ProLight

D4.1 Stakeholders mapping and Activator plan

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[1] PU = Public

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Executive summary

This deliverable addresses the activity with stakeholders and the engagement activity oriented to replication activity within the ProLight project. The Living lab methodology (described in detail in section 2) will be used for the stakeholder mapping and working strategy considering the different demo sites as a living lab. Within this report the WP4 team intends to provide responses to the following questions:

i. Who are the stakeholders involved in each of the living labs/demo districts?
ii. How are the identified stakeholders participate in each of the living labs/demo districts?
iii. What are the stakeholder recruitment and engagement processes in each of the living labs/demo districts?

The **first part of the given document** represents the description of what living labs are and how the ProLight demo districts can be considered as living labs.
The **second part of this document** is focused in the stakeholder mapping and the use of this information in order to select and develop awareness procedures for co-creation and replication of the project demo districts.

Stakeholder Workshops have taken place at all demo districts and purpose as well as outcomes are briefly **summarised in sub-section 4**.

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1. Living labs

1.1. Concept of living lab

Living Lab is a concept to support the processes of user-driven innovative integration systems. One precondition in Living Lab activities is that they are situated in real-world contexts, not constructed on laboratory settings.

Living Lab is an answer to many contemporary trends such as, for instance:

• users' behaviour role changes from passive consumers to active prosumers of content,

• shortened time to market for innovators,

• a globalised market through internet and IT's entrance into every-day activities of people.

A Living Lab has the endeavour to support the innovation process for all involved stakeholders, from manufacturers to end-users with special attention to SMEs, with the addressed users in the centre in their real-world context.

To date there exists no agreed upon definition of the concept. It has been defined as a methodology with related organisations, systems, different arenas, and environmental contexts, as well as/or a systemic innovation approach. Based on our interpretation of the concept as well as our experiences of Living Lab practices, we define Living Labs as a combination including the environment descriptions and the site approach (similar methodologies and innovation accessibilities).

Living labs are open innovation ecosystems in real-life environments using iterative feedback processes throughout a lifecycle approach of innovative actions to create sustainable impact. They focus on co-creation, rapid prototyping and testing as well as scaling-up deployments and businesses, providing (different types of) jointly agreed-values of the involved stakeholders. In this context, living labs operate as intermediaries/orchestrators among citizens, research organisations, companies, and government agencies/levels.

Living labs are **organised** by involving stakeholder groups of the quadruple helix model (as subsequently described) to create **a shared vision, mission and strategic goals** with/for their stakeholders and define multiple different innovation projects existing out of co-creation activities.

In a Living Lab, the aim is to accomplish quadruple helix by harmonising the innovation process among four main stakeholders groups: companies, users, public organisations, and researchers. These stakeholders can benefit from the Living Lab approach in many different ways, for instance companies can get new and innovative ideas, users can get a better understanding of the implication of innovative measures, researchers can get study cases as well as related empirical analysis results and public organisations can get increased return on investment on innovation research.

In the context of a living lab different actors will be considered in order to reach the expected results. The identification of the main actors has been developed considering quadruple helix approach.

Taking into account the quadruple helix, the stakeholders can be grouped considering the following division:

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- **Final users**
- **Private industries**
- **Knowledge transfer institutions (research centres and universities)**
- **Public administration**

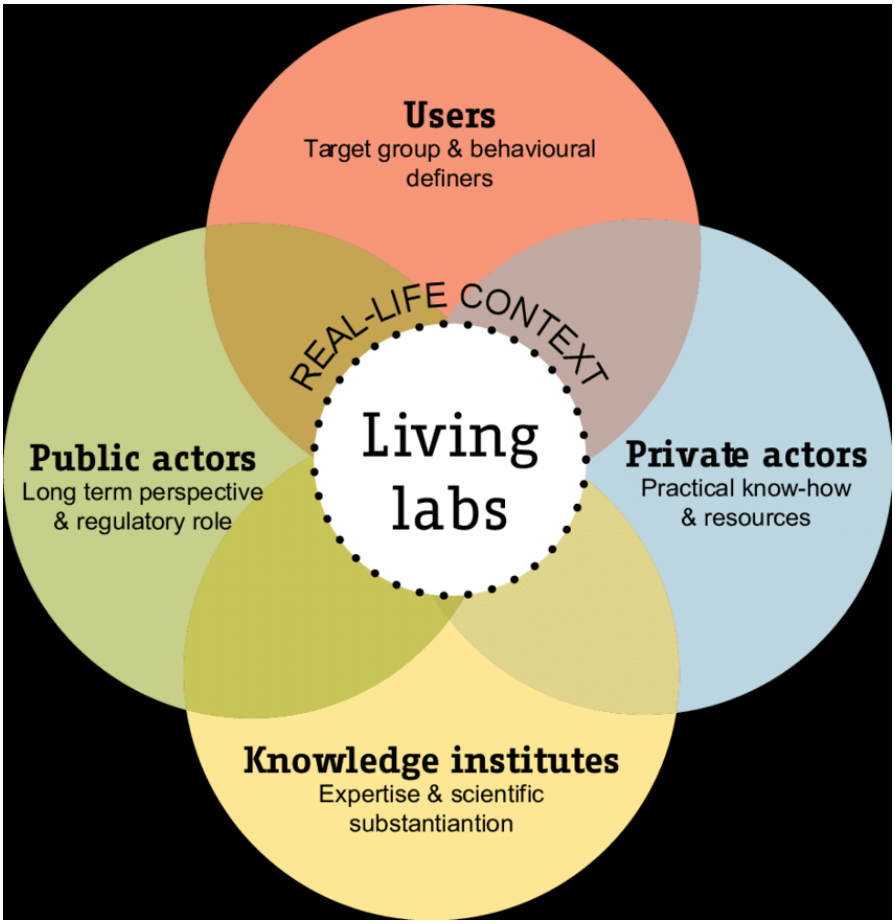

Figure 1 Quadruple helix model in the living lab environment

The Quadruple Helix is an innovation and collaboration model with a citizen/end-user perspective. The model is useful in innovation processes, in which the citizen/end-user needs are in the centre of for example in provided energy and public e-services.
The Quadruple Helix model involves representatives of the society, of public authorities, of the industry, of the academia and of citizens such as:

- **Public actors** that include government and regional development agencies and policy makers.
- **Industry/Private actors** that consists of businesses, like private energy providers and commercial companies as well as business clusters.
- **Academia/knowledge transfer_institutes** that include~~s~~ universities or research & development bodies.
- **Users/Citizens** are the fourth actor group of the Quadruple Helix.

In the ProLight project, citizens in the innovation process are focused ~~i~~n:

- end-users (such as households being and, families living in one of our six demo districts)

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Living labs are based on the quadruple helix model of partnership whereby the government, the industry, the public (users) and academia (knowledge transfer institutes) work together to generate innovative solutions. This ensures the involvement of multiple stakeholders.

The end users will be more likely to accept and use the innovation because the interest of the different actors is transparent, and the solution(s) jointly elaborated. This initiative will yield significant social advantages at a more economical expense as part of the involvement process. It will further enhance citizen empowerment, fostering increased trust in innovators, and encouraging citizens as well as end-users to actively participate in the innovation system.
In the ProLight project, each of the demo district will be considered as a living lab with its own set of actors or and stakeholders.
The latter have already been identified by the involved ProLight partners.

1.2. Living lab as an environment

Living Labs represent applied research, testing and applying the qualitative and quantitative research conducted by the project under real-world conditions. The Living Labs/ demo districts of ProLight will examine how the application of suitable good practices and tools can lead to more people taking up "energy citizenship" and how this contributes to achieving overall climate & energy targets, particularly local and regional level. Related different types of Living Lab environments are:

1. **Research Living Labs** are focusing on performing research on mutual onsite aspects of the innovation process.
2. **Corporate Living Labs** have usually physical places where they invite stakeholders (e.g. citizens and end-users) to co-create innovative solutions.
3. In **organisational Living Labs**, the members of an organization develop co-creatively innovative solutions.
4. **Intermediary Living Labs** invite, different partner organisations to collaboratively brainstorm innovative ideas within neutral arenas.
5. A **time limited Living Lab** has been established as supportive hands of the innovation process e.g. in our project. The Living Lab closes when the project ends.

