



ProLight

D2.1 Refined factsheets of ProLight districts

29.9.2023

Authors: Maria Tuuri (UNIVAASA), Päivi Haapalainen (UNIVAASA)



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.

Deliverable Information

Project acronym	ProLight
Project full title	Progressive lighthouse districts serving as green district Gate towards Leadership in Sustainability
Call	HORIZON-CL4-2021-RESILIENCE-02
Grant number	101079902
Type of action	HORIZON Innovation Actions
Project website	www.prolight-project.eu
Coordinator	FHTW

Deliverable No.	D2.1
Deliverable nature	Document, Report
Workpackage (WP)	ProLight backbone and scientific framework (WP2)
Task	T2.1
Dissemination level ¹	PU
Due date	30.9.2023
Number of pages	82
Keywords	Factsheet, Basic information
Authors	Maria Tuuri (UNIVAASA), Päivi Haapalainen (UNIVAASA)
Contributors	All consortium partners
Due date of deliverable	30.9.2023
Actual submission date	29.9.2023

¹ PU = Public

PP = Restricted to other programme participants (including the Commission Services)

RE = Restricted to a group specified by the consortium (including the Commission Services)

CO = Confidential, only for members of the consortium (including the Commission Services)



Document history

V	Date	Beneficiary	Author
V0.1	7.7.2023	UNIVAASA, EURAC, All demo partners FHTW, CluBE, MOK, ADEP, EDP, GAIA, GLK, PIS, VOAS	Maria Tuuri, Päivi Haapalainen, Adriano Bisello, Giulia Chersoni, Gianluca Grazieschi, Elisa Vasiliu, Irene Bertolami, Momir Tabakovic, Michael Heidenreich, David Sengl, Ellie Mavroudi, Thodoris Gkiourkas, Natalia Boemi, Katerina Tsepoura, Rogério Rocha, Alexandre Varela, Inês Reis, Jokin Garatea, Begoña Benito, Itziar Vidorreta, Martina Di Gallo, Stefano Fava, Marko Ylimäki, Teppo Rasku
V0.2	8.8.2023	ADEP, FHTW	Inês Reiz, David Sengl
V0.3	25.9.2023	UNIVAASA, ESCI	Maria Tuuri, Päivi Haapalainen, Sabine Alexandre Klein
V0.4	28.9.2023	4ER, BI	Johanna Ganglbauer, Elina Bosch
V1	29.9.2023	UNIVAASA	Maria Tuuri, Päivi Haapalainen



Summary

The main content of this deliverable is the refined factsheets of the six ProLight demonstration districts.

The ProLight project aims for a better quality of life and affordable social housing. The smart neighbourhood approach will be demonstrated in six European Lighthouse and pocket districts, and the results will provide blueprints for replication. Analysed districts are:

- 1) The first Innovation cluster is studying Building renewals in an energy and resource efficient way, and the three demo districts are located in Austria, Finland and Greece.
- 2) The second innovation cluster focuses in Energy communities. The three demo districts are located in Spain, Italy and Portugal.

The factsheets of the demonstration districts present a baseline scenario meaning the description of the situation at the time of the project start and targeted outcome of the project activities. The starting point for the work at the demo districts is not quite a fixed point of reference, since some of the demos already have the technologies assembled and some demos are in the point of planning them. The focus is in the planned activities and in the targeted outcomes of the interventions, which are central considering the replicability and scalability of the smart neighbourhoods. The path, actions and expected outcomes are based on the environmental policies and targets provided at EU and national level.

The refined and updated factsheets function as information sheets for ProLight partners for work in many tasks, as well as for the larger public audience. The factsheets show the focus points of the demo districts and provide the blueprint for replication. The factsheets were also visualised while updating them.

In addition to refining the factsheets, task 2.1 works for the assessment of city requirements, ambitions, risks and barriers, which contribute to the later tasks. For this purpose, the partners answered to some additional questions on the ambitions and the complexities and uncertainties, and the lessons learnt are shortly discussed in the chapter 1.

Disclaimer

This publication reflects only the author's view. The Agency and the European Commission are not responsible for any use that may be made of the information it contains.



Table of Contents

Deliverable Information	2
Document history	3
Summary	4
Disclaimer	4
Table of Contents	5
Table of Tables.....	5
1. Refined factsheets.....	6
1.1. Background and contents.....	6
1.2. Summary of the Factsheets.....	7
1.3. Sharing and learning about the Challenges.....	11
1.4. Sketches.....	13
1.4.1. Austria	14
1.4.2. Finland	15
1.4.3. Greece	16
1.4.4. Spain	17
1.4.5. Italy	18
1.4.6. Portugal	19
2. Conclusion	20
Annex: The Factsheets.....	21
a) Austria	22
b) Finland	31
c) Greece	40
d) Spain	49
e) Italy	62
f) Portugal	74

Table of Tables

Table 1 Summary. Some key points of the demo districts	8
--	---



1. Refined factsheets

1.1. Background and contents

This deliverable includes the updated, refined factsheets of the six ProLight demo districts.

The ProLight project aims for a better quality of life and affordable social housing. The smart neighbourhood approach is demonstrated in six European Lighthouse and pocket districts during the project. The results will provide blueprints for replication. Analysed districts include:

- 1) Building renewals in an energy and resource efficient way in Austria, Finland and Greece.

The Austrian demo district is located in Vienna, and it is a residential building complex of 13 buildings. Circa 25 flats, 2 of 13 buildings, have completed the refurbishment, and 18 flats belong at this point to energy grid between households.

In Finland, the demo district is located in Vaasa. The demo is student housing, and it aims at raising awareness of sustainable living habits and energy issues by engaging students through a mobile application and other activities. Long-term Living Lab research is under planning.

In Greece, the demo site in municipality of Kozani focuses on improving living standards and energy performance of vulnerable people, and aims at a model and motivation for municipalities on how to undergo major refurbishment.

- 2) Energy communities in Spain, Italy and Portugal.

The Spanish demo district is located in Gernika, in Basque Country. It is an energy community around school and homes and businesses. It has already been established and is working.

In Italy, the demo district is in Northern part of the country in Rovereto and consists of two wooden buildings that represent new nice standard for social housing.

In Portugal, the demo district is Carcavelos, in the municipality of Motosinhos. It is a large social housing block with businesses at the ground floor. The demo district is building energy community.

The six demo districts are combined to so-called Innovation clusters. The first one, **Building renewals in an energy and resource efficient way**, has following innovation aspects and demonstration districts:

Stakeholder participation in design and implementation – Vienna, Austria

LivingApp, guiding and tutoring young students on our mission – Vaasa, Finland

Making available solar electricity for free to very low income population (tenants) – Kozani, Greece.



The second innovation cluster studies **Energy communities** and the innovation aspects and demonstration districts are:

Solar electricity of the school, also for 150 homes & businesses around – Gernika, Spain

Green human centered energy transition and digital support for improving energy literacy – Rovereto, Italy

EE&RES including DR and electric mobility integration – Carcavelos, Portugal.

During the proposal set-up, the ProLight project leaders prepared the demo district factsheet template to collect multi-sided basic information. The factsheets were based on the Call requirements, and based on the information collected, the demo districts were grouped into the innovation clusters mentioned above. In the task 2.1., the factsheets were slightly modified, and all the information was checked and updated and the results are presented in this deliverable.

The refined factsheets include basic information such as general descriptions, site locations, climate area, urban/suburban, and energy performance, involved partners, main stakeholders and target groups, financing and business models, and dissemination activities etc. They give a short overview of site specific economic, energy & environmental related indicators of pilot districts, as well as some central figures, targets and values for the New European Bauhaus. They describe briefly how the demo district tackles energy poverty (redistribution of benefits), what kind of plans the demo district has regarding circular economy and local value chains, industrialization and prefabrication, and what is the viewpoint and legislation regarding energy community in the country.

The refined factsheets function as information sheets for the public, as well as for ProLight partners, as they are used as a basis for the work in several tasks. The factsheets show the focus points of the demo districts and provide the blueprint for replication. The refined factsheets are provided in this deliverable and for the project consortium also in the collaboration tool Teams. The refined factsheets were also visualised by EURAC. These sketches summarize the key points of each demo district in a nice, user-friendly way, and can be used also for dissemination. The sketches are presented in the chapter 1.4.

1.2. Summary of the Factsheets

The Factsheets of the demo districts have a role in communicating the basic information and baseline intervention scenario plans of the demo districts in the ProLight project, both internally for the work in many tasks and also externally to communicate about the demo districts. The factsheets present the demo districts and are a source of many basic information that we find valuable and practical to share. The information will be used for more defined masterplans and blueprint that will be published later. On the factsheets, there are figures on the energy performance, primary energy savings, renewable energy production, and GHG emission savings, the way that is applicable to the demo. In this section, we discuss some points that we find as good examples of what the demo districts do in the project and what kind of results and experiences they have or will have to share, as inspiration for replicability and scalability. Please note that the more comprehensive information is on the actual factsheets in the Annex.

PV production and its smart, feasible use and scalability is of interest of more or less all the partners. The demo districts have plans of acquiring solar systems, and the ones who already have a PV production and energy community, analyse current situation and investigate on the possibilities how to further develop it.



In the project, based on the New Deal goals, our aim is to empower the citizens of our demo districts to become active and responsible partners for the necessary low-carbon transition. Their role is central in reaching the targets. Therefore, we want to raise stakeholders and visibility of stakeholder advantages on the Factsheets. In addition to this we have included the ambitions of the demo districts to the factsheet to state their managerial goals. Sharing knowledge and inspiring partners inside the project, and then others, is a way of replicating the best practices and scaling the smart neighbourhoods.

Table 1 summarizes some key points of the demo districts:

Demo	Users	Services	Business model	Smart solutions	Stakeholder advantages	Ambition
IT	Young people, families	Commercial, residential, services	PPP	RES, Planet App	Improved energy literacy, Information (e.g.: power profiles, digital twinning), Contribute to creating a broader community that goes beyond the district, Participatory regeneration actions	The idea is to assess the feasibility of establishing an energy community in the district and ideally, to enlarge it to the neighbourhood
FIN	Students (Young adults)	Residential	Non-profit, all profits directed to rents and tenants, Public funding for separate investments	Room sensors, PV, Energy Class A, LivingApp, Living Lab	Knowledge, Savings, LivingLab Long-term research environment	To be among the bests in energy efficiency 2026, as a living community and in servitization.
PT	Social housing - low income people	Dwellings, small businesses	Under development, 1) Municipality as investor, 2) PPA-type model: private entity selected by public tender	RES, REC Living Lab	Exploration of a large-scale REC for the development, Experience and knowledge, Replicability opportunities, Potential savings	Carbon neutrality 2030 (municipality), Renewable energy production hubs



GR	Social housing -low income people	Housing, pilot apartment for replicability	PPP	PV Integration model	Knowledge and experience of energy efficiency upgrade, Residents have chance to contribute, Collaboration and knowledge sharing	Bringing in motivation for public institutions to undergo a major refurbishment project for all the social dwellings & for the envisaged city's climate neutrality.
ES	Cooperative Energy Community: School and other public buildings, 150 homes, businesses/ SMEs	Public buildings like School and Culture house, 150 homes, businesses/ SMEs	PPP	Smart net metering, PV	Accessibility (small fee, no invest/ permanent commitment)	After this first project, San Fidel Tek will progressively address new projects.
AT	Multi-family smart building block	Housing	One-stop shop	PVT Hybrid collectors, soil-heat pump, heat grid	Refurbishment community	Consideration of relevant urban energy planning aspects, Connecting foreseen demonstrations with related city actions, Informing about further progress of urban/district developments, Supporting stakeholder consultations in Vienna on various levels, Dissemination & promotion among extended urban networks

Table 1 Summary. Some key points of the demo districts.



Target groups

Most of the ProLight demos represent social housing, in which the residents usually have low income. In most of the cases, the apartments are family apartments. In Finland, the user / target group is students, young adults, which is seen as a good point of life for energy saving awareness campaign and intervention, because students are just learning to live on their own after living with their parents. With the help of the project, energy awareness of the students can be raised and they will better understand impacts of their own behaviour in energy consumption so they can make changes in their behaviour and create savings.

