the construction sector; ii) **Exhibition of renovation technologies and services offered by local SMEs**, complemented by a **networking session**.

After the pre-planning stage, the event was concretely organized by engaging:

- **The managing authority of 'Le Gallerie' museum** (one of Trento demo sites in ARV) to obtain the necessary approval for the use of their conference room as the workshop venue.
- Political representatives from the District and City officials responsible for critical issues related to large-scale urban regeneration, such as land management, green transition, and citizen involvement.

After reaching out to the stakeholders and receiving their positive feedback to assist in organizing the event, the following steps were taken:

- Development of a detailed agenda between Housing Europe and DTTN
- Selection and engagement of the speakers, comprising both ARV partners, local and international stakeholders.
- Identification of local suppliers/technology providers to populate the exhibition area of the workshop.
- Selection of the catering provider for the networking session scheduled at the end of the event.

Communication and engagement campaign included involvement of community leaders, online and offline communication. **DTTN** was responsible for the **organisational aspects** of the meeting and was the **main speaker** on ARV's **social renovation and residential renovation** efforts in the Povo district. **Housing Europe** acted as the **primary moderator** of the event and collaborated closely with DTTN to coordinate all logistical and content aspects, including the speakers' selection, as well as to design and disseminate the communication materials. **Architects Council of Europe (ACE)** gave a **substantial remote contribution**, by **spreading information** on the Trento workshop on ARV website, LinkedIn account and other relevant platforms such as the BUILD UP portal.

The event took place at **Le Gallerie Museum**, both in the lobby, where the exhibition area was setup, and in the conference room.

There were four **topics** discussed during the event:

- **Residential Building renovation:** Povo case study in ARV and the first large-scale installation of the "Renew Wall" retrofit prefab-kit.
- **One Stop Shop** approach: services usually offered by OSSs and the OPENGELA OSS model in the Basque Country.
- **Energy retrofit objectives** in the Province of Trento for the residential sector.
- Roundtable on the **potential of circular district** renovation in Italy.

The event consisted of several key segments and the **agenda** was the following:

- **Welcome and opening** from 2 Trento **City Councillors** on green transition and urban planning.
- **Accelerating building renovation through CPCC: the Povo case study in ARV**, presentation by DTTN and Fanti Legnami (DTTN LTP in charge of the renovation works in the Povo demo).
- One-Stop-Shop in the Basque Country: the OPENGELA model by Eurolker.
- **Energy retrofit objectives** in the Province of Trento for the residential sector by APRIE.

The event concluded with a panel discussion on the potential of circular district renovation in social, cooperative, and private housing in Italy, featuring speakers from ANCE Trento, ACER Reggio Emilia, DTTN, and COOPCASA TRENTO. Additionally, seven local SMEs showcased innovative renovation solutions in the exhibition area of the venue.

The main **outcomes** were the following:

- **Raise awareness about the importance of accelerating the building renovation** in the residential sector to comply with the EU policy framework and current regulations, like the EPBD recast.
- **Raise awareness about the One Stop Shop approach** and involve both the demand and supply to begin its development.
- **Showcase innovative and sustainable renovation technologies**, like the timber-based prefab kit used for the first time in the Povo demo.

The activity was conceived as a mixed event (**conference + exhibition**) to reflect in a comprehensive way on home renovation services and sustainable solutions for retrofitting. This approach allowed to reach out to different target groups at the same time (local industry stakeholders, technology providers, potential end-users and residents, policymakers). Policy-level and regulatory discussions were complemented by the presentation of case studies and tangible technologies in the exhibition area. The conference allowed policymakers and industry representatives to familiarize with the emerging concept of One Stop Shops in the EU. The exhibition was designed to establish a first group of local enterprises which could join the Trento

One Stop Shop, and to encourage B2C occasions with the end-users/homeowners attending the workshop.

Prior to the event, a **press release** was distributed to the media and the press office of the City Hall, which subsequently published the announcement on its website. One journalist from a local newspaper was present at the event, and the following day **an article was published**, highlighting the key topics discussed. All these materials have been documented and archived.

Target groups

Socio-Cultural Actors: some members of **Piedicastello Committee**. Their presence was crucial because actively involved, from the '70s, in the major urban transformation of the district. Beside them, some local journalists attended the event and produced newspaper articles on the initiative.

Political/Regulatory Actors: **President**, some members of the **District Council** and two **City Councillors**. Their importance lies in their political and decision-making role within the community and at the city level. The speakers and panellists included relevant representatives coming from **APRIE**, the **Provincial Agency for Water and Energy Resources, Ance Trento**, **ACER Reggio Emilia** and **CoopCasa Trento**. Other industry representatives were equally present in the audience.

Citizens: primarily **residents**, including both **homeowners** and **tenants** from the district. Their presence was essential, as they represent the primary audience for the Living Lab as well as for the Trento One Stop Shop. There were also some **students** from the University of Trento.

Technological Actors: seven representatives from different **SMEs** participated as exhibitors during the showcase of renovation solutions.

Technology providers were engaged through one-to-one interactions, leveraging on DTTN local business network. On the contrary, **local social housing companies and condominium administrators (represented by their local association) were missed out as relevant target groups**. They were approached directly by email and by phone but did not show particular interest in the initiative and/or did not reply to the invitations. Having condominium administrators available there would have been particularly important, as they usually manage all the administrative aspects of renovation works in apartment buildings.

Level of citizen engagement⁴⁹

Third level, Plan procedures and facilitate vision planning, leading to increased mutual learning of various stakeholders, including citizens. Indeed, the overall workshop was conceived to facilitate cross-contamination of knowledge and to increase the understanding of barriers/opportunities to renovate the residential building stock, both in a policy-oriented and practical way (i.e., the conference and the exhibition of renovation technologies).

Barriers

Weakness point was surely the **low participation of citizens and residents from Piedicastello District**. They were mainly represented by the members of the District Council and the local committee, but in fact there was a lack of common people interested to renovate their building. The **timing of the conference** could have affected negatively the participation: to combine the

⁴⁹ For more information see D3.1 pages 14-16.

conference and the networking/exhibition, the event started at 4 pm, which **coincides with typical working hours on a weekday**.