The segments of a Living Lab example might be hypothetical ICT and Infrastructure services, Management, Partners and Users, Research and Approach. In the centre of this innovation approach is.

- The role that ICT and Infrastructure measures can play to facilitate new ways of cooperating and co-creating new innovation processes among stakeholders in mentioned sectors.
- The Management represents the ownership, organisation, and policy aspects, a Living Lab can be managed by e.g. consultants, companies, municipalities or researchers.
- Partners & Users bring their own specific wealth of knowledge and expertise into the collective, helping to achieve boundary spanning knowledge transfer.
- Research symbolises the collective learning and reflection that take place in the Living Lab. Technological research partners and providers can also provide direct access to research that can benefit the outcome of a technological innovation.
- The approach: represents of the methods and techniques for Living Lab, practices which are necessary for professional and successful Living Lab operations.

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Hence, a Living Lab environment should have a good relationship with, and access to, users willing to be involved in innovation measures and processes. Any Living Lab should also have access to multi-contextual environments, as well as high-end technology and infrastructure that can support both the processes of user involvement and technology development and applied tests. Each Living Lab environment also needs organisation and methodologies suitable for its specific circumstances. Finally, a Living Lab needs access to a diversity of expertise in terms of different partners that can contribute to the current activities. Equally important are the Key Principles of the approaches applied in Living Lab activities.

2. What are the roles of stakeholders in a Living Lab?

This section addresses three important questions about involved stakeholders:

- Who are the stakeholders involved in a living lab within the energy sector of the ProLight demo districts?
- How are the stakeholders identified to participate in living labs?
- What are the stakeholder recruitment and engagement processes in living labs?.

2.1. Stakeholders and their roles in a Living Lab

Considering the different interest and use of the ProLight demo districts, the stakeholders involved in living labs in the energy sector can be distributed in different groups including for example, the following ones: (i) financiers; (ii) public entities; (iii) researchers; (iv) SMEs; (v) large private businesses; (vi) trainees, teachers, and students; (vii) administrative personnel; (viii) users; and (ix) industry experts (see also Table 1).

The prevalent stakeholders are the users, industry experts, researchers and public authorities. Moreover, partnerships between municipalities, universities (or research institutions), and private companies are the main initiators of living lab projects relating to energy (or energy communities).

The role of public entities includes actors such as state-owned energy companies and municipal authorities that represent the regulatory and legal framework of the living lab /demo district and incentivise SMEs to implement pilot projects. The financier plays a role in enabling operations within the living lab by contributing financial resources, the SME actor is represented as the owner of energy technology that is tested in the living lab within private homes and can thus be seen as playing the role of a living lab developer or initiator. Private businesses, also referred to as energy market actors and are seen as technology designers who are also at liberty to request funding from project initiators to develop energy products.

Another stakeholder group identified in energy living labs are industrial experts, such as architects, craftspeople, hardware developers, and suppliers of technology. This group provides industrial inputs about techniques and relevant skills, tests of products and systems in the living lab, assists in research analysis, and participates in brainstorming sessions with users and other stakeholders to come up with solutions to energy problems.

Researchers from research institutions contribute with their scientific and evidence-based knowledge to support decision-making and help realign testing strategies according to the living lab's regulatory

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requirements, objectives, and resources. Researchers are the actors who primarily interact with end-users in the living lab, via before & after interviews of the energy system installations in form of surveys related to users' satisfaction with the system after installation and use. Trainees, teachers and students may assist in data collection processes and partake in vocational training. The administrator is responsible for sending out emails concerning living lab activities and engagements to other stakeholders.
In the following table we summarize the potential classification of the stakeholders in ProLight demo districts (considering them as energy living lab) and the role that these stakeholders can represent in the living lab.

Table 1 Stakeholders and their roles in a living lab

Stakeholder type	**Role**
Industry representatives (technology providers, designers, manufacturers, and entrepreneurs)	- Offer technical support. - Involved in designing, developing, and implementing technology
Researchers (universities/ companies/ research centres)	- Provide methodological support for the living lab processes. - Involved in pre-studies, need finding, developing concepts, and testing innovation before implementation. - Contribute scientific knowledge to support living lab processes. - Provide evidence-based considerations in the decision-making process and adjust the customisation of testing strategies according to regulatory requirements, objectives, and resources of the living lab. - Involved in data collection processes. - Facilitate energy-efficient systemic innovations
Trainees, teachers, and students	- Involved in data collection processes and administering of questionnaires. - Involved in vocational training during living lab activities.
Users (residents, students, households, staff members, the elderly, citizens, building occupants, building managers, homeowners, residents, and staff members)	- Contribute to contextual understanding of living lab by expressing their values, goals and needs regarding a particular situation. - Participate in the design of technology. - Test technology in real-life scenarios and provide feedback for evaluation. - Take part in need-finding surveys and other consumer research studies. - Participate in brainstorming sessions to generate ideas for energy solutions.

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	- Test energy technologies in homes and provide feedback to increase usability.
Financiers	- Fund the development and research of the living lab. - Evaluate the progress of the project.
Public sector authorities (city councils and building managers)	- Provide real-world context by contributing their knowledge and experiences of a problem in a particular area. - Also considered as problem owners. - Provide a legal framework and public support for the living lab. - Improve competence in qualification requirements for grants. - Take part in brainstorming sessions for generating energy solutions. - Support pilot projects initiated by local SMEs in the living lab. - Municipal energy departments are a bridge between local authorities, SMEs, and universities, providing a platform that incentivises living lab methods
Private sector companies and third sector organisations	- Provide a communication platform between users and project initiators. - Involved in project planning, design, and implementation. - Own energy technologies that are tested - May request funding from the project to develop technology as solutions to be tested in the living lab.
Pilot manager and panel manager	- Interact with users and the wider community involved in a living lab. - Provide coordination of real-world experiments and stakeholder engagements. - Recruit users and disseminate information about the living lab.
Project manager	- Identifies and decides which actors can take part in the living lab project. - Oversees research and technological innovations. - Disseminates research results.
Business manager	- Develops business models and is responsible for the commercialisation of products or services.
Industry experts (architects, craftspeople, hardware developers, and engineering consultancies)	- Provide innovative solutions, skills and technical support for the living lab.

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	- Take part in brainstorming sessions to generate ideas for energy solutions. - Involved in testing, implementation, evaluation, and management of systems and products. - Support research projects in the living lab.
Administrative personnel	- Deliver general communication about the living lab and specific stakeholder engagements.

In the case of ProLight project, the stakeholders of the energy community demo districts or energy living labs, commonly referred to as 'participants', are actors such as homeowners, residents, building occupants, and managers, public administration, etc. Their roles were identified during the mapping phase in each of the demo district as technology providers as well as with their participation in the implementation and testing of installed software and energy devices such as smart metres to assess e.g. the performance of the refurbishment or RES generated energy services.
The stakeholders (or end users) in operational energy living labs may serve as informants, contributors/collaborators and testers for evaluating existing energy innovations to increase usability rather than as actual co-creators of tangible solutions.

2.2. How are stakeholders identified to participate in a Living Lab?

Stakeholders can be identified through the **mind-mapping method** or **reverse mind mapping**, done individually or during a group brainstorming session. The mapping of stakeholders is used to generate a list of actors involved in a specific sector (i.e., energy), persons who are considerably affected by a decision or project, or diverse interest groups based on their skills, economic, and political interests, or knowledge.