In Spain, the energy community is an evolving Living Lab of both public buildings like a school and private houses that form a cooperative. The efforts of the coordinating organization make it easy for the private people in the surrounding area to join the energy community. With a low barrier, paying a modest monthly fee, they get 20-25% of their electricity consumption from the PV system, and they also get a bidding on the rest of the electricity as well.

The Spanish and Portuguese demo sites also have other functions on the demo site than housing. Including other commercial services, SMEs, a school, a sports hall, a culture house, creates more users and visibility for the demo's actions and larger possibilities for dissemination.

Business model

Most of the demos have public-private-partnerships as their business model. The Finnish demo site is based on the Association's non-profit model. All the profits are directed to rents and tenants, and the association receive specific public funding for separate investments. Public funding has strict regulations how you can build, to guarantee affordable housing, and getting loan as Green funding requires reaching 30% energy saving, and fossil energy replaced by renewable energy.

Smart solutions

The demo districts shift to using renewable energy sources and improve their energy performance to meet the requirements of the energy transition. The demo districts use smart metering. A very common way to increase the share of renewable energy is a PV system, which all the demos will most likely use. The Portuguese demo will have a large PV system and the energy community will function as a part of a big Living Lab of the municipality to form and investigate large-scale PV production. The Austrian demo site, that already at this point has 2 of the 13 buildings refurbished, has a wide range of smart solutions, technologies and systems like PVT Hybrid collectors (combined photovoltaic and thermal), solar mats, soil-heat pump, and a heat grid. The soil-heat pump heats the living spaces and part of the hot water demand and it is also used in cooling. The partners, for example the Portuguese demo site, have plans on testing and using various new technologies on the site.

Also, mobile applications have a role in the intervention. Mobile applications are used for raising the awareness of the residents and thereby reducing energy consumption and making savings. The Italian demo site has created Planet App and the Finnish demo is developing Living App. The technologies and the information distributed through them are used for making behavioural changes. This will be researched in ProLight project.

Stakeholder advantages

An important advantage of the project is the knowledge and experience to the users, to the project partners and partners like municipalities. Residents have chance to contribute, as active and



responsible citizens should be by the Green deal. With the awareness and seeing the role of their own behaviour the residents can contribute in their every-day lives and make the change. The municipalities, like Kozani in Greece, get experiences on how to create energy efficiency upgrade to the buildings in order to fulfil both modern standards of living for the residents and sustainability targets. In Portugal, the municipality can investigate large-scale renewable energy community.

Ambitions

The ambition of the Italian demo district is the idea to assess the feasibility of establishing an energy community in the district, and ideally, to enlarge it to the neighbourhood. The Greek demo district's ambition is bringing in motivation for public institutions to undergo major refurbishment projects for all the social dwellings and envisage city's climate neutrality. Reasoning for this are the sustainability goals, a big shift from lignite, as well as the outdated energy performance of the buildings. The Finnish demo, a Student Housing Association, aims at being among the bests in energy efficiency by 2026, as a living community and in servitization, offering a comprehensive living concept.

Creating awareness, engaging people and dissemination

In the ProLight project the teams are interdisciplinary since the matter requires versatile competences to make the transition and consider social, environmental, economic and technological aspects. In the ProLight project, we want to engage the residents in planning the activities, because it is the way of genuinely include and engage the people. The Austrian partner highlights the importance of the EAIG's role in the demo district's work. EAIG is the End-Users Advisory and Interest Group that was set up by the house and apartment owners with the intention of keeping the refurbishment directly oriented towards the societal and economic needs of energy efficiency and integration of renewable energy sources in the buildings. They have a very responsible role in the refurbishing project.

Easy to use mobile applications bring awareness to the residents with consumption data and practical ideas how to save energy, and engage people to energy matters and change in behaviour. The Italian and Finnish demo districts develop the use of mobile application and share experiences to other partners as well as to wider audience. Also, traditional posters are spread and info events are organized by the project specialist. In addition to this there are many kinds of practical every-day collaborative things like the Tools library in Italy. These kind of initiatives bring this joint agenda to practical level close to people and liveability. Portuguese demo takes into consideration transport as well so bike sharing is one of the things they plan to try.

In addition to dwellings, many of the demos also have other services in the buildings, like shops, for example in Portugal, or the School and Culture centre in Spain, that help to bring energy matters visible to bigger community. The demo districts are urban economic districts, so more people are involved.

1.3. Sharing and learning about the Challenges

In addition to refining the factsheets, we have worked with the assessment of city requirements, ambitions, risks and barriers in the task 2.1., which contributes to the later tasks, that will continue the work with these issues in more detail. So in addition to the work with the original factsheets with basic information and technical details, the partners answered to additional questions that supplement the baseline scenarios of the demo districts. The focus of the supplementary work was in sharing inspirations of the ambitions and sharing experiences of the complexities and uncertainties of the demo district and ideas how to tackle them. Regarding the city assessment, the role of ambition was considered essential, and therefore the ambitions were taken into the public factsheets. Legislation



was also something that all the partners found important, as legislation has major influence and sets limitations to the demo district. Although all the partner countries are European, the legislations vary to some extent. As one of the innovation clusters in the project is focusing on the Energy communities and studying them, the role of the legislation is important especially. Some of the partners already have valuable insight to share how they tackled the challenges when they established an energy community. These issues are shortly discussed in this chapter to provide perspective to the demo districts' goal setting and the working environment and why some things were done and why some things were not done.

The model that we adapted for this part of the work is based on the Scalibur project's framework that our partner CluBE has worked with (Scalable Technologies for Bio-urban Waste Recovery, 2018-2022, Horizon 2020). The Scalibur project's framework describes baseline scenario of each demo district according to the following structure:

1. Pilot city or region - general data
2. Legislation
3. Main actors involved
4. Current waste management system
5. Valorisation
6. Engagement activities
7. Other relevant data.

The Scalibur project offers tools and templates they have developed on its website, like the Baseline analysis. (<https://scalibur.eu/resources/> ; <https://docs.google.com/document/d/1r9oSHGDDA0A98ZD5ysb2VsrouzU95VKx/edit?pli=1>)

About energy communities, legislation, willingness to invest and financing environment

While some of our partners are now planning and starting an energy community or renewable energy production, some of our demo districts like the Spanish and Austrian demo districts already have some valuable experiences to share regarding these issues.

In Spain, the demo district is an energy community that functions as a cooperative and has both public and private members. Self-consumption aid program has boosted the development. San Fidel Tek partners can join the cooperative without a big investment, so it is very accessible and inclusive. The consult partner has the knowledge of the legislation. A simple barrier is the requirement of 500 metres distance. Longer network of 1-2 kilometres would make it possible to reach more homes and small businesses. The private homes can get about 25% of their electricity consumption from the joint PV system placed to the school's roof. At the moment, the Living Lab with 25 years of lifespan, is a cooperative that uses and focuses PV, but it also investigates other possibilities. The demo is also interested of generation of renewable energy through sources other than photovoltaic energy, sustainable mobility, renewable thermal energy, energy efficiency and demand management. You can find the description of the Energy community, operating model and governance, and more insights on the factsheet of the Spanish demo in the Annex d.

In Austria, there is rental right legislation, Mietrechtsgesetz (Act on Tenancy Law) and Wohnungsgemeinnützigkeitsgesetz (Limited Profit Housing Act), in which the residents have both rights and obligations what comes to renovation. To summarise, the tenants have to agree on the refurbishment and pay to the refurbishing fund. One critical question is how far tenants are obliged to the co-financing of refurbishment measures promoted by the house owners. In addition, the tenants



are guaranteed to have participation possibilities of which kind of refurbishment measures are foreseen. You find more information about the Austrian demo on the Factsheet in the Annex a.

The Greek demo also has had to consider legislation and regulation matters. Many of the social housing apartments were built during times when the energy efficiency regulation and building requirements were outdated, and refurbishing to modern standard to meet the sustainability goals is a big challenge. The demo investigates now best models how the municipalities can undergo these massive refurbishments. You can read more about the plans in Annex c.

Motivating people with low income to invest now for future savings and finding the sufficient funds is maybe something many must tackle. Investment environment is especially bad now when the inflation is high so that the monthly cost of living can be significantly higher now. After Covid-19 and the Russo-Ukrainian war, there has also been difficulties in availability of some building materials and cost increases that have required re-design of the refurbishment plans. Moreover, materials included in the construction of components like semi-conductors, which are key for the functioning of solar PV-based systems, have become scarce and pricy, which hardens the process of finding companies that are able to deliver this kind of projects and comply with the proposed schedule and budget. Apartment owners can be reluctant to invest, and also public loans and special subsidies have strict requirements that must be reached in order to have affordable housing. If the renovation of a building has been finished before the war, the replication in the neighbourhood is a challenge due to inflation.

Challenges in permitting and public procurement

In general, in many countries the demo districts have had some challenges like delays in permit process. For instance, getting permits for a PV project and have it operation ready can take many months. Also planning process and planning permit can take a long time. We have one quite unlucky case amongst the demos, due to the fact that the permit system allows citizens to further complaint despite everything is legally accepted by the municipality, but complaining can lengthen the process significantly.

Second, is the issue related with the complexity of public procurement, which is seen to delay, complexify and hamper many municipal actions, especially when public and private partnerships/collaborations are in question.

Risks

The demo sites also conducted risk analysis, in which political changes, political and regulatory barriers that delay the process of implementation of REC, and challenges in engaging people were mentioned among other things. Some of the risks, like energy crisis, are also considered to be possible. Partners have considered contingency plans in their internal work.

1.4. Sketches

In this Chapter we present sketches of each demonstration district that were created for this deliverable. The demonstration districts are presented in the order how they are grouped as innovation clusters. The refined factsheets are available in the Annex.



1.4.1. Austria

SMART Block Geblergasse Wien



PILOT



Pilot location in Vienna city

Heating energy community

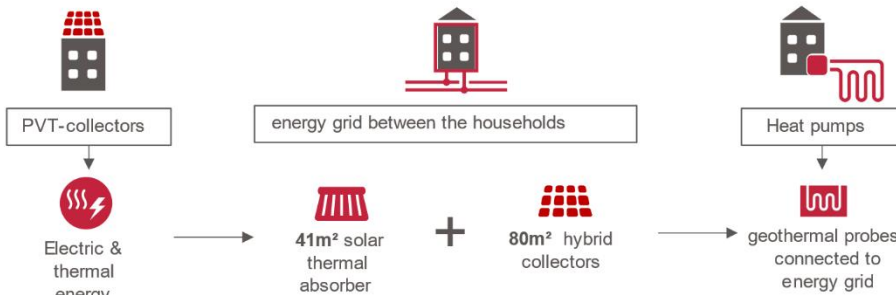
Geblergasse 11 & 13, 1170 Vienna

13 residential buildings
2 already renovated (25 flats)



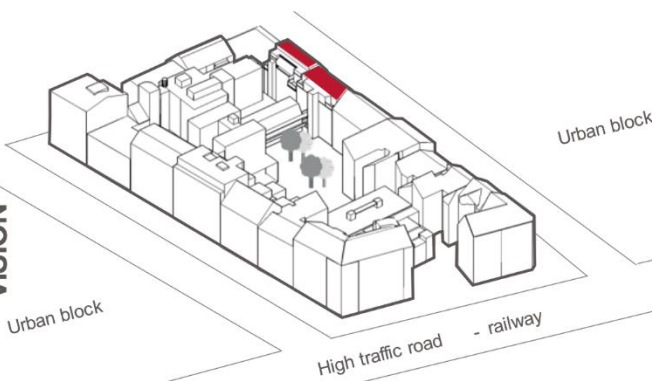
High **indoor comfort** levels & energy efficiency through detailed **monitoring**

SOLUTIONS



Solar thermal energy: **73.500** kWh/year
PVT Electrical energy: **5.050** kWh/year