Lessons learned

The project partners and the speakers seemed generally satisfied with the workshop. **Positive feedback was collected** during face-to-face talks after the event and in the coming days. Questions were raised only by industry representatives and policy makers, whereas citizens and residents in the district were more active during the final networking session/exhibition. For instance, they had some talks with the exhibitors around their services or products showcased in the booths. The main topics of interest during the conference were energy retrofit goals in the Province of Trento and the OSS case studies tested abroad. The networking and exhibition sessions showed interest of the residents for the project itself, the technology solutions showcased, and the One Stop Shop.

The combination of **two different formats – conference + technology exhibition – proved valuable**, as it makes the event more original and dynamic. The availability of technology providers made the topic of building renovation more tangible, and this is surely a strength point. In parallel, as regards the conference and panel discussion, the presentation of the case study of a mature OSS deployed abroad gained the interest of local stakeholders to get to know the benefits and challenges encountered in that context.

Next steps

The workshop was conceived to be an awareness raising initiative on the One Stop Shop and the importance of using sustainable technologies to renovate residential buildings. In the coming months the OSS will be deployed through **additional informative sessions**, possibly **focused on single technologies/services**, in combination with **matchmaking sessions** where interested people can talk to businesses and suppliers and find suitable solutions for their building renovation.



Image 27 Engagement workshop for homeowners and suppliers. Author: DTTN team.

INNOVATION #14 LOCAL ENERGY COMMUNITY APPROACH

The Local Energy Community approach involves the development of a localized energy community framework connected to Near-Surface Geothermal Energy (NSGE) and district heating services, as well as the production and sharing of energy from local renewable energy sources (RES). This innovation mainly includes the **installation of a geothermal prototype** within former tunnels, which has the potential to serve as a sustainable energy source for the 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 during the ARV update meeting in October 2023 (see below).

Target groups

Main target groups are **residents in Piedicastello** who would like to join an energy community approach. Selected **stakeholders from the municipality, the managing authority of the museum** 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.

INNOVATION #15 INVOLVEMENT OF LOCAL STAKEHOLDERS IN CO-DESIGN PHASE

The involvement of local stakeholders in the co-design phase represents a bottom-up rather than a top-down approach in the development of the Trento CPCC. This participatory method ensures the inclusion of diverse perspectives, enabling the integration of multiple viewpoints and facilitating the iterative adjustment of the CPCC design throughout the process.

ARV kick-off meeting for the Piedicastello community

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 in June 2022, 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.

Surveys on noise and dust perception during renovation works in the Povo demo

The survey took place in **September and November 2023**. A questionnaire was prepared by **UNITN** research team with questions that would be easy for the target group to understand and that would answer the planned research scope. Next, UNITN team contacted the condominium administrator (= residential building manager), who informed the tenants during condominium meetings. An informational sheet and consent form were then distributed, and the dates for the meetings were communicated in advance. Each interview was recorded to ensure accurate data collection.

Progress

The condominium administrator acted as an intermediary, facilitating communication and increasing participation. This activity is closely related to the **innovation of prefabrication**, which improves sustainability during renovation work. UNITN research team explored the **impact of noise and dust produced during the retrofit work**, gathering opinions on environmental quality. The questions were structured to compare the tenants' experience with two construction techniques combined in the renovation of the Povo demo building: traditional ETICS (External Thermal Insulation Composite System) and prefabricated facades. The event agenda included an introduction and general questions from UNITN, followed by a detailed interview and data collection. The meetings took place in an informal setting to put participants at ease, and each session lasted around **15 minutes**.

Participants were satisfied with the overall experience, **noting the reduction in dust during the installation of the prefabricated facade compared to traditional ETICS**. However, they reported an **increase in noise with the prefabricated facade**. The difference in duration between the two types of work (just a few days for the prefab-kit), which could influence the results, was not considered.

We chose **interviews** as the main engagement method because they ensure a direct and complete understanding of the questions from the tenants, providing high-quality data. This method aligns with the ARV Project KPIs, allowing the research team to measure residents' perceived impact in detail. Using questionnaires instead might have resulted in less precise responses. UNITN research team used a computer to **record audio** during the interviews without needing other specific resources. The event took place in the condominium under renovation in **Povo**, making it more convenient for the participants. No photos or videos were taken, but the collected material was saved and archived properly.

We did not receive formal feedback on the interviews specifically, but the general response to the project was positive. **Participants appreciated the focus on reducing environmental impact.** This positive feedback reflects the overall effectiveness of the retrofit intervention.

Target groups

The main target group consisted of the **tenants in the condominium**, who were directly involved in the project and were the primary recipients of the activities. They represent key actors in the Living Lab, essential for testing and evaluating retrofit interventions. We would have liked to include a wider group of residents to obtain a broader and more complete sample.

Participants were recruited through the condominium administrator, reaching those who were at home during the day. Participation was satisfactory, but we would have preferred to involve neighbours to obtain a more diverse sample. Some apartments were empty, but there were no significant difficulties.

Level of citizen engagement⁴⁸

First level.

Barriers

The activity was quite **time-intensive** because each interview was conducted in person and required some preparation.

Lessons learned

The interview approach was suitable for the target group (elderly people), facilitating direct and engaging interaction. However, in the future, it would be beneficial to involve neighbours and consider the time impact of different retrofit methods. **Involving more participants could enrich the data collected** and provide a broader perspective.

Next steps

The next steps include **analysing the collected data** and **producing a detailed report** of the results. This phase will help identify any improvements and evaluate the success of the activity.

ARV Update Meeting for the local community

The event was considered pivotal to ensure a **regular update** of the local community on the **project progress**, by **keeping the dialogue ongoing** after the kick-off in 2022. A standard informative event - with presentations from speakers and a frontal setting - was privileged since no concrete innovations were already visible or installed in Trento at that time (autumn 2023). A more dynamic participatory approach, based on the **collection of feedback through the digital survey**, was equally encouraged during the last session of the event. The activity is also related to the innovation number 13.

Progress

ARV update meeting was designed and implemented **to update the local community on the progress of ARV in Trento** and to **create synergies and connections** with major urban policies ongoing or planned, such as the **urban regeneration plan of Piedicastello District**.