A visual matrix that clusters stakeholders according to their importance, influence, and capacity during planning or later implementation may also be drawn from the stakeholder list.

In an energy lab context for enabling energy-conscious communities, an in-depth stakeholder analysis claims to be the best method for obtaining a well-represented final list of stakeholders. This simplifies how and when the stakeholders can be involved and helps determine their position or role in the project. The main issues to be considered in the deeper analysis of stakeholders are summarised in Table 2

Table 2 Summary of stakeholder analysis. Questions to be answered.

Stakeholder Group	What are the advantages that the stakeholders may have when they contribute to or are Involved in the Project?	What are the disadvantages that the stakeholders may have when they contribute to or are involved in the Project?	Evaluations of the stakeholders' contribution or position

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2.2.1. Mind mapping method

A Mind Map is an easy way to brainstorm thoughts organically without worrying about order and structure. It allows you to visually structure your ideas to help with analysis and recall.

A Mind Map is a diagram for representing tasks, words, concepts, or items linked to and arranged around a central concept or subject using a non-linear graphical layout (see figure 2) that allows the user to build an intuitive framework around a central concept. A Mind Map can turn a long list of monotonous information into a colourful, memorable and highly organized diagram that works in line with your brain's natural way of doing things.

The Five Essential Characteristics of Mind Mapping are:

1. The main idea, subject or focus is crystallized in a central image.
2. The main themes radiate from the central image as 'branches'.
3. The branches comprise a key image or key word drawn or printed on its associated line.
4. Topics of lesser importance are represented as 'twigs' of the corresponding branch.
5. The branches form an interrelated nodal structure.

Figure 2 Principal scheme of Mind mapping

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2.2.2. Reverse mind mapping method

The four Essential Characteristics of reverse mind mapping mapping (see figure 3) are:

1. Tell me everything. Bring into view all the data, ideas, problems, etc. that are relevant to the project.
2. Categorise and sort the information under headings that emerge from the data itself
3. Sequencing and setting the categories in a meaningful sequence
4. Brainstorming the "big idea" behind and develop the concept that puts everything together

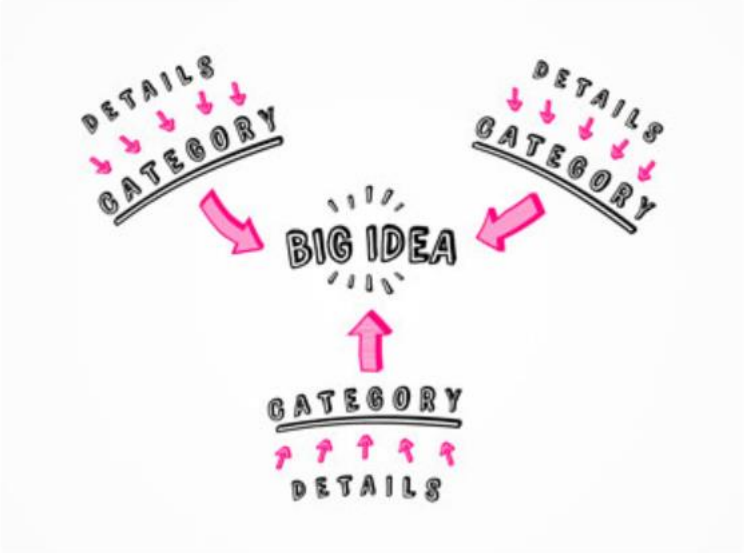

Figure 3 Reverse mind mapping

2.3. What are the stakeholder recruitment and engagement processes.

Literature explaining the recruitment processes of stakeholders and end users involved in a living lab / demo district is limited. Nonetheless, cold-call techniques that involve sending out email newsletters that call for participation, individually contacting potential stakeholders via telephone, and attending subject-related events to engage with relevant persons are activities that can support recruitment processes.

The end users were either recruited voluntarily or invited to test and evaluate technology, subject to their interest in energy solutions. In the case of end users as building occupants seemed not formally recruited but rather participated in the living lab / demo district study because operational changes were occurring within their living space.

In most of the cases, the user recruitment of an energy living lab / demo district was based on a screening process that included households with specific technological infrastructure, permanent residents, and people possessing knowledge about smart energy technologies.

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Researchers, technology developers / providers, and end users mostly engage directly with each other through a series of face-to-face interviews, telephone interviews, user-pool brainstorming workshops, kick-off events, questionnaires, roundtable discussions, and technical workshops.
The latter engagements are utilised as instruments for data collection for researchers and developers to enhance their contextual understanding of users and their needs during the early phases of the living lab / demo district. After the setup and installation phase and during the final technology or system implementation phase, end users can exchange their immediate experiences with the user community, convey problems, and receive solutions from researchers via online discussion forums, instant messenger groups, and regular phone calls.
This encourages ongoing dialogue and cultivates close relationships between users and researchers. Overall, engagements between all participating stakeholders in a living lab/ demo district ensue through regular meetings, occasional technical and codesign workshops, conferences, and focus groups. This is where certain stakeholders present the plans and progress of the living lab/demo district, and the codesign of technological and scientific solutions amongst expert stakeholders and municipal officials occurs.
Keeping stakeholders and end users engaged throughout the living lab/demo district process is one of the obstacles a fruitful collaboration. Some partners either become passive in their participation due to undefined roles and expectations, or the level of commitment decreases, resulting in their absence from certain activities.

3. ProLight living labs demo districts

In previous sections we have principally described Lliving Llab approach as innovation underpinning methodology that consider users as in the focus of related developments.
In this section we examine the ProLight demo districts serving as living lab with specific innovation items. For the stakeholder mapping we have considered the participation of different actors and the involvement of end users in its development.

3.1. Demo district in Viena

Viennese building block comprises of 13 residential buildings.

Location

- Situated in the 17th district of the 2M capital city (see figure 4).
- Viennese building block comprises of 13 residential buildings.
- The quarter in Vienna is already partly renovated and extended by new attic floors.
- Courtyard of the multi-family houses, earth storage tanks consisting of 8 earth probes with a depth of 120 m each.

Vision

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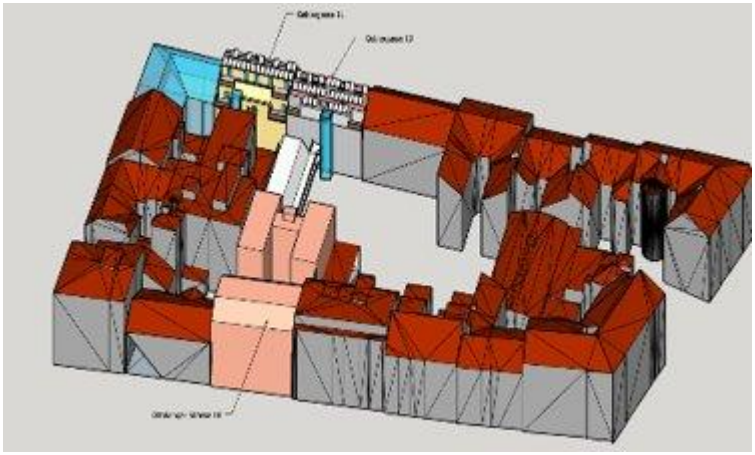

- Intention is to establish so-called Energy Plus quarters in Vienna
- Interconnection with the stand-alone DH of all 13 buildings with different ownerships.
- The refurbishment of this quarter in Vienna shall be replicated in the neighbourhood with nearly similar building stocks in close cooperation with involved municipal departments.

Figure 4 rendering scheme of the demo district

District objectives

- Utilising various solar technologies during the summertime to be stored for heating purposes in the earth for the cold season.
- Using ground water heat pumps at locations where drilling of earth probes is possible and affordable.
- Awarded with several public prices it is intended to increase the visibility of the district.