VISION



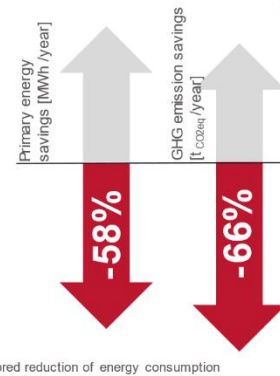
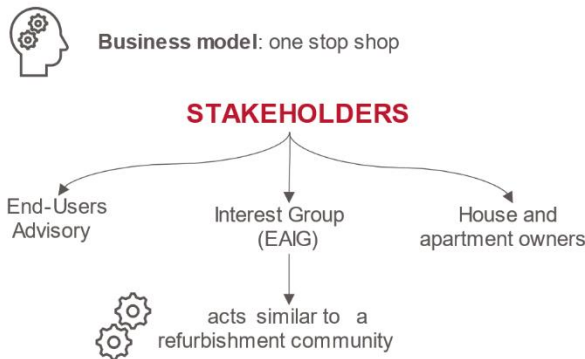
PERFORMANCE

- Hot domestic water
- Heating system: floor heating
- Clean electricity through PVT
- Energy monitoring system
- Aesthetic value

“ Transform the district in an energetically active node in the area ”

“ Flexible and energy efficient way to produce energy ”

PARTNERSHIP



1.4.2. Finland

VOAS Student Apartments



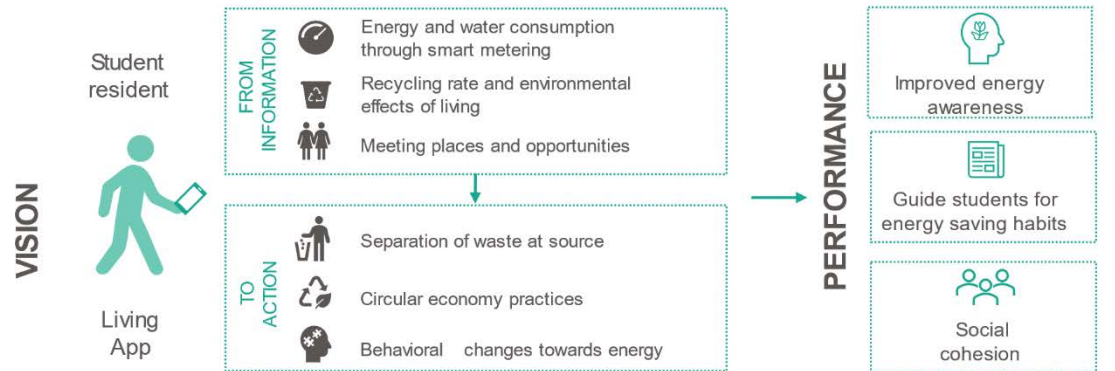
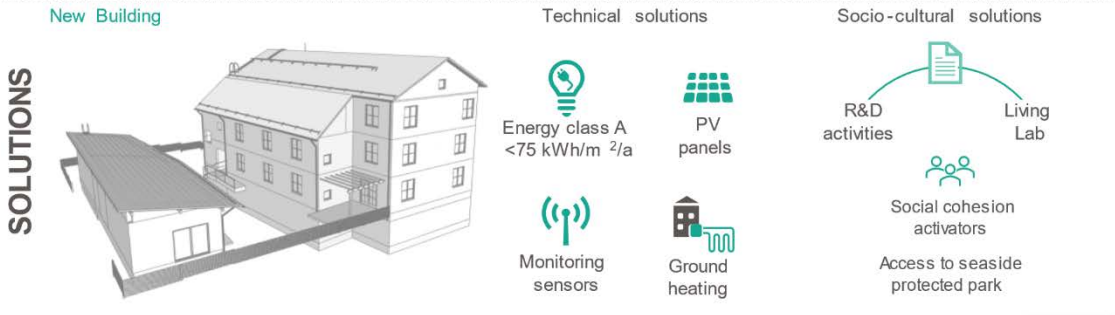
PILOT

Student Housing

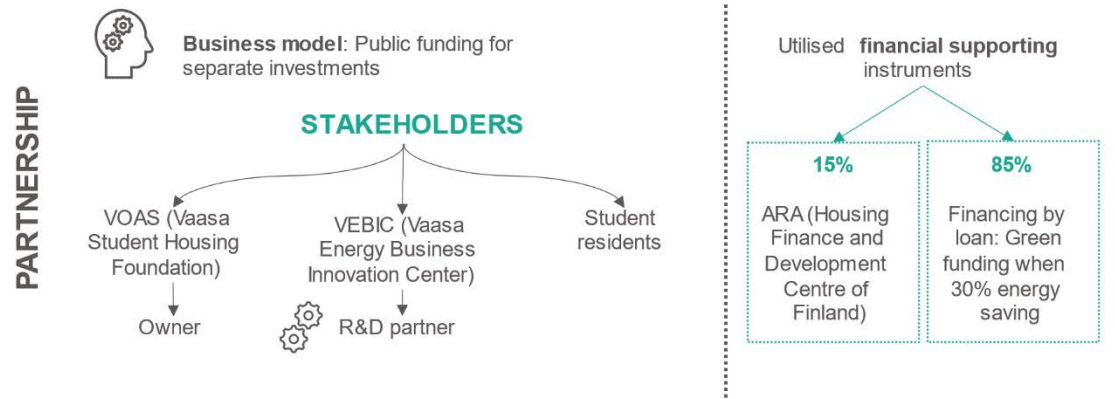
Wolffintie 24, 65200 Vaasa
1 building
21 student apartments



Living lab focusing on residents' behavioral change & **social cohesion**



“ It will be established a **LivingLab concept** (continuous, regular, long -term R&D partnership) for the whole target area. ”



1.4.3. Greece

MOK Energy Community

PILOT



Pilot location in Kozani city

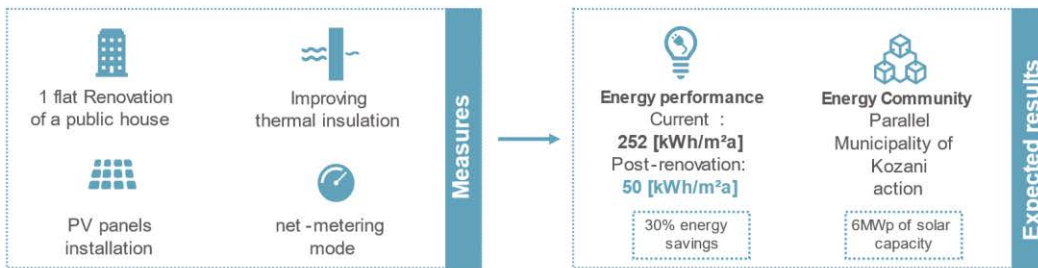
Energy Community

Kozani 501 00, Greece
1 out of 500 dwellings
Municipality of Kozani direction

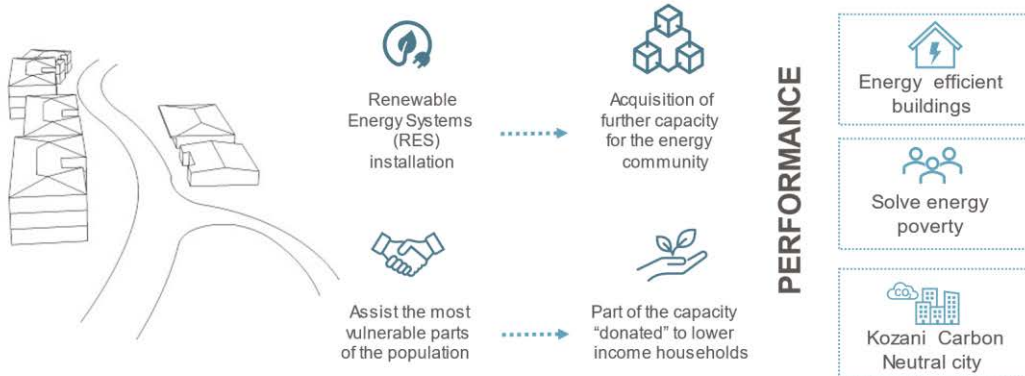


Development of Energy Community & support to vulnerable social groups

SOLUTIONS

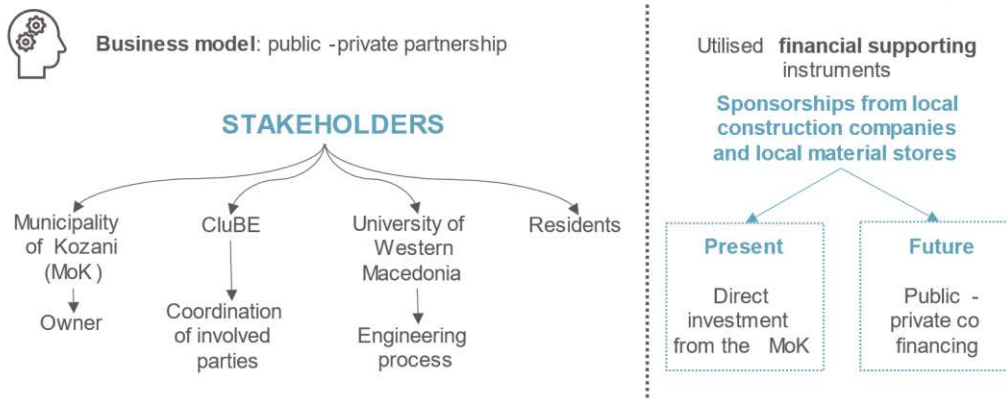


VISION



“ Saving 30% of the tenants' electricity bill, with an estimation of the cost, and which share of that might be covered by the City of Kozani , to reach a total Climate Neutrality by 2030. ”

PARTNERSHIP



1.4.4. Spain

GERNIKA TEK Energy Community



PILOT



Pilot location in Guernica city

Energy Community

Carlos Gangoiti Kalea, 11, 48300 Gernika -Lumo, Bizkaia, Spain

150 homes, shops and public buildings
25 years project



Development of Energy Community & San Fidel Tek APP

SOLUTIONS

Clean Energy



200 PV panels installed in the roof of Ikastola San Fidel sports center

Expected results

Primary energy savings [MWh /year]	25% of energy consumption
Renewable energy production [kWh /year]	109.400
GHG emission savings [TnCO ₂ e q/year]	885 TnCO ₂ e q/year

R&D projects



New aggregation solutions, demand management and flexibility

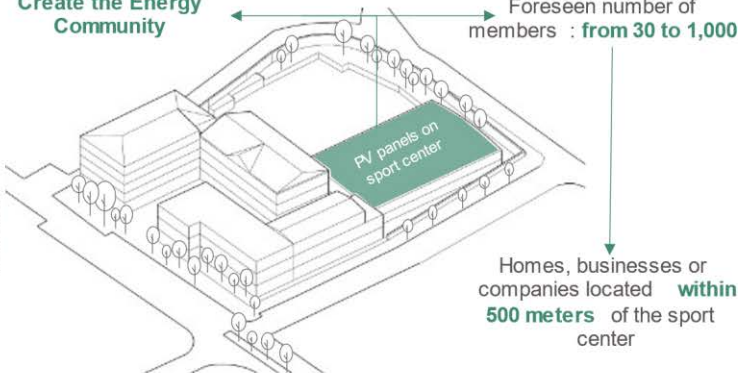
San Fidel Tek APP



It allows partners to monitor consumption and use of the facility

VISION

Create the Energy Community



PERFORMANCE

- Promote use of RES at municipality level
- Ambitious economic incentive systems
- Social revitalization and awareness raised

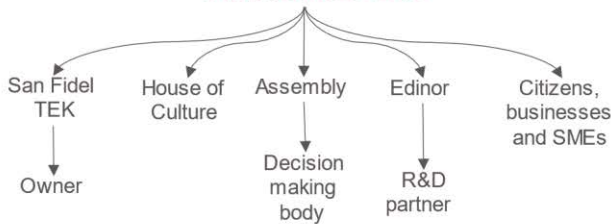
“ It will not be just a matter of placing some PV modules, but a project with an evolution of 25 years, in which its environmental, cultural and economic benefits will be verified and analyzed. ”

PARTNERSHIP



Business model: public -private partnership

STAKEHOLDERS



Utilised financial supporting instruments

Edinor (Brokerage energy entity)

It supports San Fidel Tek in obtaining public aid, financing, selection of companies and legalization procedures