The support of local stakeholders was crucial to ensure the participation in the event. The President of the District Council and some members of the Piedicastello Committee directly engaged potential participants by **spreading the voice of the event in the neighbourhood**. **Habitech's social media channels were used to spread the news** and information about the event, along with the poster/agenda which were sent to the entire list of contacts collected during the first meeting in 2022. Additionally, these materials were displayed outside the district meeting centre. A second engagement method was used during the event, by **inviting the participants to fill out a digital survey focused on users' requirements for home renovation and the multiple benefits associated to the ARV project** from their perspective. The event was held at the **neighbourhoods' local meeting centre**, a quite outdated building with a few rooms available, where the district typically hosts community gatherings as well as social and cultural activities.

Four main topics discussed during the event were:

- **Activities, developments, and synergies** related to the transformation of the Piedicastello neighbourhood within the ARV project (speakers: Eurac Research, Dolomiti Energia and Councillors from the City of Trento)
- The zoning plan for the former Italcementi area and the new University student residence (speaker: Patrimonio del Trentino)
- A detailed **description of the new multifunctional building for the Ex-Zuffo area**, as part of the ARV activities in Trento (speakers: University of Trento and Armalam (DTTN Linked Parties))
- Residential renovation, One-Stop-Shop approach in Trento and Multiple-Benefit Analysis (speakers: DTTN and Eurac Research)

The main outcomes were the following:

- Strengthening the connection between the ARV project and the district's comprehensive regeneration plan.
- **Raising awareness about the project's planned activities** and the **various technologies** that will be implemented, fostering a deeper understanding and connection, in particular regarding the new multifunctional building.
- Facilitating ongoing dialogue among participants on the future of the Piedicastello district, highlighting the positive impact of ARV to accelerate energy and green transformation.
- **Familiarizing** the local community and the policymakers with novel concepts, such as the **One-Stop-Shop** for home renovations, and the **multiple-benefits** associated to regeneration projects.

Several pictures were taken on site. The local contact list was updated. All those materials are stored and documented in DTTN repository. Preliminary data were also collected through the digital survey on user requirements and multiple-benefit analysis, at least for those participants who decided to respond live and not at a later stage.

The project partners and speakers involved showed satisfaction towards the event implemented. Participants seemed moderately interested in the event. Most of their questions were addressed to the city officers and concerned the next steps of the development plan for the 'Italcementi area' and the new student residence in the northern side of Piedicastello. They seemed less interested

in the One Stop Shop approach, whereas raised some questions on the new multifunctional building in the Ex-Zuffo parking lot.

Before the event, a **press release** was sent to the local media outlet and the city press office, which then published it on its website. Two journalists from different local newspapers attended the event. The following day, **two articles** were published covering the main topics discussed. All those materials are stored and documented.

Target groups

- *Socio-Cultural Actors*: some members of '**Piedicastello Committee**', a local association established in the 70s. Their presence was crucial because they were actively involved, from the '70s, in the major local urban transformation and in the public debate on the liveability of the district. Local media outlets (journalists and video-makers): their relevance is due to the capacity of spreading the voice of the event outside the neighbourhood via newspapers, social media and news websites.
- *Political/Regulatory Actors*: **President and members of the District Council**: their relevance is linked to their engagement capabilities in the neighbourhood as trusted community leaders. **City councillors of Trento**: their importance lies in their political and decision-making role within the community and at the city level. Their presence lends greater appeal and credibility to the event, as citizens are typically more inclined to participate in events that involve political representatives.
- *Citizens*: primarily **residents**, including both **homeowners** and **tenants** from the district. Their presence was essential, as they live the district on a daily basis. Furthermore, they represent the primary audience and target group for the OSS and home-renovation related aspects. They are also the potential main end-users of ARV multifunctional building in the ex Zuffo parking lot.

The expected target groups were generally recruited. Participants were recruited through the combined efforts of the District Council President and its members, along with an online campaign on Habitech's social media channels.

Level of citizen engagement⁴⁸

Between First and Second level. The activity can be seen as a mix of the two levels, as it simultaneously stimulated feedback collection in a technology assisted urban context, together with co-creation aspects when it comes to the survey on "user requirements" for renovation services.

Barriers

One of the main challenges was **explaining to the audience the concepts of the One Stop Shop, the multiple-benefit analysis and the objectives of the digital survey**. This is mainly due to the novelty of similar concepts, which probably require a more pragmatic approach in the future.

A second weakness point was the **timing of the digital survey**, which was presented and disseminated during the **last session** of the event. Although invited to fill it outlive, in order to receive assistance by project partners, **most of the participants declined to do so**. They probably considered it a quite boring activity to do after 2 hours of the physical attendance. The next time engagement activities should be anticipated in the agenda, to keep the audience more focused and interested.

To further corroborate the One Stop Shop approach, it would have been beneficial to have there some representatives from **local social housing companies, residential building managers** (so-called condominium administrators), and **trade associations**. Although contacted in advance they did not showed interest in the initiative.

Lessons learned

The connection between ARV activities in Trento and the district regeneration plan proved valuable to arrange a consistent and engaging local event. The **involvement of local stakeholders** (policymakers, managing authorities, community leaders) **confirmed its positive role in similar initiatives**. Another strength point was the **presentation of concrete case studies** (i.e., the student residence, ARV new building, etc.) by **using a clear language and avoiding technical jargon**. This approach proved useful even when some residents raised concerns on the removal of a few parking lots for the construction of the new building.

Next steps

The next steps involve the **arrangement of additional informative events to keep the local community regularly updated on the progress of ARV**, as well as the **organization of more detailed sessions focused specifically on the One Stop Shop**.



Image 28 ARV Update Meeting for the local community. Author: Trento LL team.

5.6 UTRECHT

GOALS AND TARGET GROUPS OF THE UTRECHT LL

Type of LL⁵⁰	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 groups⁵¹	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. The main focus of development is on social renovation and energy coaching. 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 (M1-18)	Setting up and implementing the LL activities in Utrecht: <ul style="list-style-type: none"> • 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 of the second project period (M19-34)	<ul style="list-style-type: none"> • 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 Woonin 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.

⁵⁰ For more information on the types of LLs see D3.1 page 12.

⁵¹ For more information on the categorisation see D3.1 page 25.