Bringing in…

- Innovative technologies integrating solar production, geothermal application and HVAC for a sustainable user comfort.
- Participatory processes e.g. via the End-Users Advisory and Interest Group (EAIG) already setup by the house and apartment owners accompanied by external stakeholders
- Analysing measured results due to the use of monitoring equipment.
- Awareness creation in the frame of local ProLight dissemination and communication activities

Some pictures of the site

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3.2. Demo district in Vaasa

Location

The Vaasa demo district incorporates modern solutions for energy management regarding highly energy efficient eco-building construction (>30%), integrating Renewable energy, implementing Living Lab and a related application.

City Of Vaasa, Finland

Ahvenranta student village

The start of construction has been postponed several times because of complaints about the city plan change

Will be replaced by **option 1: Wolffintie24** – Small scale pilot site with 21 apartments (~29m²) or **option 2: Palosaarentie 58** – Middle scale pilot site with 66 apartments. Both are constructed with Energy class A

If the requested Contract amendment will be approved by the EC.

Vision

- Vaasa Student Housing Foundations (VOAS) mission is to enable living of students that leaves them good memories
- The Foundation works closely together with the Vaasa Energy Business Innovation Centre (VEBIC) and Development Centre of Finland (ARA)
- The main goal is to replace a whole block of student residences with a new energy efficiency housing concept which will use renewable energy as much as possible
- VOAS will develop an Living App application that allows students to get information about the environmental impact of their housing and living

District objectives

- Due the complaints about the city plan changes of Ahvenranta Student Village, we will test energy efficiency solutions and LivingApp in a small pilot site at first
- **New buildings: Wolffintie 24 in ProLight**: Energy efficiency class A, solar panels, geothermal heat, room sensors, motion detectors, water saving solutions, etc. **Palosaarentie 58 in ProLight:** Energy class A, Ground heating or District heating (from high efficiency waste plant and waste heat recovery unit), Room sensors. The house utilizes eco-friendly solutions, e.g. solar panels or green roof. The house is a part of a student housing block. Related contract amendments are requested to the EC.
- **LivingApp**: Energy and water consumption data, recycling rate, support and instructions for environmentally friendly living within the students' premises.

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Bringing in…

- With the cooperation we find the best solutions for the students' premises
- The data and experiences from pilot building (Wolffintie 24, Palosaarentie 58) can be used on a larger scale in future construction projects and also for refurbishments of existing buildings
- With the mobile application we may influence on consumer behaviour, which will result into energy saving and more environmentally friendly living in each building

Some pictures of the site plans and rendering:

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3.3. Demo district in Kozani

Greek public residential buildings have been donated by the State to the poorer people. These houses were constructed with the lowest specifications of Energy Efficiency, which results into higher needs for electricity and heat to be overcome in future.

Location

- Kozani, Western Macedonia, Greece
- 25.000 total dwellings
- The city hosts approximately 500 dwellings that have been donated by the State to the lower income population.

Vision

- Intention of CluBE is to accurately design & implement:
  - energy efficiency solutions
  - smart net metering

  for residential buildings that have been donated by the Greek State to population with lower income in the City of Kozani.
- The city of Kozani will install **6 MWp of Solar power** over the coming period through an **Energy Community**, which will cover the needs of the municipal public buildings.
- The Municipality examines the possibility of developing another PV Park to **"net-meter"** the PV energy to the most vulnerable population.

District objectives

- Renovating **a selected dwelling** by improving their thermal insulation (to reduce the consumption in the first place).
- Installing sensors & smart devices to measure & adapt behavioural patterns.
- Installing the solar thermal equipment.
- Criteria of selection will be the **social** and **economic** status of the residents as well as the **energy features of the residence.**

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Bringing in…

- **Motivation** for public institutions to undergo a major refurbishment project for all these apartments & for the envisaged **city's climate neutrality.**
- **Social Innovation and Financial Engineering,** as the Municipality will test & examine the technical solutions & the implementation, in order to then scale up to the rest of the population living in the social apartments. In parallel, Kozani will discuss with financial institutions the potential of a **massive refurbishment mixed funding scheme**.

Some pictures of the site

3.4. Demo district in Gernika

Gernika Tokiko Energia Komunitateak (TEK), meaning Local Energy Community is situated in Basque, in a Biosphere Reserve is part of a municipality of Biscay (Basque Country) belonging to Busturialdea's district.

Location

- Gernika TEK is located in Gernika-Lumo, a town in the province of Biscay, in the Autonomous Community of the Basque Country, Spain.
- The particularity of Gernika-Lumo is that it is located within the Urdaibai Biosphere Reserve, a natural area of great beauty and diversity, which is why it was listed by UNESCO as a Biosphere Reserve in 1984.

Vision and District objectives

The City Council of Gernika-Lumo has developed an energy diagnosis and its corresponding Greenhouse Gas Emission inventory to achieve the goals of the Euskadi Climate Change Strategy 2050. The recommended actions in this regard are:

- Continue applying energy efficiency measures in its own facilities: Installation of photovoltaic panels.

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- Promote the implementation of energy efficiency measures in the municipality, through extended local financial and informal support and accompaniment for citizens in their implementation.
- Continue promoting the implementation of renewable energies in the municipality, by supporting and accompanying citizens in the process.
- Study the possibility of applying more ambitious economic incentive systems than the current ones, for the application of energy efficiency measures and renewable energies in the municipality. Using environmental taxation is might be a suitable tool to support this objective.
- Monitor the consumption of the municipal energy generation facilities and promote the incorporation of management and control systems for the facilities.
- Promote through planning the generation with renewable sources in public spaces (canopies with solar panels, cogeneration micro-stations, spaces for biomass storage, etc.)
- Local awareness campaigns to promote the reduction of energy demand
- Emissions inventory: The municipal buildings are the area that causes the most Greenhouse Gas emissions in the Gernika-Lumo City Council (65%, 853tCO2 eq), thus being considered the area where the focus should be placed when acting in terms of mitigation to climate change. Public lighting accounts for 32.74% of emissions and the vehicle fleet 2.24%.
- Emissions reduction potential: Assuming the start-up of the measures included in the energy diagnosis recommendations, an emission reduction potential has been estimated. Public lighting has the greatest potential for reducing emissions among the areas studied in Gernika-Lumo. The necessary measures to reduce emissions could generate a 60% reduction, avoiding the emission of 257.73 tCO2 eq
- Assuming the implementation of the measures included in the energy diagnosis recommendations, the potential reduction in total energy consumption is estimated to reach 38%. If these reductions are achieved, the City Council would comply with the consumption reduction obligations established for the 2030 horizon in Basque Law 4/2019 on Energy Sustainability
- Gernika TEK will use the local energy community at the Colegio San Fidel and other municipal buildings as a case of good practice, which entails the creation of the first solar energy community in the Busturialdea and Lea Artibai area.
- To do this, the educational center plans to install a total of 200 solar panels on its roof, which will allow renewable energy to be supplied not only to the school, but also to the infrastructure around the school: 150 homes, shops as well as public buildings such as Casa Cultura de Gernika

Implementation

The so-called Tokiko Energia Komunitateak (TEK) in Gernika will allow users who choose to 'hook up' to the installation, reduce their environmental footprint and save on electricity bills.

- Gernika-TEK differentiates 4 types of public and private beneficiaries:

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1. Colegio San Fidel: Owner of the facility and direct beneficiary of energy savings.
2. Municipal building and direct beneficiary of energy savings
3. Homes for private use
4. Businesses for public and private use

- The implementation of the project will specifically contribute to avoiding the emission of 885 tons of CO2 per year, which is equivalent to planting 3,500 trees that absorb carbon dioxide emissions for 25 years.
- Gernika TEK will have a "living lab" character. It will not be just a matter of placing some photovoltaic modules on the roof. It is a project with an evolution of 25 years, in which its environmental, cultural and economic benefits will be verified and analysed.