1.4.5. Italy

Ex-Marangoni Wooden Blocks

PILOT



Pilot location in Rovereto city

Social Housing

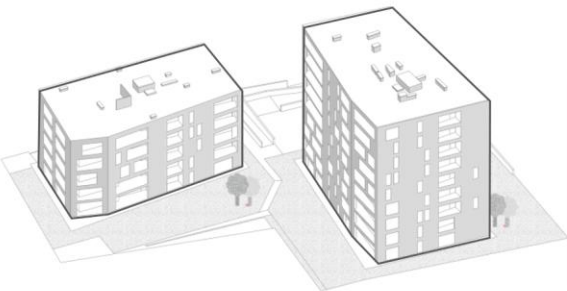
Via dell'Abetone, 38068 Rovereto

2 wooden buildings
68 flats



Human centered energy transition & digital support for improved **energy literacy**

SOLUTIONS



20 smart solutions

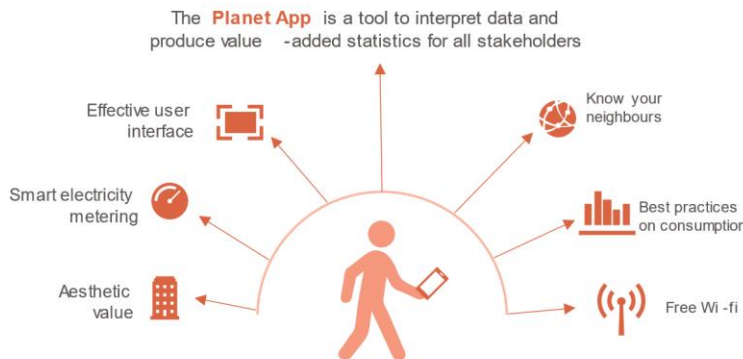
Macro -areas

- Environment
- Social Innovation
- Planning & Architecture
- Technological Systems

Examples

- lockers
- urban gardens
- library -of-things
- intelligent irrigation
- free Wi -Fi

VISION



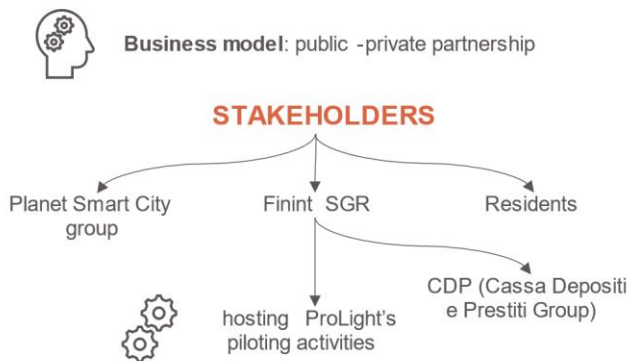
The **Planet App** is a tool to interpret data and produce value -added statistics for all stakeholders

PERFORMANCE

- Improved energy literacy
- Participatory regeneration actions

“Empower residents with **awareness** and capacity to use services and to promote social or economic development initiatives”

PARTNERSHIP



Business model: public -private partnership

STAKEHOLDERS

Utilised **financial supporting instruments**

- Private investments and secured loans
- Support business models on energy communities
- Replicate the smart solutions in other Finint dwellings



1.4.6. Portugal

CARCAVELOS Social Housing

PILOT



Social Housing

Largo Carcavelos, Matosinhos

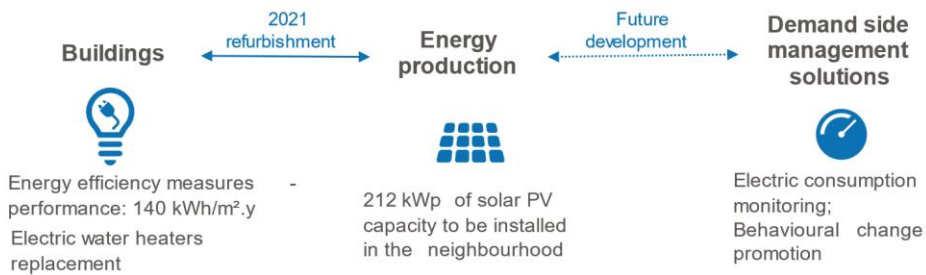
2 buildings
278 dwellings
Small businesses at the ground floor



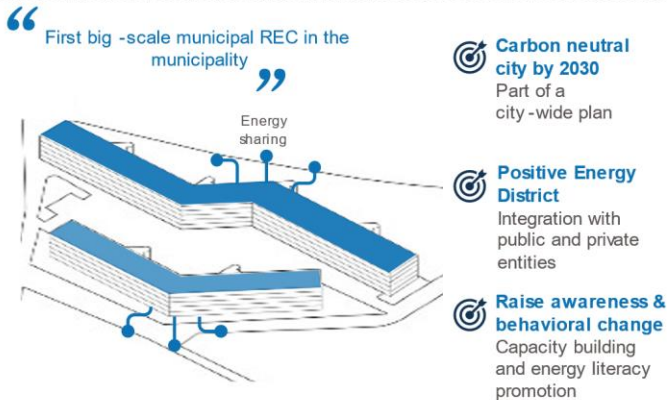
Development of **Positive Energy District** at the municipality scale

Pilot location in Matosinhos city

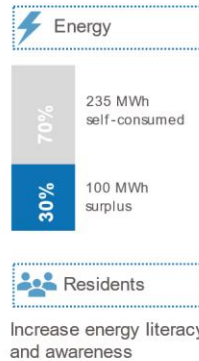
SOLUTIONS



VISION



PERFORMANCE



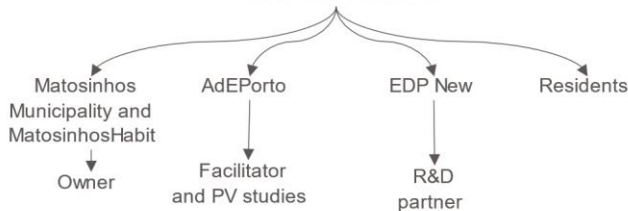
“ The intervention will contribute to the decarbonization of the city of Matosinhos and to the empowerment of people towards more sustainable behaviours ”

PARTNERSHIP

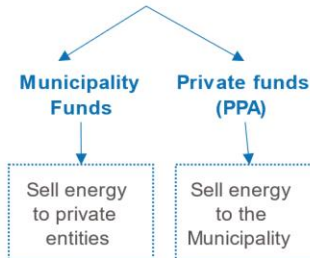


2 Business models: Own Municipality Funds and PPA (Private Funds)

STAKEHOLDERS



Utilised **financial supporting instruments**



2. Conclusion

This deliverable includes the refined and updated factsheets of ProLight demonstration districts. Social, environmental, economic and technological perspectives are all taken into consideration in the ProLight project, and these perspectives are also presented in the factsheets and in this deliverable. The chosen presentation form of the factsheets is encompassing, instead of factsheets with only technical details. As important as the energy performance figures are, we need more for market deployment. This broader view is to enable inspiration and knowledge sharing, first, to other demonstration districts in the project, and second, to external organizations, because knowledge sharing, replicability and scaling are in the core of the ProLight project. By providing brief answers to a rather broad range of topics, the factsheets function as information leaflets you can return to.

The sketches that summarize the factsheets and present the demonstration districts visually were created for the deliverable, and they will be used for dissemination of the project's demonstration districts and their solutions.

The Factsheets consists of the preparatory information for successful solutions in the Lighthouse and pockets districts. The Factsheets include the demo districts' general information, their goals, stakeholder advantages and ambitions, and on the other hand, they also introduce what kind of barriers and challenges restrict them. The broader, yet general, framework was lightly adapted from Scalibur project's baseline scenario analysis. The framework has the rationale in the task 2.1 Assessment of the city requirements, ambitions, risks and barriers. For example, legislation was a topic of interest of roughly all the demo partners. The regulations work in both ways, it has accelerated and encouraged to the transition to renewables and energy communities, however, national legislation and bureaucracy can also restrict expansions, and they can also hinder transferability before the regulations and processes are aligned, so replication must be considered towards the national legislation.

Some of the demos have already tested technological systems and working models and have experiences to share. The Spanish demo provides an example of how to establish an energy community as cooperative model, and how to produce value to stakeholders by providing easy access PV community. PV is the most common renewable energy production method within the ProLight project demo plans. The Austrian demo has installed earth probes and PVT hybrid system, and can share replicable best practice of co-working with End-Users Advisory and Interest Group and in stakeholder networks for large refurbishments. All the demos share plans on how to engage people in energy matters, e.g. through using mobile applications like for social housing in Italy and for student housing target group in Finland. The Greek demo is to build a plan for municipalities on energy performance refurbishments of social housing and how to proceed large-scale. The Portuguese demo will be part of a big PV producer community and study system integration. And like all the demos, it is an urban demo, and it aims to engage different user audiences for maximum awareness and impact.

The work for this deliverable and task took place at early phase of the project, and it was internally important for partners' collaboration, knowledge sharing and clarifying the current plans for future work in the project. The refined factsheets are the starting point for the work towards detailed Master plan of demo districts concepts and implementations and contribute for several other tasks as well.



Annex: The Factsheets

a) Austria

Factsheet of the Viennese Pilot

b) Finland

Factsheet of the VOAS Pilot

c) Greece

Factsheet of the Kozani Pilot

d) Spain

Factsheet of the Gernika-San Fidel TEK, Spain, GAIA and Gernika City Council Pilot

e) Italy

Factsheet of the Italian Pilot

f) Portugal

Factsheet of the Carcavelos Pilot



The Viennese Pilot

Geblergasse, Austria, Viennese building block comprises of 13 residential buildings, district leader FHTW

<https://www.prolight-project.eu/demo-case/vienna-austria/>



Overall summary:

The demo-site is located in the 17th district of Vienna and consists of 13 residential buildings. Two of the buildings are already renovated and serve as a demo lighthouse project in Vienna. With the combination of heat-pumps, PVT-collectors and an energy grid between the households, the demo site has a flexible, energy efficient way of producing electricity and heat and can provide it to the neighbouring households. A Monitoring phase in the buildings should show the effects of the used approach and also the effects on the indoor climate shall be determined to check advantages not only on the energetic but also on the social side due to increased energy prices.

The project will deploy its solutions to a variety of residential buildings in Vienna in Austria. The use cases involve residential buildings related to the intermediary FHTW.



ProLight Demo district – GENERAL DATA

Pilot description and expected performance results (incl. No. of buildings, Building type, Renewables, Others):

The quarter in Vienna is already partly renovated and extended by new attic floors. Within the courtyard of the multi-family houses, earth storage tanks are installed that consist of 18 earth probes with a depth of 100 m each. PVT (combined PV and solar thermal collectors) are installed on the roof of the multi-family house and the garden wing to the south. The heating centre in one of the building objects supplies heat energy to other buildings. The heat energy is brought into the rooms with a heat pump by means of underfloor heating systems. Some selected facts of the refurbishment results are given in the following:

- Heating load: 55 kW
- Specific heating load: 50 W/m²
- Roof area garden wing: 60 m²
- Roof area of the building: 45 m²

In regards to HVAC and integration of renewables:

- PVT Technologies –
 - Thermal energy: 73.500 kWh /year,
 - Electrical energy: 5.050 kWh /year
- Heat pumps with ground water
- Storage tanks: 120 liters

The space heating demand and part of the domestic hot water demand is covered by a brine-water heat pump via a district heating (DH) grid (low temperature network), which is supposed to supply other houses in future. The heating energy for this islanding DH grid is partly produced by 80m² hybrid collectors and partly with 41m² solar thermic absorber mats which are installed on the roofs of one multi-family house of the building block. The hybrid collector is a combination of a solar thermal and photovoltaic system. A part of the electricity production is used for the electricity consumption of the heat pump while the rest covers a certain share of the residents' electricity consumption. Via monitoring and dissemination of the project results it is intended to demonstrate that high levels of comfort and a high quality of the indoor environment can be ensured in combination with an energy-efficient building complex.