Aims for the next project period

- Social renovation: options for variations of social renovation are being explored, specifically at the Bo-Ex Brederoflats in Kanaleneiland, the city's critical assessment of social renovation for potential citywide implementation is expected to lead to adjustments in the social renovation approach, the analysis of post renovation survey will be finished probably followed by two focus groups, assessment framework for determining the initiation of social renovation is planned, after the renovation works a final one-on-one meeting with the tenants will be held.
- **Energy coaching: evaluation** will be written; it will be decided if energy coaching will take place in the two apartment buildings which are currently renovated

OVERVIEW OF UTRECHT'S LL ENGAGEMENT ACTIVITIES

Table 6 Overview of Utrecht's LL engagement activities

2022											
1	2	3	4	5	6	7	8	9	10	11	12
					Start of Social renovation (Strooys buildings tenants)	A pre-renovation survey (Strooys): residents' health, their homes, the neighbourhood, and the renovation					
2023											
1	2	3	4	5	6	7	8	9	10	11	12
Start of Energy coaching			Human Capital "Stakeholder workshop for circular skills"		Human Capital "Stakeholder workshop for circular skills"		Social renovation: In-depth interviews with 10 professionals involved. (Strooys) (till Feb24)				
					Social renovation (Strooys): in-depth interviews with 8 residents in various phases of the renovation about the renovation and its impact					Presentation of preliminary results from the interviews for Woonin and the Municipality	
2024											
1	2	3	4	5	6	7	8	9	10	11	12
Social renovation: In-depth interviews with 10 professionals involved in SR. (Strooys) (beg Aug23)	Social renovation (Bredero buildings): first meeting with advisory group							A post-renovation (follow-up) survey (Strooys) - ongoing	<i>Events will be reported in the next edition of this report.</i>		

INNOVATION #34 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 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

Woonin⁵² 'Strooys' buildings

Social Renovation conversations were carried out with Social Housing Association (Woonin) **tenants** to discuss the upcoming renovation. The aim of the meetings was to get acquainted and **build trust** between the 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 **Dock⁵³** for all social cohesion question, activities in neighbourhood or language lessons; **Work & Income (municipality)⁵⁴** for all financial, job-related, education and training questions; and **District team (municipality)⁵⁵** for all questions concerning help with the renovation.

264 one-on-one meetings with tenants were held⁵⁶ 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.

In the following months (June-November 2023) **8 in-depth interviews with residents** were conducted in various phases of the renovation about the renovation and its impact on residents' health and well-being. Another **10 in-depth interviews with professionals involved in social renovation** were conducted from August 2023 to February 2024.

In December 2023 a short **presentation was given to share preliminary results** from the in-depth interviews with Woonin and the Municipality.

From September 2024 a **post-renovation (follow-up) survey is being administered** amongst the residents who participated in the pre-renovation survey.

⁵² Woonin = ARV partner and social housing corporation. The social renovation project is targeted at the tenants living in their 2 apartment buildings that will be retrofitted within the LL Overvecht district as part of ARV.

⁵³ DOCK (NGO). A welfare organisation, that receives funding from the municipality. Within social renovation they visit tenants before renovation to increase cohesion and identification of welfare issues.

⁵⁴ Work & Income is a municipal department that works on income, employment, education, safety, and other social issues. Forms part of the social renovation team and aims to help tenants that are identified to need support for job employment, debt, or other social issues.

⁵⁵ District team is a municipal department that works at the district level. It employs social workers from city and provide individual social support for tenants identified in social renovation process.

⁵⁶ Preliminary results were shared with Dutch partners in a factsheet (see Factsheet BL Strooys).

The **current approach to social renovation in Overvecht** was developed **into a guideline** in 2023, in collaboration with the involved partners. This includes a decision-making framework (where and when to apply social renovation). From the end of 2023, it is being explored whether it is possible to expand the Overvecht approach to social renovation more broadly in Utrecht, beyond the Overvecht neighbourhood. Due to new urban assignments for the social partners involved and upcoming municipal budget cuts, it was determined that **expanding the comprehensive model of social renovation**, as it was implemented in Overvecht, **is not feasible**. Since the summer of 2024, it is being explored whether a **'light variant'** of the approach could be expanded more broadly in Utrecht. Together with Bo-Ex, this is being specifically examined at the Brederoflats in Kanaleneiland (see [Bo-Ex 'Bredero' buildings](#)). In Overvecht, social renovation has continued unabated during this period, including for renovations other than Strooys by Woonin.

Bo-Ex 'Bredero' buildings

Coordination regarding the application of Social Renovation Light is still ongoing between Bo-Ex and the municipality of Utrecht. Bo-Ex has started and continues to conduct **resident visits (initial assessments)**, in which households are mapped out in terms of **social status** and **technical condition** of the housing. Meetings have also been held with the advisory group. In March 2024, the first meeting of the year was held with the advisory group, during which an outline of the plan was presented, and work agreements were made.

In recent months, the preliminary action phase has also been prepared. During this preliminary action, essential work is carried out to address the most serious complaints.

Target groups

Target group of **Social renovation (Light)** are tenants living in one of the **Woonin (and Bo-Ex) apartment buildings** that are 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 engagement⁵⁷

The Utrecht Living Lab ambition level for citizen engagement is **the first and second level**.

The **ARV activities in WP3** are aimed at **developing, testing and evaluating "social" innovations: #34 Social renovation, #35 Together Developing Skills for Circular Building (former name: Human Capital programme), #36 Energy Coaching and #37 Physical hub**. 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 (#35 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.

⁵⁷ 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.

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. The municipality's city-wide approach in the social domain is shifting from a focus on care to a focus on well-being. **It is being explored whether social renovation could be developed more in collaboration with neighbourhood-focused (well-being) partners and less with (city-wide) care partners.**

Results from a **previous case study** (Portaal) and **control flat** Ibisdreef showed that **several months after the renovation**, compared to control participants, residents of the intervention flat reported **lower scores for mental health, sleep quality, perceived control over their life and perceived ability to solve problems**. However, they also reported **fewer housing-related problems and increased satisfaction with their homes after the renovation**. Additionally, residents in the renovated flat mentioned **increased pride in their homes and increased ability to keep their homes clean**. The renovation thus negatively affected mental health in the short term, but positive health effects can be expected in the long term. **It remains to be seen to what extent the results from the IGLO study at the Strooys (Woonin) will be in line with these previous findings**. The in-depth interviews have shed light on nuanced differences in social renovation approaches across different housing corporations and construction companies, which might also have an impact on residents. Conducting similar evaluations in diverse local contexts will help to distinguish universal from context-specific mechanisms and outcomes, contributing to the further development and large-scale implementation of social renovation. It is recommended to **examine the long-term effects and extend the IGLO research** to investigate the enduring impacts of social renovation.