Bringing in…

- 1 **educational centre** with about 150 homes & businesses. App. 770 Occupants
- **Integrated Renovation Status**: Installation of 200 solar panels with a capacity of 90kWp.
- **Livability**: Gernika TEK is a cooperative to supply above mentioned assigned customers. Via solar panels 20 - 25% of the electricity consumption will be covered in connected households and offices. An amount that is deducted from the bill w/o additional fees being fully autonomous.
- **Technological Advancement**: The Gernika TEK installation is monitored for the time being. In this way the students will be able to check how much energy is produced & consumed.
- **Social Innovation/Business Models**: Basque Country is a very active member of this new initiative in which three Basque entities have been selected by the European Commission as an official partner of the New European Bauhaus. GAIA, is working very closely with them & coordinates the deployment of the BDCC (Basque District of Culture & Creativity).

Some pictures of the site

3.5. Demo district in Rovereto

The pilot location is set in the so-called Ex-Marangoni area. The property has an area of 4,300 m2, and it is situated within a larger 18,100 m² lot called the Ex Marangoni Meccanica that hosts various functions: commercial, residential and services.

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Location

- The property is located in the southern part of Rovereto.
- The social housing units are including two buildings, with five/ nine floors and 68 apartments.
- The buildings are a part of a sustainable regeneration project of an industrial area that was previously occupied by Marangoni Meccanica.
- The structure was realised using 100% felled timber from the 2018 storm that hit the surrounding region.

Vision

- Impowering residents with dedicated digital services in the energy domain
- Reducing the energy consumption at final use
- Facilitate the engagement of residents and the sense of belongings to the communal district

District objectives

- Spreading energy literacy to vulnerable beneficiaries and rationalise the use of energy
- Engagement: by fostering active participation in project experiments
- Generate understandings by making complex issues simple and understandable for targets of affordable social housing
- Social challenge #1: to overcome the reluctance to use digital tools among residents of social housing districts
- Social challenge #2: Turning individual needs such as energy savings to collaborative practices

Community profile

Nº APPARTMENTS	68
Nº RESIDENT	142
% SINGLE	31
% COUPLE	14
% FAMILIES (from 3 to 7 person)	23
AVERAGE AGE	45 years

Residents gained access to social housing through a call for applications issued by the autonomous province of Trento. Requirements included an income level below a certain threshold to address the vulnerable population.

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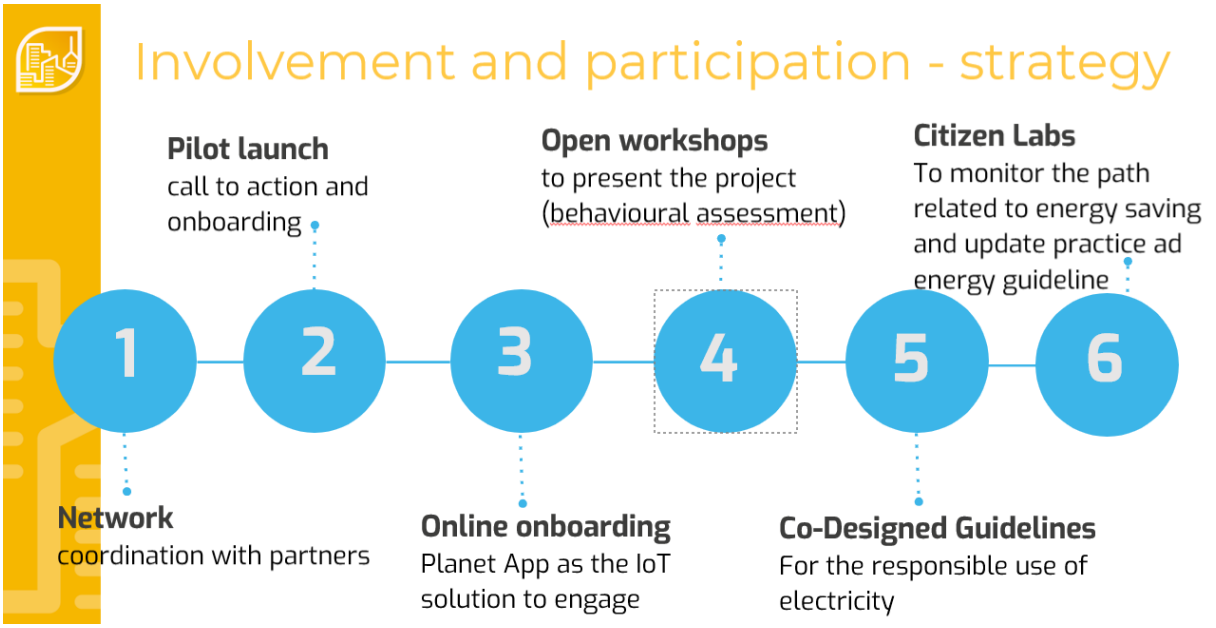
Various sizes of different sizes are available, from 55-sqm small apartments to larger 130-sqm dwellings to accommodate smaller and larger families, with rents ranging from €310 to €760/month.



Preliminary Analysis of Social Actors in the demo districts

NAME	TYPE	FOCUS
Coop Smart Onlus – Rovereto	Non-profit	- participatory regeneration actions; - temporary reuse projects; - promotion of active citizenship
Cooperativa Il Girasole - Rovereto	Non-profit	Carpentry workshop with recycled materials involving vulnerable people
Fa La Cosa Giusta - Trento	Initiatives for critical consumption and sustainable behaviors	Online platform, with quality information, workshop proposals and map of solidarity economy protagonists; a traveling office and a series of events throughout the year
Cooperativa Sociale Samuele – Trento	Non-profit	Handicraft workshops with vulnerable people: leather work, handicrafts, recycled materials, social farming workshops
Cooperativa Laboratorio Sociale	Non-profit	Workshops for people with disabilities: carpentry, weaving, bookbinding, accessory making with a focus on reuse and sustainable materials
APPA Trento	Provincial environmental protection agency	Educational and teaching proposals for children on environmental and sustainability education
UNITRENTO SOSTENIBILE - Trento	College Association	Sustainability policies and actions to be implemented within the university

Bringing in…

- Dedicated feature via a mobile APP with information about energy consumptions, costs and (possibly) carbon intensity.
- Energy management system to rationalise the use of energy.

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- Community Managers skills to create a community focused (also) on energy related issues: the living lab format.
- Measurement and impact assessment.

Some pictures of the site

3.6. Demo district in Bairro de Carcavelos

Collaborating closely with the municipality of Matosinhos to understand the status of the works in Chouso and the PED creation, in which Carcavelos is included. Collaboration with the local social housing managing entity (Matosinhos Habit) to ease the process of social engagement to the targeted population.

Location

The Carcavelos Social Housing district was built in 1984 in the Municipality of Matosinhos -PT. It includes a total of 2 blocks accounting for a total of 278 dwellings (690 residents), in a living area of over 24 000 m^2. Buildings are used for residential and commercial purposes. The district was fully renovated in 2021, in an investiment of over 4M€.

- 690 residents
- 55% female / 45% male
- 35% couples or single-person families with no children and > 50 years
- 40% families with children (half are single parents).
- 52% of the residents are unemployed, on sick leave, full-time housekeepers, or pensioners (30% + 22%).
- 47% are employed or studying.

Community profile

Nº APARTMENTS	278

The project leading to this application has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101079902.

Nº RESIDENT	690
BUILDING PURPOSE	Mixed (residential and commercial)

Vision

The Carcavelos neighbouhood already has energy efficiency measures in place due to deep renovation works in 2021. This neighborhood is located in the city center and is constituted by a mix of building's typology that includes commercial and residential purposes. The intention is to take advantage of the extensive rooftop areas available and disseminate renewable energy communities in the city social housing districts, in which a 4.9 MWp PV potential was identified. This action complements energy efficiency. Alongside, activities with citizens will be deployed to transform socially deprived areas into an empowered and inclusive population.