Climate area, Location urban/suburban, Energy performance [kWh/m²*a] (Current / after renovation)

Moderate climate Zone in Central Europe, Urban Area, 35.97 kWh/m²a of existing buildings, 27.41 kWh/m²a after the renovation



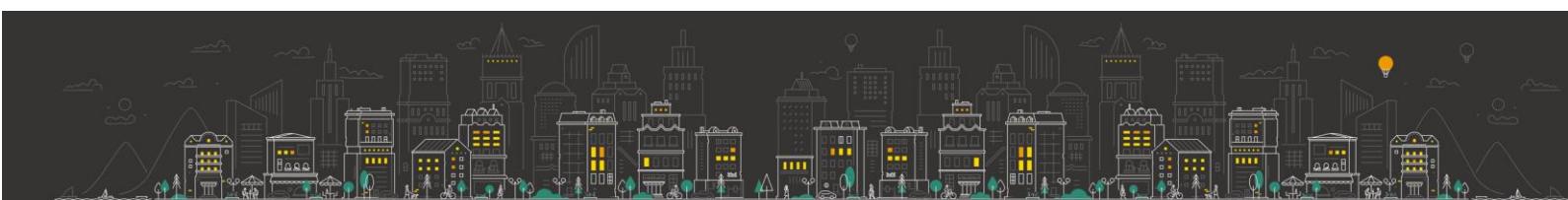
Overview of site specific economic, energy & environmental related indicators of pilot districts.

Key Performance Indicators	Lighthouse district	Expected results
Number of dwellings	18 dwellings installed/connected with the earth storage, originally 8 planned (13 residential buildings)	Efficient energy usage and significantly reduced CO ₂ abatements
Primary energy savings [MWh /year]	~58 %	Even higher savings via optimising the control logic of system
Renewable energy production [kWh /year] -> KPI5 in the project	N/A	Better in-house consumption through PVT-hybrid-collectors
GHG emission savings [TnCO ₂ eq/year]	~66%	High savings through renewable sources with high efficiency
Number of TRL 6 to TRL 8 technologies	PVT-Collectors Soil-Heat pump DH network	The used technologies are tested in the demo-district
KPI7: Investment costs [Euro/m ²]	N/A	Higher investment costs but lower costs during the operation

ProLight figures for the New European Bauhaus

Geblergasse, Vienna
 18 Dwellings (earth storage)
 ~25 flats (refurbishment)

- Integrated Renovation Status:** 2 houses are already renovated
- Liveability:** high comfort in the buildings through low temperature heating
- Technological advancement:** heating energy community
- Social Innovation/Business Models:** establishing the End-Users Advisory and Interest Group (EAIG) / heat energy community with different renewable sources



Which business model is used (e.g. ESCO, PPP, one-stop shop, others)?

One-stop shop: thanks to this business model house and apartment owners will get high quality renewed building objects with little risk and responsibility which usually is the case with traditional handicraft renovations. The energy costs will be reduced, the market value of the building may increase, mortgage banks will have a safer asset and there are societal benefits in terms of reduced energy use and greenhouse gas emission.

Utilised financial supporting instruments:

Promotion measures are financially supported by the regional (Viennese) and Austrian governments to bring the investors towards energy solutions that are more ambitious in terms of performance and sustainability.

Main economic activities in your city/region:

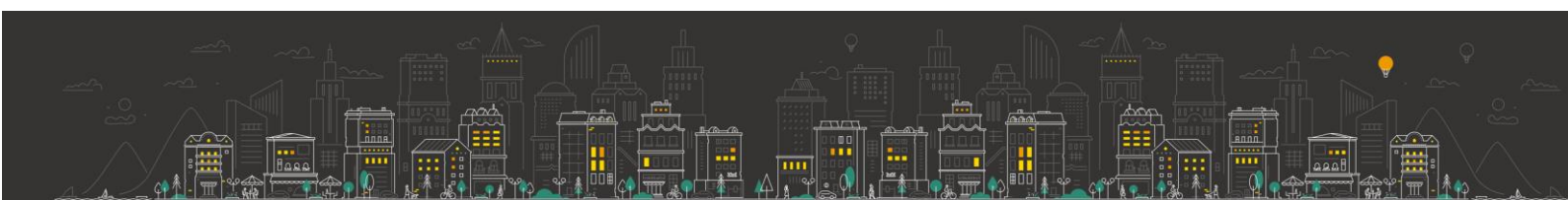
As being the capital of Austria, the focus of economic activities is related to governmental and digitalised services, the commercial, construction and tourism sectors, real-estate administrations, the public transport and a nearby airport.

Envisaged local dissemination activities:

Come together with mentioned EAIG members and awareness campaigns towards the building occupants and owners

LEGISLATION

Relevant procurement procedures are depending on who is investing according to the national procurement law. The Dorda Brugger Jordis Rechtsanwälte webpage provides an overview about relevant laws: "For the State (Bund) and public bodies on the central government level, the Federal Public Procurement Law 2006 (Bundesvergabegesetz 2006 – "BVerG 2006") implements Directives 2004/17/EC and 2004/18/EC (aspects on content) as well as Directives 89/665/EEC and 92/13/EEC (review proceedings). The legal frame for refurbishment of buildings is linked with living-legal laws e.g. laws governing tenancy such as the so-called "*Mietrechtsgesetz (Act on Tenancy Law)*" and "*Wohnungsgemeinnützigkeitsgesetz (Limited Profit Housing Act)*". Of importance is the question how far tenants are obliged to the co-financing of refurbishment measures by the landlords. In addition participation possibilities of which kind of refurbishment measures foreseen are guaranteed to the tenants. The financing of renovation projects depends on promotion models of the federal states which entered into force in regional laws since 1987. As far as only generally used parts of the house are concerned by refurbishment, no formal agreement of the tenants must be caught up by the building manager. If changes are intended, however, in the households e.g. with the installation of ventilation or heating systems, the tenants affected have to agree on it. Renovation and improvement actions are part of the household expenses in the non-profit rental living area in Austria. Financial support for these



improvements are determined in the “*Wohnungsgemeinnützigkeitsgesetz*”¹. The use of these financial contributions for refurbishment measures must take place within a period of ten years, otherwise they are to be refunded. If the sum of mentioned financial contributions is not sufficient with respect to the needed investments for required refurbishment measures, the building project organisers have two options to demand more payments from tenants. i) There is the possibility to agree voluntarily on the rise of rental payments beyond the legally defined rates. ii) Another possibility would be that landlords and landladies apply for an increase in rental contributions before court. The justice decides about the appropriateness of the renovation intention and how the increase of rental payment is determined. Voluntary agreements are preferred, because judicial judgments can be time-consuming taking into account of possible objections by the individual tenants. Of importance is also the fact that by a judicial enforcement of refurbishments in multi-storey buildings it will lead to low acceptance which may complicate the implementation of the measures.”²

How are energy communities regulated in your country/region?

Based on the Austrian legislation to facilitate formal energy communities (CEC/REC according to the Austria energy law, EAG³). Intention is to harvest benefits from reduced grid tariffs and reduced taxes and levies for its users / customers and prosumers.

What else is important, having impact?

Together with the Viennese Municipal Department 20 - Energy Planning (MA 20) as part of the Administrative Group for Urban Development, Traffic and Transport, Climate Protection, Energy Planning and Public Participation visions of replicating performed refurbishment measures in the neighbourhood have been developed.

MAIN ACTORS INVOLVED AND STAKEHOLDERS

Local stakeholders and partners:

End-Users Advisory and Interest Group (EAIG) has been setup by the house and apartment owners with the intention of keeping the refurbishment directly oriented towards the societal and economic needs of Energy Efficiency and integration of RES in the building objects.

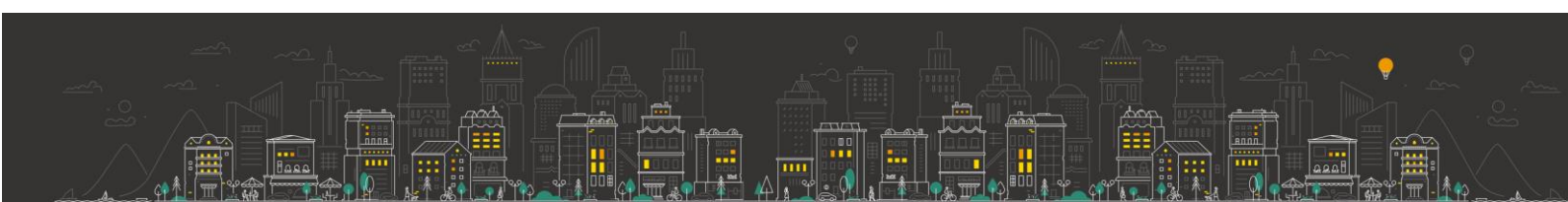
What are the advantages that the stakeholders may have when they contribute to or are involved in the project?

The EAIG is in charge of negotiating with the construction firms for the extended implementation actions in the other pending 11 buildings of the block. It acts as a kind of refurbishment community of the neighbouring objects.

¹ Wohnwirtschaftliche Werte: <http://www.gbv.at/Document/View/4156>

² Österreichisches Ökologie Institut: "Erfolgreich Sanieren mit Bewohnereinbindung - Leitfaden für Bauträger und Hausverwaltungen", ISBN 3-901269-13-4, 2004, bmvit, 2004

³ <https://www.ris.bka.gv.at/defaultEn.aspx>





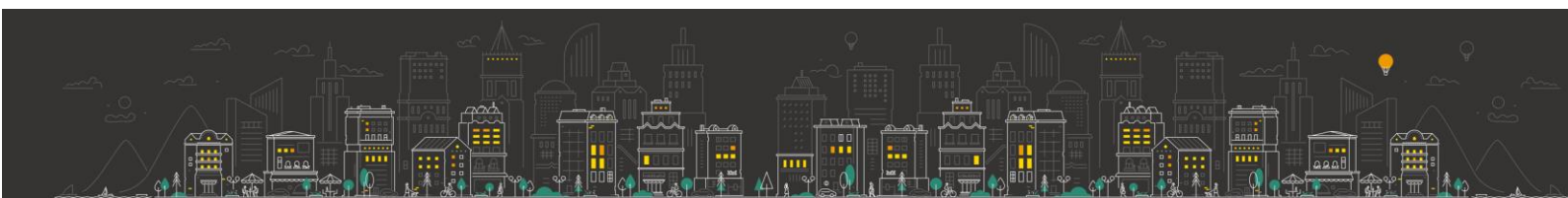
REQUIREMENTS

Energy poverty (redistribution of benefits)

- How do you address energy poverty?
- How do you redistribute the benefits generated by the project to the tenants?
- How do you prevent gentrification after the renovation?

Response: The legal frame for refurbishment of buildings is linked with living-legal laws e.g. laws governing tenancy such as the so-called “Mietrechtsgesetz (Act on Tenancy Law)” and “Wohnungsgemeinnützigkeitsgesetz (Limited Profit Housing Act)”. Of importance is the question how far tenants are obliged to the co-financing of refurbishment measures promoted by the house owners. In addition, participation possibilities of which kind of refurbishment measures foreseen are guaranteed to the tenants. In order to perform the establishment of a Smart building Block in Vienna the following main activities have taken place:

- planning procedures and inclusion of relevant market and social actors (real estate / apartment owners, municipal departments, interested representatives of the residents, social forum of the district etc.)
- surveys about the needs of the building users and interest of the owners
- analysis of the environmental impact
- involvement of stakeholders and external experts
- regular meetings and workshops with relevant market and social actors.



Circular economy and local value chains

- How do you include principles of circular economy in your project? (i.e. specific local value chains like for example timber wood construction etc.)
- Do you use or are you interested in using by-products from other value chains for your renovation? (i.e. alternative materials for insulation)

Response: An interdisciplinary team is responsible for the project development, process design, communication and moderation, technical expertise (planning, energy, building, law, etc.) and on-site consultation considering lesson learnt of the two forerunner objects. Of crucial importance is the management of the interfaces between the different groups of actors necessary for the completion of the refurbishment of all buildings of the block. There will also be an extensive search for by-products that can be integrated into building renovation by e.g. using insulation material of recycled paper instead of conventional building material.

Industrialization and prefabrication

- How is your renovation process including or is compatible with industrialization, standardization and prefabrication? (i.e. modular cladding, prefabrication of modules with integrate BIPV BAPV, Lean process construction... etc.)

Response: It is intended to use affordable technologies, but to integrate the components in an intelligent way easy to be replicated in the neighbourhood.

Energy communities (ict and/or social driven)

- How your project promotes the activation of energy communities based on ICT and Social Innovation?