Next steps

The **collaboration agreements with the social renovation partners** in Overvecht are **being re-evaluated and aligned**. **Options for variations of social renovation are being explored**, specifically at the Bo-Ex Brederoflats in Kanaleneiland (the procurement process has been prepared and will commence in November 2024. Following this, the plan will be further refined with the selected contractor).

The **city's critical assessment of social renovation for potential citywide implementation** is expected to lead to adjustments in the social renovation approach. The renewed collaboration

agreements in Overvecht and the specific situation and possibilities at the Brederoflats (Bo-Ex) provide important input for these adjustments.

The academic research by Utrecht University on social renovation, drawing insights from the outcomes of the previous study on Nigerdreef should be finalised. **The analysis of the post-renovation survey results** should be **finished in December 2024**. A factsheet will be made including results from the pre- and post-renovation survey and in-depth interviews.

In Q1/Q2 2025 **two focus groups may be organized**; one with residents from Strooys (Woonin) and Nigerdreef (Portaal) and one with professionals involved in social renovation.

Based on the research findings, **enhancements should be made 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.

INNOVATION #35 TOGETHER DEVELOPING SKILLS FOR CIRCULAR BUILDINGS (HUMAN CAPITAL PROGRAMME)

The name of this innovation was updated from The Human Capital program to Together developing skills for circular buildings. The goal 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 on 5 April 2023 and 13 June 2023**. The first was aimed to identify required skills for circular retrofitting system (Inside-Out) and second to translate required to education program (Inside-Out).



Image 29 Workshop Inside-Out. Author: Utrecht LL team.

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 enrol 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

The pilot project provided valuable lessons learned and insights to the partners of the consortium "Together developing skills for circular buildings". The results have been embedded in their own human capital and development programs. No further pilot actions are proposed within the framework of the ARV project.

INNOVATION #36 ENERGY COACHING

Social housing tenants were invited to participate in an **energy coaching session** to inform and support energy efficiency behaviour. The goal of this innovation is to **reduce energy poverty**.

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.

Energy coaching for the **Intervam flats** is scheduled to commence upon the completion of the units. Similarly, activities related to the **Bredero flats** will be initiated once a detailed implementation plan and energy provisioning framework are established, which is anticipated to occur approximately six months after the completion of the flats.

Progress in energy coaching between 7/2023 and 10/2024

Energy Coaching by and for Residents: after the renovation of the Stroyenborch and Schooneggendreef flats, Woonin asked SME Advies to develop a training program aimed at the residents of these buildings. The idea was to train a group of residents to become energy coaches. These energy coaches would then help other residents (their neighbours) with energy-saving measures. The underlying thought was that it would be more approachable and comfortable for residents to discuss this topic among themselves rather than with an unfamiliar energy-saving expert.

When the homes were delivered in the spring of 2024, Woonin began **recruiting residents for the training program**. It turned out that while some residents were interested in the topic, they were not particularly keen on the training program or the role of energy coach. As a result, Woonin decided to join existing moments where residents already gather (natural meeting opportunities) and introduce the topic of energy saving during those moments. Again, there was noticeable interest in the theme but not in the role of energy coach.

After consultation with SME, Woonin decided to inform residents one more time about the training program via a letter in early 2025. If there is little to no response, the focus will shift to organizing energy-saving workshops for existing resident groups (at the neighbourhood centre De Dreef or the SVO De Dreef football club).

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

In early 2025, Woonin will send a **final letter to residents** to inform them about the **energy coach training program** and invite participation. If the response is minimal, Woonin will pivot to organizing **energy-saving workshops** for existing resident groups at established community venues, such as neighbourhood centre De Dreef or football club SVO De Dreef. The energy coaching session for the two apartment buildings that are currently renovated will be explored but not yet confirmed, if energy coaching will take place.

INNOVATION #37 PHYSICAL HUB – CIRCULAR PAVILLION

Progress

Panino Fresco opened in September 2022 as a lunch restaurant for the neighbourhood. It is operated by an entrepreneur from the local area and housed in a circular constructed pavilion of containers and re-used material. The circular pavilion is designed by DOOR architects and constructed by Hemubo. They are also contracted by Social Housing Corporation Woonin to renovate their building blocks in Overvecht. The municipality of Utrecht and Woonin cooperated with facilitating the realization of the pavilion at its current location.

In addition to restaurant services **Panino Fresco provides meeting spaces for local initiatives**. In the original plan it was also foreseen that Panino Fresco would serve as the physical hub in the Overvecht district for ARV community engagement activities. It was foreseen that co-creation activities with citizens related to innovations #34 *Social renovation*, #35 *Together developing skills for circular buildings (Human Capital programme)* & #36 *Energy coaching* will take place. However, the implementation of these activities led to the different approach of community engagement activities. **Therefore, the physical hub in the district was not used.**

For #34 Social Renovation and #36 *Energy Coaching* the reason for not using the physical hub in the district is the **personal approach** that was required. Key insights of social renovation and energy coaching is that a personal approach is important and therefore a door-to-door approach, visiting tenants in their own homes, fit better than organising an event at another location. For #35 *Together developing skills for circular buildings (Human Capital programme)*!

Target groups

People living and working in the Overvecht neighbourhood that want to attend a local lunch restaurant. Local welfare organisations that want to organise meetings at a local meeting hub.

Barriers

The specific target group (social housing tenants) of the community engagement innovations require a tailored and personal approach, rather than a more group-based approach. Personal door-to-door visits lead to a larger impact on the target group compared to organising meetings at an external location. In addition, **the scope of innovation is more targeted to personal aspects** (renovation of their dwellings, use of energy in their dwelling) than district wide aspects.

Lessons learned

The involvement of the architect, constructor and housing corporation supported the realization of the lunch restaurant by a local entrepreneur. The place serves as a meeting point for people working and living in the district. However, for incorporating the physical hub as part of a community engagement strategy the focus should be more on district wide renewal innovations rather than more personal dwelling-based approaches.

Next steps

No further next steps are planned within the frame of the ARV project.

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.

The second phase of the project brought on the one hand, a deepening and expansion of some collaborations and activities, but also several challenges, lessons and difficulties. Below we summarise the main findings.

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.