The refurbishment solutions implemented in this neighbourhood are currently being replicated in several other ones and the best practices and experience of REC creation shall be disseminated across other similar neighbourhoods.

District objectives

Technological advancement:

- The project will contemplate the development of short-, medium-, and long-term plans for creating a Renewable Energy Community to supply the electricity needs and to integrate several renewable production assets and e-mobility solutions into a Positive Energy District (PED).
- Non-intrusive load monitoring devices will be used to exploit demand response solutions.
- Electric energy storage as well as electric mobility integration options will be assessed.

Increasing the livability of residents:

Cost reduction from more efficient energy solutions and self-consumption result in better comfort and financial availability. Also, the social innovation created by the participation in a REC will foster the sense of belonging, mitigating social segregation.**Social innovation**:

This intervention will help to raise awareness and promote individual and collective behavioral change.

Bringing in…

- Integrated approach combining energy efficiency and PV energy generation: inclusion of vulnerable consumers in the energy transition.
- Engagement activities to be setup between the project team, residents, and local entities.
- Demand response exploitation in a poorly addressed social context.

Some pictures of the site

The project leading to this application has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101079902.

4. Co-creation stakeholders workshops

As part of the activity of the project different workshops will be carried out within each of the demo site. The information regarding the workshops will be included in the deliverable as part of the activator plan.

4.1. Co-creation workshop in Viena

ProLight – EAIG co-creation workshop on issues concerning the Geblergasse demo district on 13.10.2023:

Participant list:
Wieland Moser (TB Käferhaus)
Johannes Zeininger (Zeininger Architekten)
Josef Zeininger (Zeininger Architekten)
Momir Tabakovic (FHTW, ProLight Projektkoordinator)

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Michael Heidenreich (FHTW, wissenschaftlicher Co-Koordinator in ProLight)
David Sengl (FHTW, wissenschaftlicher MA für Monitoring in ProLight)
Conrad Wolf (Beyon.Carbonenergy (BCE))

Some remarks during the introduction round
- Research group AnergieUrban[3] focusing on:
    - o Geothermal 2.0 - urban scale review.
    - o In the 16th district, potentials of decentralised anergy grids in 36 building blocks are
    - o The focus is on (partial) self-supply of parcels
    - o In the 14th district, perimeter houses from the post-war period have been investigated - there is a hypothesis that (partial) self-supply involving public space is also possible in very densely populated cities.
    - o AnergieUrban studies: ÖGUT - Gerhard, Karlasek (TU), Götzl (Bundesanstalt für Geologie) --> project results are available on the ÖGUT website[4]

- CHP in Vienna has the disadvantage --> too high heat production in summer, too high electricity production in winter --> optimisation through adsorption/absorption cooling or decentralised anergy networks
- Site visit of Geblergasse by visitors accompanying the Minister of Economics of Lower Saxony on 26-09-23
o Suggestions of the German delegation - the current building code is geared towards new construction, but according to the President of the Chamber of Architects, a renewal code is needed.
o The federal state of Lower Saxony intends to draft its own renewal regulations.

Comments of the audience during the ProLight status quo presentation
- Recommendation: Regulatory framework conditions are important and should be considered in the project and recommendations given by the stakeholders published:
    - o Draw up proposals for changes to the regulations.
    - o Regulations should be uniform in the EU -> tightening is possible in individual countries.
    - o Suggestions for extended public advertisement: Show, which public relations measures have already been taken by the project partners? Note projects initiated by the Viennese demo district on posters or leaflets that underline the potential of replicability.

From FHTW relevant presentations and project documents to be sent to the meeting participants
- Provide questionnaires by email to meeting participants to fill them in.

Regular EAIG Meeting frequency
- As needed every 4-5 months
- Next meeting will probably take place in February 2024

Discussed benefits of project results for the meeting participants
- Performance optimisation of the device operation via recommendations derived from monitoring analysis results
- Receiving insights for applying for new projects

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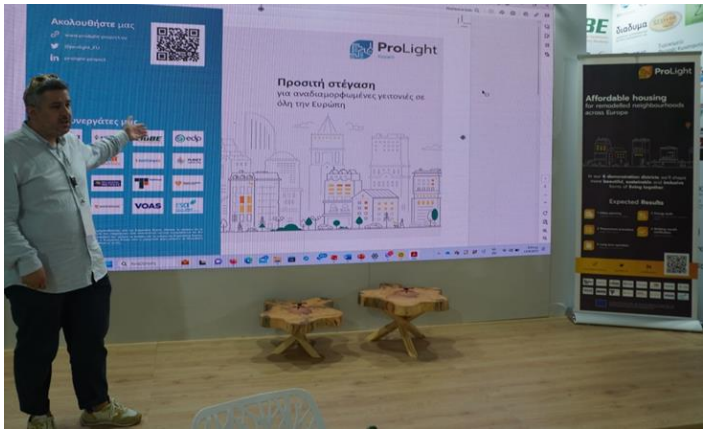
4.2. Co-creation workshop in Vaasa

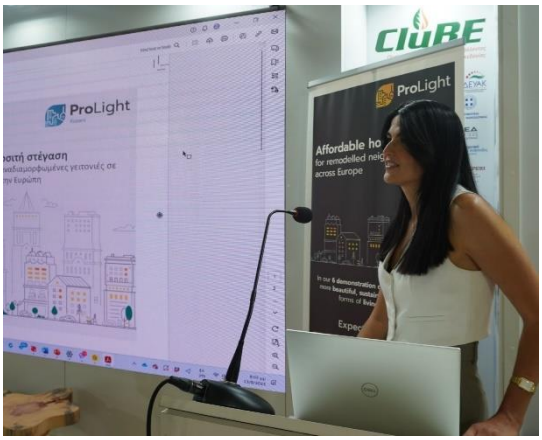
Will be performed by the Finnish team at a later stage in the project and will be part of our progress reporting of WP1.

ProLight stakeholder organizations are in contact, and resident co-creation is waiting for the constructions of the new student smart house to start and proceed. VOAS is experienced in arranging possibilities for residents to be heard and co-creating activities. The requirement comes from Act on joint management in rental houses which gives residents of state-subsidised housing opportunities to influence and decision-making power, and in addition social events are being organized. VOAS has launched based on the needs and ideation new services that create value to the student residents. We aim at following the agenda that Gernika presented as their workshop structure. We also aim at highlighting the student residents' active role. Most of them are university students in their twenties, who can share their ideas and innovate for better living and environment.

4.3. Co-creation workshop in Kozani

On the 13th of September, CluBE has organised a session dedicated to the ProLight project at the 87th Thessaloniki's International Fair (TIF Helexpo 2023), the Greek pilot has been presented among energy experts from the Technical Chamber of Greece. The discussion followed has been related to affordable housing solutions regarding energy consumption and the scalability of our project to an aggregated district level regarding the city of Kozani.
Future engagement/ co-creation activities are intended to take place at a later stage in the project and will be part of our progress reporting of WP1.





4.4. Co-creation workshop in Gernika

Gernika co-creation workshop was held in September (20-21 September) with the participation of different entities/stakeholders.