Response: Sustainable step-by step refurbishment of a building block in Vienna with about 437 residents is partly already accomplished and extensions are foreseen towards a Positive Energy District (PED). Regarding ICT, demand-side management strategies, supported by building energy management systems, will be implemented to promote energy efficient behaviours, and maximise the benefits of the building block.

New European Bauhaus

How your city – or local context hosting the project – is promoting the New European Bauhaus concept?

1. sustainability, from climate goals, to circularity, zero pollution, and biodiversity
2. aesthetics, quality of experience and style, beyond functionality
3. inclusion, from valorising diversity, to securing accessibility and affordability:
 - a. reconnecting with nature:
 - b. regaining a sense of belonging:
 - c. prioritising the places and people that need it most:
 - d. fostering long term, life cycle and integrated thinking in the industrial ecosystem



Response: The intervention will promote the New European Bauhaus concept in regards to: 1) sustainability - The attitudes of various residents and house respectively apartment owners have been identified and related energy behaviour will be investigated in the frame of ProLight as well as presented and discussed with involved stakeholders. 2) Aesthetics – 2 house owners of 13 building objects are active customers/prosumers and all other investors shall be integrated within the next 10 years following jointly decided aesthetic criteria. 3) Inclusion - house or apartment owners can assess the benefits of the joint approach, such as shared energy use (heating and electricity), cost advantages in bidding, synergies through joint property management, proper energy use of the courtyard, etc.

AMBITIONS

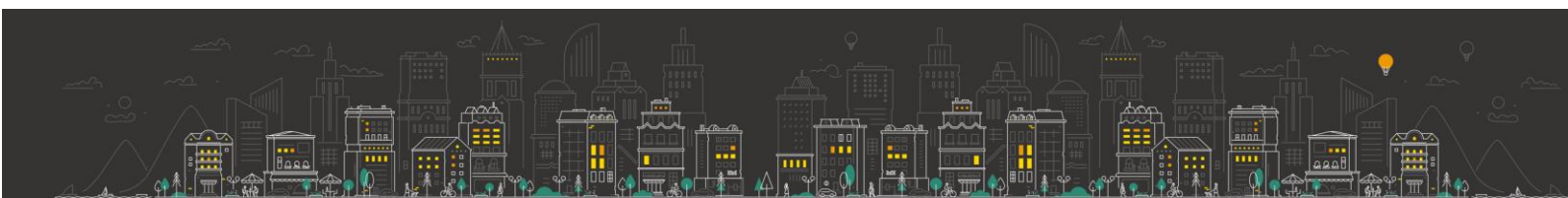
What are the demos' visions?

Together with the Viennese Municipal Department 20 - Energy Planning (MA 20) as part of the Administrative Group for Urban Development, Traffic and Transport, Climate Protection, Energy Planning and Public Participation and intends to contribute as follows:

- Consideration of relevant urban energy planning aspects
- Connecting foreseen demonstrations with related city actions
- Informing about further progress of urban/district developments
- Supporting stakeholder consultations in Vienna on various levels
- Dissemination & promotion among extended urban networks

Do you have a statement, which?

The Positive Energy District (PED) is a national initiative for sustainable development and to reach energy political goals in Austria. Although not realised the PED for all 13 buildings in the Viennese demo quarter, the 2 building owners are quite proud about what they have achieved so far and that they have been awarded with several environmental prizes.





ProLight

ProLight – Better quality of life and affordable housing: Our smart neighbourhood approach will be demonstrated in 6 European Lighthouse and pocket districts, and the results will provide blueprints for replication.

Analysed districts include:

- Building and renovating in an energy and resource efficient way in [Austria](#), [Finland](#) & [Greece](#).
- Energy communities in [Spain](#), [Italy](#) & [Portugal](#) combined in so-called Innovation clusters

Follow us



[/prolight_EU](#)



[/prolight-project](#)



[www.prolight-project.eu](#)



Co-funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them.

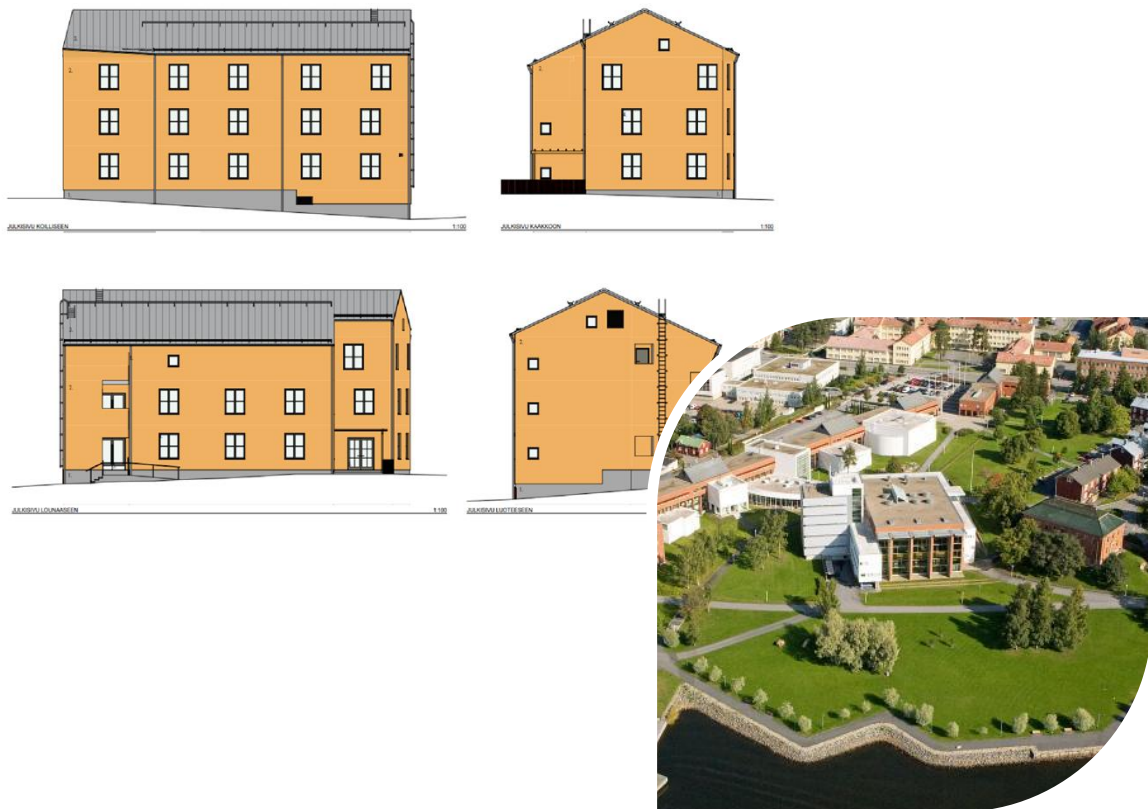


The VOAS Pilot

Vaasan opiskelija-asuntosäätiö, VOAS, The Student Housing Foundation in Vaasa, Vaasa, FINLAND

Wolffintie 24, 65200 Vaasa, Finland

<https://www.prolight-project.eu/demo-case/city-of-vaasa-finland/>



Overall summary:

VOAS Pilot incorporates modern solutions for energy management, including the following:

- Highly energy efficient construction that will be 30% more energy efficient, at the minimum, compared with the existing housing;
- Renewable energy will be accepted as the source of energy as much as it is possible, in collaboration with the local utility and VEBIC, the University of Vaasa;
- VEBIC together with VOAS will establish a LivingLab, meaning a real-life context for continuous, regular and long term R&D and demonstration activities for new technical, economic and social solutions;
- VOAS will prepare a LivingApp, and within the ProLight project an independent compartment for guiding and tutoring young students with their daily routines of energy use, waste management and circular economy will be prepared; the whole App will be available for all students also in other targets than the VOAS Pilot.



ProLight Demo district – GENERAL DATA

Pilot description and expected performance results (incl. No. of buildings, Building type, Renewables, Others):

Demo site, option 1:

Wolffintie 24
21 apartments
Energy class A
Ground heating/District heating
Solar panels
Room sensors

Construction of a new energy efficient building on an empty plot. The house will offer modern living in studio apartments, very close to the University campus and seaside nature, and with walking distance to the City centre.

Demo site, option 2:

Palosaarentie 58
66 apartments
Energy class A
Ground heating/District heating
Solar panels or green roof
Room sensors

The building will replace the old, not energy efficient, student dormitory built in 1968, which is in poor condition. The building has indoor air problems and there are many spaces that cannot be used for any purpose. The new building will have 66 modern student apartments, as well as common spaces that will also be used by other students living in the area.

During the project, VOAS will take in use a phone application that allows the tenants to manage all matters related to their housing and from which they can get information on energy consumption, water consumption and recycling rate, among other things. With the help of new buildings, apartment-specific information about the environmental effects of living is obtained, and via the application, the information can also be passed on to the resident.

With the application and information we can guide the students for energy saving habits, separation of waste at source, circular economy, but also some fundamental “habits of living” important especially for new students who start their independent life outside childhood home. This also makes the concept socially innovative. With the energy saving construction, smart metering and rational use of energy directly affect the rents and other costs of living paid by the residents.



Climate area, Location urban/suburban

Vaasa, Finland. Cold, Northern Europe. Urban.

Overview of site specific economic, energy & environmental related indicators of pilot districts.

Key Performance Indicators	Lighthouse district
Number of dwellings	Wolffintie: 21 / Palosaarentie: 66
Primary energy savings [MWh /year]	120,85 MWh / n/a
Renewable energy production [kWh /year] -> KPI5 in the project	20000 kWh / n/a
GHG emission savings [TnCO2eq/year]	n/a
Number of TRL 6 to TRL 8 technologies	n/a
KPI7: Investment costs [Euro/m2]	3393 €/m ² / 3450 €/m ²

ProLight figures for the New European Bauhaus

Demo, Country Finland

1 house, 21 apartments

Number of residents 21

Integrated Renovation Status: Demo option 1 is now an empty plot and on demo option 2 the old building must be demolished before starting a construction.

Liveability: The whole target will be a LivingLab for the VEBIC of the University of Vaasa, meaning systematic, regular & continuous research & development activity as a long-term partnership.

Technological advancement: All will be constructed energy efficient and renewable energy sources are used as much as possible.

Social Innovation/Business Models: The energy management concept will include, on top of using RES & energy saving construction, smart metering & incentives for rational use of energy, i.e. saving that directly affect the rents & other costs of living paid by the students. The VOAS "LivingApp" will be developed, with the purpose of guiding the students for resource/service efficient habits.



Which business model is used (e.g. ESCO, PPP, one-stop shop, others)?

VOAS is a non-profit foundation, and all benefits will be directed to rents and tenants. Public funding for separate investments, see below (Financial instruments).

Utilised financial supporting instruments:

- ARA (The Housing Finance and Development Centre of Finland; ARA supports the improvement of the housing conditions of people with low or average incomes and special-needs groups, including students) subsidy, 15 % of the total investment;
- Financing by loan, 85% with special conditions: Green funding when 30% energy saving, fossil replaced by renewable energy.

Main economic activities in your city/region:

Energy technology industry, electronics, marine machinery, Retail, Construction.

Envisaged local dissemination activities:

- The LivingApp delivered to all tenants, accompanied with information on website and special meetings
- Information to the local audience: newspapers, local and regional radio and TV, info meetings
- Following the ProLight dissemination strategy and program

LEGISLATION

How are energy communities regulated in your country/region?

Energy community's participants must be on the same lot (or belong to same real estate group) in order to share the produced or stored electricity. Production and consumption are measured by smart metering and using data hub.

STAKEHOLDERS

Local stakeholders and partners:

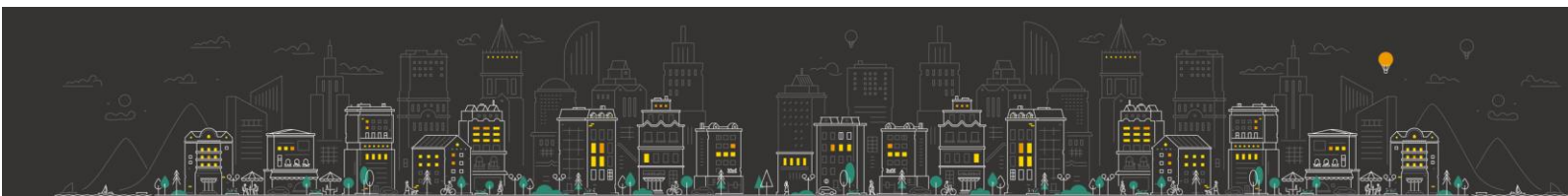
- VOAS, Vaasan opiskelija-asuntosäätiö (The Student Housing Foundation in Vaasa), the owner.
- VEBIC (Vaasa Energy Business Innovation Center), University of Vaasa, R&D partner; will establish a LivingLab concept (continuous, regular, long-term R&D partnership) for the whole target area.