The **interviewed institutional stakeholders** are interested in getting involved in some energy projects, but these aspects are especially important for them:

- Realistic and clearly defined content and goal of the project,
- Economic aspect of the project,
- Information on the time and human capacity of the project,
- The composition of the project participants,
- Intended long-term effect of the project.

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 pupils (9th graders) 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 pupils feel a greater degree of creative autonomy.

The learning moment is that the amount and scope of activities for a new school must be very **well thought out and communicated**. It is possible that it would work better if the ARV team offered only **a limited selection of possible directions** at the outset, agreed in advance with the school management. This would **avoid disappointment by pupils** and could have been used to **secure greater engagement among the teaching staff**. The co-creation activity in the second project phase was built around the invitation from the school, but the organisers could have been even clearer about the aim. For all activities, it is **crucial to explain well how the activity will benefit participants and organisers**.

Two schools are onsite in Voldsløkka, offering the potential to reach out to two communities surrounding the Voldsløkka secondary school and the Oslo Cultural School. There is potential to reach out to the latter.

Palma

The *Es Laboratori* initiative highlights **innovative citizen engagement in energy transition and social rehabilitation**. Progress was achieved through decentralized Living Lab activities like **community meetings, energy data collection, and educational workshops**, emphasizing the value of clear, accessible communication. The project advanced solar panel installations, developed informative videos, and promoted self-consumption and retrofitting among vulnerable communities. However, **challenges such as socioeconomic barriers, low awareness, and political shifts** affected engagement and activity continuity. Key lessons include the **importance of simplicity in information delivery, trust-building, and adaptive outreach strategies**. Future steps aim to complete renovations, expand data collection, and foster energy communities, leveraging tools like VR for visualization and education. Despite hurdles, the initiative underscores the transformative potential of community-centred innovation.

Sønderborg

Engaging citizens has proven to be a challenge. There was a need to link the topic of energy consumption with the concrete interests of citizens to participate in the programmes. There was a need to develop a strategy to activate, motivate and involve citizens and, ideally, entire families. **A progress has been made engagement-wise.** The ARV team organised a successful public event with various energy-related activities that attracted more than 130 visitors. The team also initiated a programme of direct communication with the tenants through home visits that is appreciated by the residents and is very effective in starting a dialogue leading to energy-related topics and behavioural change.

Trento

The Trento One Stop Shop (OSS) for CPCC refurbishment exemplifies a holistic and innovative approach to building renovation, **bridging the gap between demand and supply** by providing comprehensive support throughout the renovation process. The initiatives undertaken, including the Povo demo project and the engagement workshops, highlight the OSS's commitment to integrating innovative, sustainable solutions like the "Renew Wall" retrofit kit and facilitating citizen involvement. Informative sessions and site inspections demonstrated a proactive effort to ensure transparency and collaboration with homeowners and stakeholders, fostering trust and support for the project. The **focus on citizen engagement** through Trento Living Lab further underscores the value of collaborative urban innovation, blending technology-assisted research with co-creation opportunities.

The lessons learned from these initiatives reflect the **importance of clear communication, time-efficient planning, and the inclusion of tangible demonstrations** to foster interest and participation. Despite barriers such as scheduling challenges, limited citizen engagement in some cases, and gaps in connecting with key stakeholders like condominium administrators, the OSS initiatives have been pivotal in raising awareness about sustainable renovation technologies and the OSS model. The next steps involve **deepening engagement** through targeted workshops, matchmaking sessions, and qualitative feedback collection. These efforts aim to strengthen the OSS framework, enhance public understanding of sustainable retrofit technologies, and accelerate the adoption of innovative renovation practices within the Trento community. The **mixed-format events, combining policy-level discussions with practical exhibitions**, provide a robust model

for engaging diverse audiences, from policymakers to residents, and set a foundation for scaling OSS solutions in broader urban contexts.

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. Because of various reasons, it has been decided that **expanding the comprehensive model of social renovation, as implemented in Overvecht, is not feasible**. Since the summer of 2024, efforts have been underway to **explore whether a simplified version of this approach could be more widely applied in Utrecht**.

7. FUTURE UPDATES

This deliverable **will be updated at the end of the project** (third and final edition). The final edition will also include reporting from M35 till the end of the project.

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

- **Summary and reflection** of 3 years of activities by the leaders of all 6 Living Labs.
- Summary of **key barriers** and **lessons learned** across engagement activities with focus on different target groups.
- **Reflection on the reporting and monitoring process** for the Living Labs environment, including the use of logbooks and the format of stakeholder meetings.

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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.

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This deliverable contains information that reflects only the authors' views, and the European Commission/CINEA is not responsible for any use that may be made of the information it contains.

VERSION 1.1 FOR M1 – M18

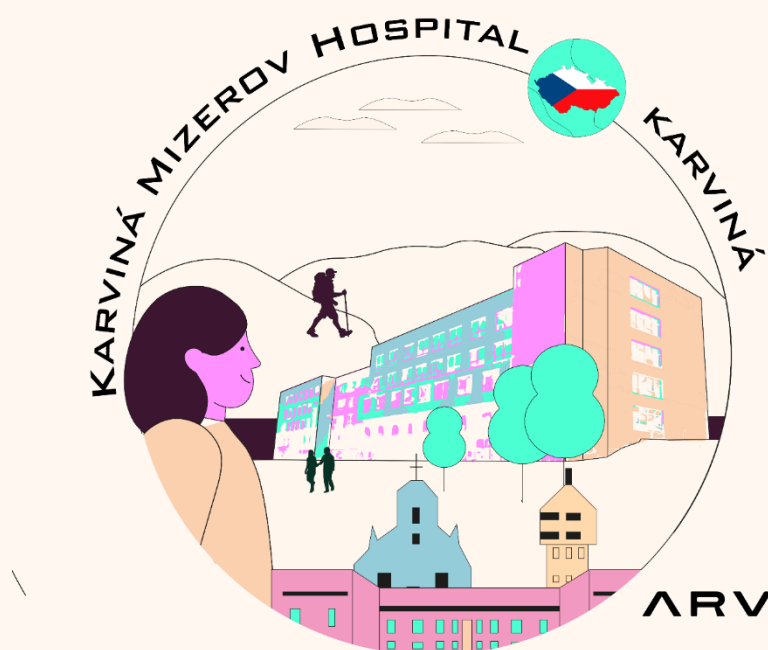
ARV LIVING LAB LOGBOOK FOR KARVINÁ DEMO

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.⁵⁸

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 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.