The purpose of the workshop was focused on the followed aspects:

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- **Presentation of ProLight project (performed activities).**
- **Dissemination and awareness of the project**
- **Identification of needs and potential next steps to be implemented in the demo site**
- **Cooperation with other projects and initiatives at regional level. Opengela project**

Participants in the workshop:

The participants in the workshop were mainly Public administration, Industry and Final users:

Ayto. Gernika. Public administration. Public actor	Cristina Arana
EDINOR. Private actor	José Etxebarria
SAN FIDEL IKASTOLA	Itxaso Garteizaurrekoa
GV (Basque Goverment). Public administration. Public actor	Ignacio de la Puerta (Project coordinator), Jon Asúa, Nerea Guezuraga
EVE. Public administration. Public actor	Jose Ramon Lopez, Sagrario Eneriz, Leonor Prieto
Eraikune. Industry, cluster. Private actor	Noelia Ortiz, Ana Ortega
UPV/EHU. Akademia. Knowledge institue	Olatz Grijalbo, Nagore Urrutia, Rufino Javier Hernández
VVMM. Public administration. Public actor	Txari Vallejo, Lander Irazoqui
GNE. Private actor	Eduard Puig, Alvaro Salamanca, Borja Gumuzio, Margarita Tomás, Paula Ferrando, Valentina Cabal
GAIA. Industry, cluster. Private actor	Begoña Benito, Itziar Vidorreta, Jokin Garatea
Fundacion EDE. Public actor	Itziar Fernandez, Alex Carrascosa, Sagrario Iturrate (in-house consultant)
Ciclica. . Private actor	Ander Bilbao, Joaquim Arcas, Anaïs Bas
Aclima. Industry, cluster. Private actor	Olga Martín, Juan Antonio Gascón
G6. . Private actor	Eduardo Ortiz de Arri, Andoni Hidalgo (in-house consultant), Iñaki de Urbieta, Patricia Burgo, Alba Díaz de Sarralde
FEDARENE. . Private actor	Marta Lupattelli, Elodie Bossio, Clemence Pricken
GBCe. . Private actor	Raquel Diez, Dolores Huerta, Alicia de la Fuente, Alicia Ruiz
ZABALA. . Private actor	Julen Ugalde, Isbaal Ramos

The workshop was divided into two parts: initial meeting/discussion were the ProLight project was presented, and all the participants were invited to share experiences and to identify needs and potential next steps or activities to be carried out. During this session some initiatives/project were presented and cooperation possibilities were identified.

Second part of the workshop was oriented to the communication with the final users. Visit to some neighbourhoods related to the Gernika demo district.

Regarding the next steps, Gernika demo district intent to work on the following:

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- To reduce the energetic poverty risk.
- To create energetic neutral balance communities, friendly neighbourhoods, and universal accessibility scale up from dwellings to neighbourhood scale.
- To improve the quality of life.
- To ease proximity resources (0 km). Their feasibility was demonstrated during the Covid-19 lockdown. It may be restricted to neighbourhood scale.
- "Ad hoc" training and education.
- New processes and developments are needed, even a new market, to implement the CAV Urban Agenda (to neighbourhood scale).
- Digitalization integration is critical to accomplish all this plan electrification, cybersecurity, digital literacy of the population.

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4.5. Co-creation workshop in Rovereto

Not applicable yet.

4.6. Co-creation workshop in Bairro do Carcavelos

The first co-creation workshop in Bairro do Carcavelos will be held in the first trimester of 2024 when the renewable energy community is expected to be presented to the residents. Meanwhile, residents were already introduced to ProLight through letters informing about the project.

ProLight

Caro(a) Morador(a),

Como residente do **Conjunto Habitacional de Carcavelos**, damos-lhe a conhecer o projeto europeu **ProLight** que conta com a participação da Agência de Energia do Porto (AdEPorto) e da NEW, e apoio da Câmara Municipal de Matosinhos e da MatosinhosHabit EM.

Este projeto tem como principal objetivo desenvolver soluções de baixo carbono em edifícios municipais e de habitação com vista à **melhoria da qualidade de vida dos residentes através da consciencialização, alteração de comportamentos e integração de renováveis**.

Enquanto parceiros do projeto, a AdEPorto e a NEW, acompanhados pela MatosinhosHabit, irão nos próximos meses desenvolver algumas atividades onde se inclui a realização de inquéritos e a instalação de equipamentos de monitorização.

A MatosinhosHabit apoiará no esclarecimento de dúvidas, sobre o projeto, e participação nas diferentes iniciativas.

Neste contexto, gostaríamos de o(a) convidar a saber mais sobre o projeto e a colaborar connosco, respondendo a um questionário que visa a caracterização das condições energéticas e de habitabilidade, assim como conhecimentos acerca do tema "Energia e Sustentabilidade".

Adicionalmente, estamos a identificar agregados familiares que demonstrem interesse em monitorizar os consumos elétricos nas suas habitações e receber aconselhamento sobre como alterar padrões de consumo e assim poupar energia.

A ADESÃO AO PROJETO É VOLUNTÁRIA E SEM QUALQUER CUSTO!

AdEPORTO · NEW · MATOSINHOS HABIT · matosinhos

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Perguntas frequentes

Quanto tempo demora o preenchimento do inquérito e como vai ser realizado?
A resposta ao inquérito demora cerca de 15 minutos e será realizado presencialmente. Caso queira colaborar connosco, um colega da nossa equipa deslocar-se-á à sua habitação em dia e hora a combinar.

Quem vai aceder aos meus dados?
Apenas a equipa do projeto terá acesso à informação recolhida, comprometendo-se a tratá-la de forma confidencial.

Quanto tempo demora a instalação?
A instalação dos equipamentos demora entre 10 a 15 minutos e poderá decorrer ao mesmo tempo que o inquérito é realizado.

Uma equipa técnica deslocar-se-á à sua habitação para a instalação. As visitas serão articuladas entre a equipa técnica e residentes, com o apoio da empresa MatosinhosHabit.

Se eu estiver interessado em monitorizar consumos, que equipamentos serão instalados em minha casa?
Caso esteja interessado em monitorizar os seus consumos, serão instalados medidores de consumo da energia elétrica. Estes equipamentos permitem caracterizar as necessidades e padrões de consumo das habitações.

Onde serão instalados os equipamentos?
Para a medição do consumo de energia elétrica, será instalada uma pinça no quadro elétrico e tomadas inteligentes em equipamentos elétricos identificados como sendo de interesse, por exemplo, máquinas de lavar, termoacumulador, etc.

Estes equipamentos não representam consumos energéticos para si mas terão de estar ligados a rede Wi-Fi. Caso não disponha de Wi-Fi na sua habitação, a equipa do projeto irá disponibilizar um equipamento para esse efeito.

OS EQUIPAMENTOS INSTALADOS SÃO PROPRIEDADE DA EQUIPA DO PROJETO. NÃO REPRESENTAM QUAISQUER CUSTOS PARA OS RESIDENTES E NÃO AFETAM OS CONSUMOS DE ENERGIA NAS HABITAÇÕES.

Dúvidas? Nós ajudamos!
Para qualquer dúvida, contacte diretamente a equipa do projeto recorrendo ao email info@adeporto.eu ou ao telefone 222 012 893

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5. ProLight mapping tool.

The objectives of WP4 awareness creation towards replication are focused in the following aspects:

- Drawing up of an efficient replication strategy via target oriented promotion measures
- Establishment of active local crystal points to spread small scale replication experiences
- Implementing targeted capacity building activities to allow regular knowledge exchange
- Engaging market players & citizens to promote local replication strategies and actions
- Implement dedicated networking communities in the project to share knowledge, approaches, learnings & project results

The project leading to this application has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101079902.

The objective of ProLight mapping tool is to identify the stakeholders related to each of the demo districts in order to prepare awareness and engagement processes among these stakeholders considering their needs, their role and demo site availabilities.
For the mapping of the stakeholders different aspects have been considered taking into account that the identification of the level of involvement of the stakeholder will provide inputs to the WP4 awareness campaign.