What are the advantages that the stakeholders may have when they contribute to or are involved in the project?

The residents will get to know more about their energy consumption and get savings directly. With accessible data, awareness of energy issues will rise among the residents. Living in an energy efficient and sustainable house, can have meaning to people, as especially young people feel environmental values very important. Does the information and energy efficiency of the house make it more attractive to residents?

University researchers and students will learn more through LivingLab concept. The application will also be implemented in VOAS old houses, so in the best case, the application will have approximately 2500 users at the end of the project and there will be comparison data available.



REQUIREMENTS

Energy poverty (redistribution of benefits)

- How do you address energy poverty?
- How do you redistribute the benefits generated by the project to the tenants?
- How do you prevent gentrification after the renovation?

Response: The financing instruments presuppose and audit afterwards that 30% energy savings will be achieved, compared with the existing buildings. Energy poverty is addressed from the very beginning of planning and subsequent construction.

VOAS is a non-profit organisation. All benefits are seen in lower rents, which already today are among the cheapest ones in Finland. Also, new housing and living concepts developed by the foundation benefit directly the tenants.

All benefits will be evenly, equally and transparently distributed within all tenants, without any risks for gentrification.

Circular economy and local value chains

- How do you include principles of circular economy in your project? (i.e. specific local value chains like for example timber wood construction etc.)
- Do you use or are you interested in using by-products from other value chains for your renovation? (i.e. alternative materials for insulation)

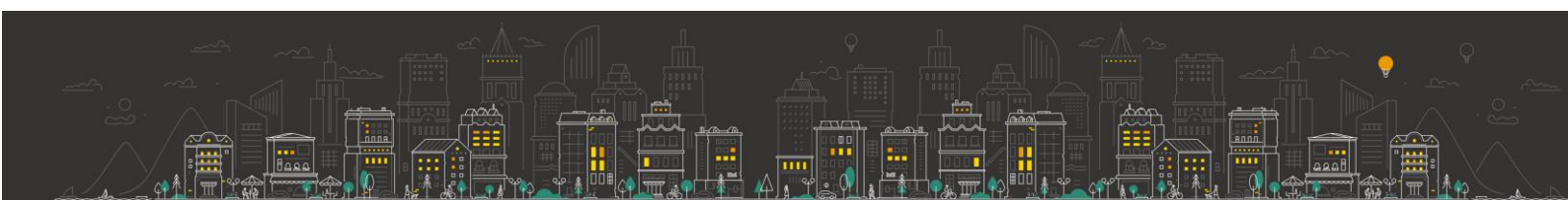
Response: Attention will be paid to waste handling during construction, and modern deep collection containers have been planned for the building, which will allow residents to sort waste efficiently. The amount of waste and the recycling rate are monitored and information about the results is communicated to the residents via LivingApp. Competitions can also be organized for residents between houses, which can be used to motivate them to recycle. In addition, residents are informed about issues related to recycling.

The waste management companies utilise the organic fraction to biogas, and the incineration plant (using combustible, source separated waste) produces district heating energy for the City of Vaasa. In Vaasa the utilization rate of municipal waste received is over 99 %.

Industrialization and prefabrication

- How is your renovation process including or is compatible with industrialization, standardization and prefabrication? (i.e. modular cladding, prefabrication of modules with integrate BIPV BAPV, Lean process construction... etc.)

Response: The VOAS Pilot is planned by high quality architects, thus guaranteeing decent aesthetic appearance both for the region and the separate new houses. For this purpose, prefabricated concepts can be challenging, but can be used as far as it is possible. All solutions must be standardised and industrially compatible in terms of the permit procedures and renovations in the long-term.



Energy communities (ict and/or social driven)

- How your project promotes the activation of energy communities based on ICT and Social Innovation?

Response:

- The phone application introduced during the project activates the residents and increases their awareness of the environmental impact of their living.
- VEBIC of the University of Vaasa will use VOAS as a LivingLab, meaning continuous research, development, and support activity – involving both the tenants and the foundation (the owner).
- VOAS will prepare a “LivingApp”, and within ProLight a separate compartment for energy (saving, rational use of energy, circular economy, dissemination of information) will be prepared.
- The VOAS housing targets, especially the new ones including this pilot, will devote special attention to creating and activating preconditions for social cohesion. This is done by persuasive meeting places and opportunities, and by the LivingApp, for instance.

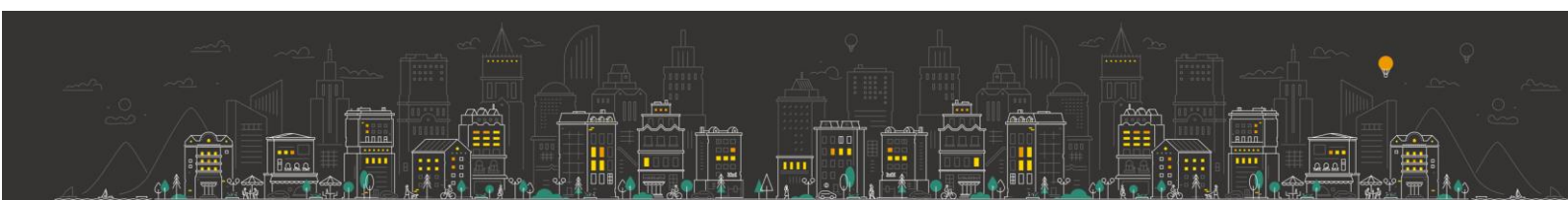
New European Bauhaus

How your city – or local context hosting the project – is promoting the New European Bauhaus concept?

1. sustainability, from climate goals, to circularity, zero pollution, and biodiversity
2. aesthetics, quality of experience and style, beyond functionality
3. inclusion, from valorising diversity, to securing accessibility and affordability:
 - a. reconnecting with nature:
 - b. regaining a sense of belonging:
 - c. prioritising the places and people that need it most:
 - d. fostering long term, life cycle and integrated thinking in the industrial ecosystem

Response:

1. The City of Vaasa has committed itself to be carbon neutral by 2029. It has elaborated and committed to the “Energy and climate program”, which was facilitated by the University of Vaasa. The program includes a vast number of actions, all divided, given responsibilities, scheduled and followed-up within the City’s organisation. Vaasa is also the main owner of the regional waste management company that has been one of the forefront actors in Finland in the field of circular economy. It has created a systemic view towards promoting circulation as far as towards product and service systems with premises and areas reserved for companies using circulated materials and things.
2. All construction activities within the City of Vaasa are strictly regulated by the City’s organisation and the permit procedures. They include all the mentioned perspectives, from architecture to the quality of construction.
3. The VOAS Foundation has equal rules for accepting tenants.
 - a. The demo houses, despite of being a part of the City centre, is close to the most important sea side area that is well managed and close to its natural condition. The target residential area has a direct contact with and open access to the park.



- b. Participatory processes are included in all construction permit procedures.
- c. The City of Vaasa supports the VOAS Foundation which offers students affordable living still with high quality apartments and living concepts. For some students it has been difficult and too expensive to hire apartment from free markets, and student housing has been invaluable for especially young students.

AMBITIONS

What are the demos' visions?

It's in the VOAS strategy, To be among the bests in energy efficiency 2026, as well as a living community and in servitization.





ProLight

ProLight – Better quality of life and affordable housing: Our smart neighbourhood approach will be demonstrated in 6 European Lighthouse and pocket districts, and the results will provide blueprints for replication.

Analysed districts include:

- Building and renovating in an energy and resource efficient way in [Austria](#), [Finland](#) & [Greece](#).
- Energy communities in [Spain](#), [Italy](#) & [Portugal](#) combined in so-called Innovation clusters

Follow us



[/prolight_EU](#)



[/prolight-project](#)



www.prolight-project.eu



Co-funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them.



The Kozani Pilot, Greece

Cluster of Bioeconomy and Environment of Western Macedonia – CluBE,
Municipality of Kozani – MoK

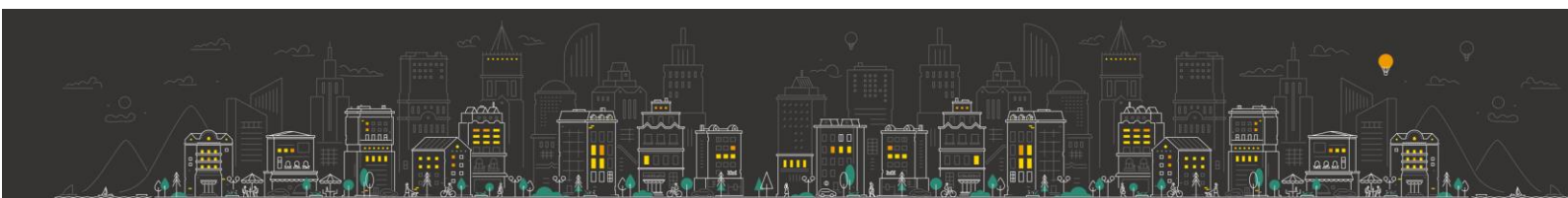
Kozani 501 00, Greece

<https://www.prolight-project.eu/demo-case/kozani-greece/>



Overall summary:

The project will deploy its solutions to a social dwelling in Kozani, Greece.



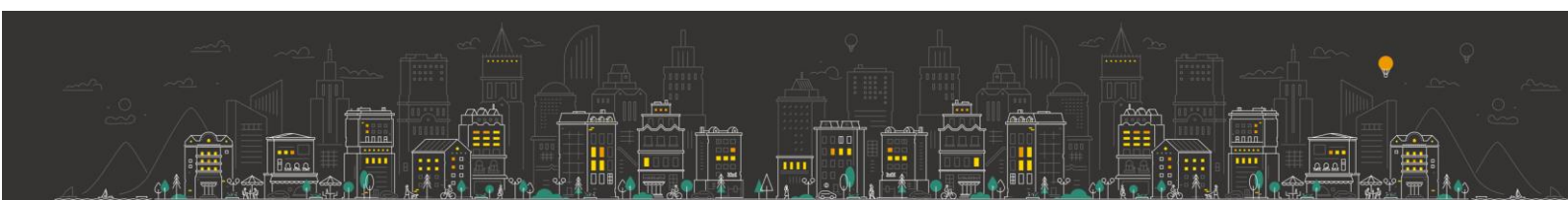
ProLight Demo district – GENERAL DATA

Pilot description and expected performance results (incl. No. of buildings, Building type, Renewables, Others):

The pilot project is planned to design and implement energy efficiency solutions and smart net metering for a selected residential flat among the ones that have been donated by the Greek State to population with lower income in the City of Kozani. Overall, the City hosts approximately 500 dwellings (out of 25.000 total dwellings) that all have similar characteristics and 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, in an area (Western Macedonia, Greece) that is subject to harsh winters, being the only non-coastal and fully mountainous Region of the country.

The project consists in renovating the flat of a public owned multi-storey house by improving its thermal insulation (to reduce the consumption at the first place) and installing PV panels on the roof to be used in net-metering mode (to balance the electricity production with free solar energy and allowing to pay only electricity costs of the supply and demand differences). In parallel, the Energy Community (EC) of Kozani has installed a solar capacity of 6MWp; although there is no surplus to be donated to the most vulnerable population. EC Kozani, in direct coordination with the Municipality, is considering acquiring further capacity, part of which may be “donated” to lower income households. This is especially urgent, due to the imminent decommissioning of the lignite power plants in the Region, that once used to provide up to 75% of the country’s total electric energy and which still provides the heat for the district heating in the city of Kozani.