⁵⁸ Source: http://looperproject.eu/wp-content/uploads/2018/09/LOOPER_D4.2_Framework_for_monitoring_and_evaluation_Living_Labs.pdf, pg. 12

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.

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	9 th Nov 13 th Jan 19 th Apr 21 st Apr 9 th 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 Renovation / 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.

VERSION 1.2 FOR M19 – M34

(updated March 2024)

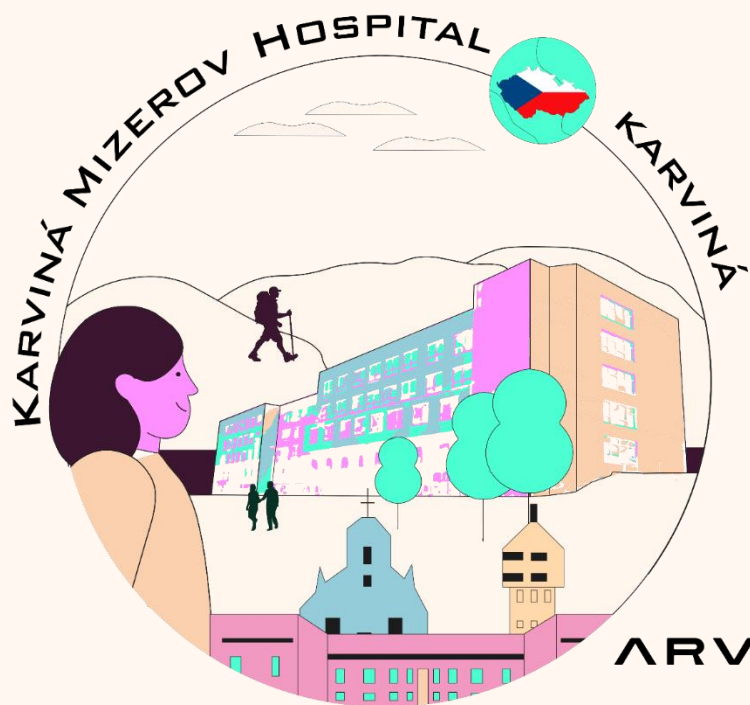
ARV LIVING LAB LOGBOOK FOR KARVINÁ DEMO

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

Authors: CVUT UCEEB, Karviná Demo Representatives

26 March 2024

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,
- the follow-up interviews and
- submitting a deliverable 3.3 CPCC Living Labs reports (LL reports) in months 24, 36 and 48. Deliverable 3.3 was first submitted in M24 and this logbook works towards the next edition in M36.

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. 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

For the D3.3 CPCC LIVING LABS REPORTS (responsible CVUT) the information gathered via the logbooks is crucial. The D3.3 reports aim at evaluating the tools used in citizen engagement activities mainly through

these three dimensions: (1) time and cost intensity, (2) the level of inclusivity (extent of representation) as well as (3) the potential to uncover tacit and hidden needs of citizens and occupants' preferred usage of the building and neighbourhood. The report **outlines the goals of each CPCC LL, the target groups, and overall schedule** of engagement activities and **analyses the barriers** encountered, **lessons learned**, and **next steps** planned for each engagement activity.

Approx. 2 – 3 rounds of interviews a year between the task 3.4 leaders (CVUT) and each demo will be conducted to get more in-depth information about the activities listed in the logbooks and to keep in touch about the reporting process. Find the plan for upcoming months in [the Gantt diagram](#). The meeting minutes from each interview should be found in [your reporting folders](#).

INSTRUCTIONS

The logbook consists of two sections – general information about the LL and continuous record of the LL activities. 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.

It is a **responsibility of each demo to fill** the information in in time. However, it is possible to slightly **adapt the form** according to your demo's needs (please just shortly describe the changes made in the comments). 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.

Important links and resources:

- Your [reporting folder](#) with a NEW photo folder
- [Miro Calendar](#)
- [Gantt Calendar \(with important deadlines\)](#)

- [D3.1](#) PLAN AND OVERALL METHODOLOGY FOR ESTABLISHING CPCC LIVING LABS
- The [D3.3](#) Deliverable (submitted in M24)
- [The table of innovations](#)

What's new for 2024?

- New edition of D3.3 in M36 will overwrite the first one.
- Folders for your **photos or other graphic materials** (e.g. images, logos, graphs, maps, diagrams) created (see instructions below)
- Please **connect each activity with the Innovation ID** (see [The table of innovations](#))
- If you have difficulties filling in the more methodological parts of the logbook, let's figure this out together during the interviews or connect with us directly via e-mail.
- **Level of engagement**: let's try to indicate the level of citizen engagement **for each target group specifically**, see instructions for question 1.5 and 1.6.

Contact persons for LL methodology and Task 3.4:

- Klára Dvořáková (CVUT) klara.dvorakova@cvut.cz
- Soňa Stará (CVUT) sona.stara@cvut.cz

- **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.

- **What type of Living Lab is it?**

Please choose one or more and comment. For more information on the types see D3.1 page 12.

- **What is the Living Lab main theme or topic?**

Shortly describe.

- **What are the main challenges the Living Lab wants to address?**

Shortly describe.

- **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.

- **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.

In a wide sense, a stakeholder is any entity or organisation with different disciplines and with different needs, responsibilities and resources who can affect the development of the project or are affected by the project. In a narrow sense, a stakeholder is an identifiable actor on which the project is dependent for its continued survival.

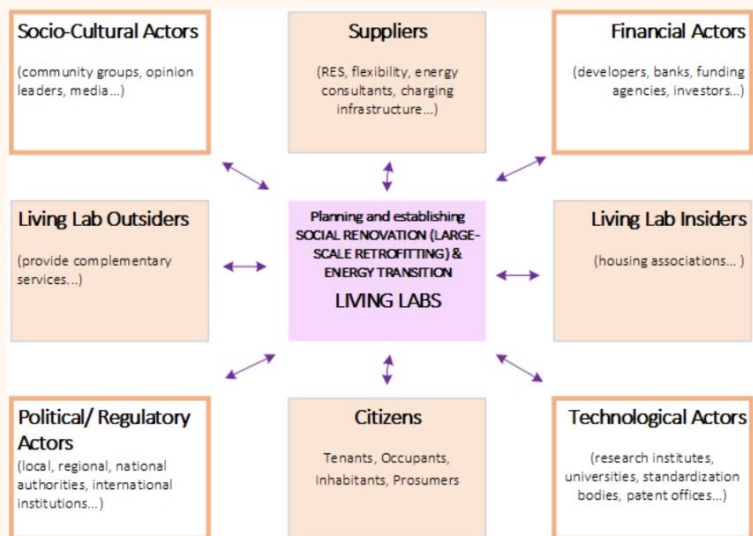


Figure 6. Actor-oriented stakeholder mapping tool to envision the most relevant actors for citizen engagement activities.