5.1. Who are stakeholders?

Stakeholders are persons, groups, or institutions with involvement in, interests in, or in-depth knowledge of the actions and context. They may include:

1) Those who directly influence the success of the project
2) Those who are affected by the project

5.2. Objective of task 4.1

The goal of the WP4 team is to identify stakeholders both globally and in-country (demo district). The objective is to engage stakeholders in the early phase of concept development and throughout the research, design and implementation processes. Early stakeholder involvement can help to make feasibility studies more relevant to a particular country or region, thereby increasing the likelihood of innovative actions and a scaling up. Also, if site tests demonstrate positive results, the stakeholders are better prepared to support utilisation of findings and/or scale up of the interventions in the neighbourhood. The engagement of the stakeholders will facilitate the capacity building processes and the scalability of demo district results.

5.3. Questions to map relevant stakeholders

Below are several questions to consider while communicating with stakeholders to determine their interest in the project, formulate stakeholder roles, conceptualise strategies for engaging stakeholders and obtaining support, and identify perhaps additional stakeholders needed to achieve the project targets. These questions are not designed to be asked in an interview format. Rather, these questions can help guiding the thinking of the WP4 team to properly speak to key informants and complete the stakeholder analysis.

- Is the stakeholder well-informed about the demo district topics and issues? How much influence does the stakeholder have in this area and regarding implementation?
- Has the stakeholder actively and/or publicly demonstrated already reference projects to the issues above?
- How might the stakeholder(s) benefit from supporting research/demo site objectives? Does the issue being investigated, or intervention being tested in this demo district posing any risks for the stakeholder?

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- How can we engage the stakeholder? What might the stakeholder potentially do (now or later) to facilitate future utilisation of project findings and/or eventual scale up of the interventions? (e.g., help define the research question, review the protocol, be informed of research progress, help to interpret and communicate project findings, etc.)
- What other persons, organisations, or departments does this stakeholder know who might influence the success of this intervention and/ or should be informed of or involved in the project work plan?

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ProLight

STAKEHOLDER ANALYSIS TOOL TEMPLATE

Name(s) of person(s) reporting:

Project/demo site:

Country:

Stakeholder	Role of the Stakeholder	Type of the Stakeholder	Level of Knowledge about the project /demo site	Project /demo site relationship				How could this stakeholder...		Level of support for the project / demo site	Potential benefits /Risks to stakeholder. Issues raised by the stakeholder. What is important to the stakeholder? What are his fears?	Expectations	Possible strategies for engaging stakeholder	Additional stakeholders identified by this source
Name, title, organization Contact information (address, cell/office phone number, fax number and email address).			1=Uninformed 2=Familiar 3=Expert	Level of Impact (High, Medium, Low)	Level of Influence (High, Medium, Low)	Content Expert (Y/N)	Decision Authority (Y/N)	Impact the project?	Be impacted by the project?	1=Actively opposed 2=Somewhat opposed 3=Neutral/ undecided 4=Somewhat supportive 5=Actively supportive		Expressed or implied expectations of project?		

The mapping sheet contains the following requests:

Stakeholder identification. Indicate the information related to the identification of stakeholder (minimun information the name)	**How could this stakeholder…** (Brief description of the impact of the stakeholder in the demo site and the impact of the demo site in the stakeholder Impact the project? Be impacted by the project?
Type of the Stakeholder. Please check the list above and try to identify the type of stakeholder type	
Role of the Stakeholder. Please check the list above and try to identify the type of stakeholder role	**How could this stakeholder…** (Brief description of the impact of the stakeholder in the demo site and the impact of the demo site in the stakeholder Impact the project? Be impacted by the project?
Level of Knowledge about the project /demo site. 1 Uninformed, 2 Familiar, 3 Expert	
Project /demo site relationship. Indicate the level of impact and influence of the stakeholder in the demo site/ project Level of Impact (High, Medium, Low) Level of Influence (High, Medium, Low) Content Expert (Y/N) Decision Authority (Y/N)	

The project leading to this application has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101079902.

Stakeholder type	Role
Industry representatives (technology providers, designers, manufacturers and entrepreneurs)	- Offer technical support - Involved in designing, developing, and implementing technology
Researchers (universities/ companies/ research centers)	- Provide methodological support for the living lab processes. - Involved in pre-studies, need finding, developing concepts, and testing innovation before implementation - Contribute scientific knowledge to support living lab processes - Provide evidence-based considerations in the decision-making process and adjust the customisation of testing strategies according to regulatory requirements, objectives, and resources of the living lab - Involved in data collection processes - Facilitate energy-efficient systemic innovations
Trainees, teachers and students	- Involved in data collection processes and administering of questionnaires - Involved in vocational training during living lab activities
Users (residents, students, households, staff members, the elderly, and citizens, building occupants, building managers, homeowners, residents, and staff members)	- Contribute to contextual understanding of living lab by expressing their values, goals and needs regarding a particular situation - Participate in the design of technology - Test technology in real-life scenarios and provide feedback for evaluation - Take part in need-finding surveys and other consumer research studies - Participate in brainstorming sessions to generate ideas for energy solutions - Test energy technologies in homes and provide feedback to increase usability
Financiers	- Fund the development and research of the living lab - Evaluate the progress of the project
Public sector authorities (city councils and building managers)	- Provide real-world context by contributing their knowledge and experiences of a problem in a particular area - Also considered as problem owners - Provide a legal framework and public support for the living lab - Improve competence in qualification requirements for grants - Take part in brainstorming sessions for generating energy solutions - Support pilot projects initiated by local SMEs in the living lab

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	- Municipal energy departments are a bridge between local authorities, SMEs, and universities, providing a platform that incentivises living lab methods
Private sector companies and third sector organisations	- Provide a communication platform between users and project initiators - Involved in project planning, design, and implementation - Own energy technologies that are tested - May request funding from the project to develop technology as solutions to be tested in the living lab
Pilot manager and panel manager	- Interact with users and the wider community involved in a living lab - Provide coordination of real-world experiments and stakeholder engagements - Recruit users and disseminate information about the living lab
Project manager	- Identifies and decides which actors can take part in the living lab project - Oversees research and technological innovations - Disseminates research results
Business manager	- Develops business models and is responsible for the commercialisation of products or services
Industry experts (architects, craftspeople, hardware developers, and engineering consultancies)	- Provide innovative solutions, skills and technical support for the living lab - Take part in brainstorming sessions to generate ideas for energy solutions - Involved in testing, implementation, evaluation, and management of systems and products - Support research projects in the living lab
Administrative personnel	- Deliver general communication about the living lab and specific stakeholder engagements

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6. Stakeholder mapping per demo site

Information included in annex 1.

7. Awareness activities per demo site and stakeholders.

Information included in annex 1.

8. Preliminary conclusions/recommendations

In conclusion so far, Living Labs / demo districts serve as dynamic open innovation ecosystems operating in real-life environments, employing iterative feedback processes across the lifecycle of innovative actions for sustainable impact. Emphasizing co-creation, rapid prototyping, testing, and scaling-up, they align with jointly agreed values of involved stakeholders. Functioning as intermediaries, living labs orchestrate collaboration among citizens, research organizations, companies, and government agencies. Organized around the quadruple helix model, they involve users, industry experts, researchers, and public authorities to create a shared vision, mission, and strategic goals. ProLight's six Living Labs or demo districts have defined their project vision and objectives, involving workshops within each district to facilitate co-creation activities. The mapping activities in ProLight are crucial for planning awareness processes and enhancing co-creation at the interrelated trans boarding district level. This collaborative approach, driven by partnerships between municipalities, universities, and private companies, underscores the commitment to innovative projects related to ambitious building renewal and Renewable energy communities.

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9. Bibliography

- https://www.researchgate.net/figure/The-living-lab-stakeholders_fig2_318109901
- Living lab methodology handbook https://www.ltu.se/cms_fs/1.101555!/file/LivingLabsMethodologyBook_web.pdf
- A Systematic Review on the Application of the Living Lab Concept and Role of Stakeholders in the Energy Sector http://www.mdpi.com
- Mind mapping https://www.mindmapping.com/mind-map

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Annex 1: Stakeholder mapping per demo district

Included the analysis of stakeholder per demo district.

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