Socio-Cultural Actors:

Suppliers:

Financial Actors:

Living Lab Outsiders:

Living Lab Insiders:

Political/Regulatory Actors:

Citizens:

Technological Actors:

- **What is the ambition level for citizen engagement?**

Please see [D3.1](#) pages 14-16. "Citizen engagement comprises a wide range of activities and can be structured according to different levels of engagement, depending on what the purpose is with the planned activities, ranging from merely influencing and informing people, to real participation and actual decision making. (...) Juujarvi and Pessa (2013) have identified three ambition levels in terms of citizen engagement commensurate with the goals of the Living Labs. In **the first level**, the urban context acts as a technology-assisted research environment by collecting as much citizen and user feedback as possible, such as by using different sensors and Internet of Things (IoT) deployments. In **the second level**, citizens are viewed as co-creators who contribute to designing and developing local services and urban artefacts (e.g. circular art, one stop shop solutions). The **third level** entails a new kind of urban planning that uses novel processes and tools that are developed by actively engaging citizens. In this third level of engagement, the aim is to plan procedures and facilitate vision planning, which will lead to increased mutual learning of various stakeholders, including citizens."

Please indicate which level of engagement would you like to achieve through your activities with all your specific target groups. You may pick one or more levels, or you can describe how do you expect target groups to engage through different activities and we will figure out the levels together.

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

- **Write any additional comments and thoughts that describe your LL.**

2. ACTIVITIES OF THE LL

- Were there any specific goals that you tried to achieve in the first year?

Please shortly describe.

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

Please shortly describe.

1. OVERVIEW OF THE ACTIVITIES

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

If you are not comfortable with using this table in the word document, please copy this [table template](#) (in excel) to your reporting folder and use that instead.

Note: If your activity is a part of a larger public event, please try to indicate the approximate number of people attending the event and also the approximate number of people engaged through your activity (e.g. engaged with your stand at a conference).

Identification number (ID) + Innovation 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 Innovations #37 and #38	Series of workshops with students	9 th Nov 13 th Jan 19 th Apr 21 st Apr 9 th Jun	1,5 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

• **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).

- **ID and name of the activity:**
- **Please outline the steps of the whole process of delivering this activity.**
- **What engagement methods did you use? What innovation is this connected with the most?**
- **What were the topics covered/discussed?**
- **Describe the agenda/timeline of the event.**
- **What were the main outcomes and results?**
- **Why did you choose this activity to achieve the defined goal?**
- **Which category did this activity belong to the most?**

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

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

- **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.

- Very time intensive / slightly time intensive / not time intensive
- Very cost intensive / slightly cost intensive / not cost intensive
- **Describe the premises of the event and needed material resources.**
- **List the task force / team of organizers and their roles.**
- **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.

- **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:

- **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?**
- **Was there any feedback from the participants or your project partners? Did you collect any feedback systematically, what methods did you use?**

Shortly describe.

- **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.

- **What are the next steps?**
- **Write any additional notes or comments. (E.g. Was there any media coverage of your activities? Did anything unexpected occur? What had triggered the activity and communication with stakeholders in the first place? ..)**

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 – 1ON1 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
Sønderborg	Anne Branderup	8.3.2023
Palma	Marta Nicolau	13.3.2023
Karviná	Michal Sikora	13.3.2023

APPENDIX C 1ON1 INTERVIEWS IN M26-27

Moderator: **Klára Dvořáková, task leader of T3.4 (CVUT)**

Note taker: **Soňa Stará (CVUT)**

Demo site	Attendees	Date
Trento	Marcello Curci SINTEF representative: Phuc Hong Huynh Evertsen, Caroline Cheng	12.2.2024
Oslo	Ruth Woods SINTEF representative: Lillian Sve Rokseth	8.2.2024

Utrecht	Roel Massink; Joop ten Brink, Martijn Broekman SINTEF representative: Marianne Skaar, Caroline Cheng	15.2.2024
Sønderborg	Anne Branderup; Kristian Holm Jensen SINTEF representative: Anandasivakumar Ekambaram, Caroline Cheng	14.3.2024
Palma	Marta Nicolau Prohens; Mar Saurina Bonet; Antoni Llabres Payeras SINTEF representative: Claudia Trinidad Moscoso Paredes, Lillian Sve Rokseth, Caroline Cheng	22.2.2024
Karviná	Michal Sikora; Klára Starzyczna SINTEF representative: Judith Thomsen, Caroline Cheng	7.2.2024

APPENDIX D 1ON1 INTERVIEWS IN M33

Moderator/note taker: **Klára Dvořáková, task leader of T3.4 (CVUT) and Soňa Stará (CVUT)**

Demo site	Attendees	Date
Trento	Marcello Curci, Roxana Pop SINTEF representative: Lillian Sve Rokseth, Caroline Cheng	17.9.2024
Oslo	Ruth Woods, Daniel Amin Haddadi SINTEF representative: Lillian Sve Rokseth	18.9.2024
Utrecht	Roel Massink; Joop ten Brink, Martijn Broekman SINTEF representative: Anandasivakumar Ekambaram, Caroline Cheng	18.9.2024
Sønderborg	Anne Branderup; Brian Skou Juhler Larsen SINTEF representative: Anandasivakumar Ekambaram, Caroline Cheng	16.9.2024
Palma	Marta Nicolau Prohens; Mar Saurina Bonet SINTEF representative: Claudia Trinidad Moscoso Paredes, Lillian Sve Rokseth, Caroline Cheng	18.9.2024
Karviná	Michal Sikora; Klára Starzyczna SINTEF representative: Caroline Cheng	19.9.2024

PARTNER LOGOS