The project which aims, among others, at installing RES and assisting the most vulnerable parts of Kozani’s population, will be carried out by the Cluster of Bioeconomy and Environment of Western Macedonia (CluBE). CluBE will be in charge of the planning and implementation process of the demonstration actions in the site of Kozani and will also raise investments and funding to complete the renovation of the selected household. The Municipality of Kozani (MoK), together with CluBE, will perform an in-depth analysis of the existing status quo of the apartments identified and the selection of the household to be upgraded. Currently, MoK in collaboration with CluBE is conducting a survey concerning the Energy poverty of the social housing of the city, in order to define the “right” dwelling that meets the criteria that MoK has set for renovation. Afterwards, CluBE will undertake the construction of the household selected. Finally, following an assessment of the performance achieved and the projection according to building types, an overall plan for the upgrade of all the buildings in Kozani will be drafted by EC Kozani and CluBE, including specific contacts with financial resources (relevant Ministries, Regional Operational Program, European Investment Bank, etc), in order to cover the entire vulnerable population in a concerted and organised manner, achieving economies of scale and drastically improving the energy performance of these households. The overall idea would be that the tenants will save 30% of their electricity bill, while they will also receive an estimation of which would be the cost and which share of that might be covered by the City of Kozani, to reach a total Climate Neutrality by 2030.



Climate area, Location urban/suburban

Climate area: Continental

Location: Urban

Energy performance [kWh/m²*a] (Current / after renovation): 252 / 50

ProLight figures for the New European Bauhaus

KOZANI, Greece

1 out of 500 apartments

2 Residents

Integrated Renovation Status: 1 out of 500 apartments will be refurbished.

Livability: The apartments are donated by the State to the lower income population. ProLight will act as a motivation for public institutions to undergo a major refurbishment project for all these apartments & for the envisaged city's climate neutrality.

Technological advancement: Besides the upgrade & the provision of solar thermal energy, the apartment will host sensors to monitor & optimise its performance. It will be connected to a Municipal solar PV park through virtual net metering.

Social Innovation/Business Models: The Municipality of Kozani 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.

Which business model is used (e.g. ESCO, PPP, one-stop shop, others)?

Direct investment from CluBE, potentially benefiting from a public - private co financing to make solar electricity available for free to very low-income populations (tenants). Net metering will be applied for the balance between self-consumption and the distribution of the rest of the electricity to the national grid, thanks to digital tools and smart meters.

Utilised financial supporting instruments:

Sponsorships from local construction companies and local material stores.

Main economic activities in your city/region:

The main economic activity of the city, for many decades, was the lignite mining and the power plants which is expected to last until 2028 due to the decarbonisation phase Kozani is experiencing. Kozani is also a pole for winter tourism as well as an emerging agro-tourism destination.



Envisaged local dissemination activities:

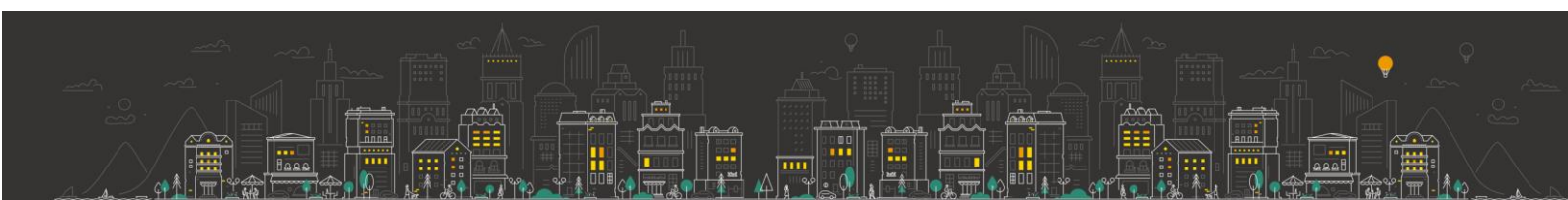
CluBE will perform local and regional dissemination activities, in order to showcase the construction works and demonstrate its effectiveness and capacity to improve the living conditions and economics for the most vulnerable population. At the same time, a parallel campaign will target the local ecosystem of construction companies, in order to improve their understanding of the benefits that these interventions can have and the amount of work arising for the local companies. A special attention will be given to promote the applicability of the developed solutions to the rest of the similar houses in Kozani and the whole Region. The Association of all Municipalities in Greece (KEDE), will promote the scheme to all cities in the country.

LEGISLATION

Did you have any special challenges regarding town planning and legislation? What are the lessons learnt?

The Directives 2010/31/EU (Energy Performance of Buildings Directive-EPBD) [5] and the 2012/27/EU (Energy Efficiency Directive – EED) introduced specific measures for improving the energy performance of the European building stock. Although the aforementioned Directives were amended by 2018/844 and 2018/2002 Directives a major focus of the EPBD is nearly Zero-Energy Buildings (nZEBs) both for new buildings and renovations, as well as the long-term renovation strategies through cost-effective approaches.

Lessons learnt: The first Thermal Insulation Regulation was introduced in 1979, and it was for its time a very strict one. However, it was not updated or recasted until the introduction of the Energy Performance of Buildings Regulation (KENAK 2010) in 2010. The results of this hiatus period are unfortunately felt until this day. In terms of the date of construction of residential buildings 30% were constructed before 1980, i.e., they have no thermal protection, and 60% were constructed from 1981 to 2005. Hence, the buildings constructed in the period between 1990 and 2005, when the construction sector was booming, were built according to the initial Thermal Insulation Regulation, which by that time was already quite outdated. Due to the economic recession, the number of buildings constructed after 2008, near the year of implementation of the minimum requirements foreseen by KENAK (KENAK 2010), represents only 7% of the total stock of normal residential buildings used by households.



How are energy communities regulated in your country/region?

Greece adapted the European Union energy community legislation in 2018. The establishment and operation of the Energy Communities, as introduced and established by Law 4513/2018, constitutes a new and integrated institutional intervention supporting social economy in the energy sector. In this context, the founders of Plegma Labs started the initiative which would later become the Plegma Energy Community.

The concept of energy communities was introduced in the Greek reality with the Law 4513/2018. This legislation has been welcomed in Europe as an innovative, participatory tool that enables the local community (natural persons, SMEs, and local authorities) to contribute to the transition of the country towards clean energy sources. Unfortunately, the recent developments on the framework of energy communities in Greece threatens their existence and development and, thus, the participation of citizens in the energy transition.

The legislation about the EPBD doesn't mention anything regarding the microclimate conditions. Changes concerning this issue are expected to be published based on the EU legislation.

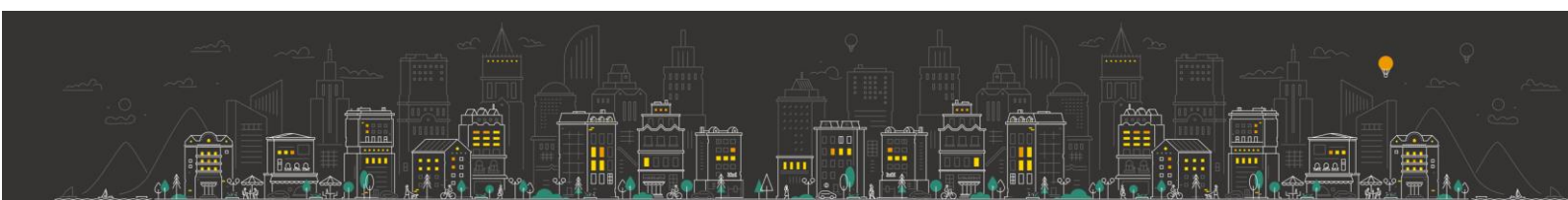
STAKEHOLDERS

Local stakeholders and partners:

The Cluster of Bioeconomy and Environment of Western Macedonia will undertake the renovation and PV activities, assisted by MoK and one of CluBE's members, the University of Western Macedonia, which is in charge of the engineering and project development in the building renovation process. The University of Western Macedonia will perform the analyses of data regarding the household(s), before and after the interventions. CluBE will also undertake the local coordination of all involved parties and stakeholders (Municipality of Kozani, other regional municipalities, technical experts, etc), the promotion and dissemination activities, the contacts and attraction of public and private investors, etc. Also, due to its great network of members and connections with the local productive tissue, CluBE will undertake the mobilisation of local manufacturers in order to maximise the added value of the project implementation.

What are the advantages that the stakeholders may have when they contribute to or are involved in the project?

The stakeholders that are getting involved in the project will gain knowledge and experience on how to deal with the energy efficiency upgrade of buildings with lower income residents. Furthermore, they will have the chance to contribute to the design phase of the renovation actions trying to achieve the indicators that were set by the project. Finally, it is a good opportunity that different types of stakeholders (Regions, Municipalities, Property owners, Construction companies, Energy providers, Local district heating companies, Citizens) will come together and have the chance to exchange knowledge.



REQUIREMENTS

Energy poverty (redistribution of benefits)

- How do you address energy poverty?
- How do you redistribute the benefits generated by the project to the tenants?
- How do you prevent gentrification after the renovation?

Response:

- Two-fold approach: reducing energy consumption and providing renewable energy.
- The project will lead to decreased consumption, which constitutes the benefit of the residents.
- It is a small scale renovation, so there is no risk for gentrification in Kozani.

Circular economy and local value chains

- How do you include principles of circular economy in your project? (i.e. specific local value chains like for example timber wood construction etc.)
- Do you use or are you interested in using by-products from other value chains for your renovation? (i.e. alternative materials for insulation)

Response:

- This is not really covered: even if we talked about recycled wood and other materials from construction sector, it wouldn't be allowed by the current national legislation.
- Not allowed normally by the legislation.

Industrialization and prefabrication

- How is your renovation process including or is compatible with industrialization, standardization and prefabrication? (i.e. modular cladding, prefabrication of modules with integrate BIPV BAPV, Lean process construction... etc.)

Response: It is not currently; however, we had some initial discussions with local construction companies for their potential interest to industrialize their production line and the first approach was very positive. We will include them as stakeholders.

Energy communities (ict and/or social driven)

- How your project promotes the activation of energy communities based on ICT and Social Innovation?

Response: The Energy Community of Kozani will be associated to the project as a stakeholder, for the endorsement of the concept and principals and potential future replication.



New European Bauhaus

How your city – or local context hosting the project – is promoting the New European Bauhaus concept?

1. sustainability, from climate goals, to circularity, zero pollution, and biodiversity
2. aesthetics, quality of experience and style, beyond functionality
3. inclusion, from valorising diversity, to securing accessibility and affordability:
 - a. reconnecting with nature:
 - b. regaining a sense of belonging:
 - c. prioritising the places and people that need it most:
 - d. fostering long term, life cycle and integrated thinking in the industrial ecosystem

Response: Kozani is starting to endorse the New European Bauhaus concept and incorporating it within its strategic way of thinking for the future of the city. In fact, Kozani is one of the 100 Climate Neutral Cities by 2030 (EU Mission), where the Bauhaus concept is playing an important role in the sense of wood becoming a widely used material for façade refurbishment. Consequently, wood will act as a carbon sequestration tank, while it will also contribute to aesthetic reasons, reviving old local traditions where wood used to be a significant component of local house construction. Finally, the use of wood is expected to have very positive impacts on the efforts of reviving and boosting the local wood industry. Also, Kozani is one of the Lighthouse cities of the Eyes Hearts Hands Urban Revolution (EHHUR) project, which aims to revitalise a whole area of the city, including two schools, the University Research Center and a park, with main goal to develop and test a co-designed methodological structure in their built environment transformation by using already existing good practices and complementing them with the New European Bauhaus and EU Missions principles.



AMBITIONS

What are the demos' visions?

Bringing in motivation for public institutions to undergo a major refurbishment project for all the social dwellings & for the envisaged city's climate neutrality.

Did you have a statement, which?

To be one of the 100 Climate Neutral and Smart Cities in Europe and one of the 6 in Greece.

How was it to establish an energy community?

Due to the reduction of electricity production from coal which will have a big impact on the local economy the Municipality of Kozani created an energy community with the name "Energy Community of the Just Transition".

In this Community, apart from the Municipality, private investors and citizens (natural persons) also participate. Its form ensures the enhancement of shareholders' incomes, the development of local entrepreneurship while contributing to the protection of the environment.

This Community acts as an example of good practice, opening perspectives in the field of the new economy that has been formed, while its concern is the utilization of local renewable resources for the benefit not only of its shareholders but also of local communities.

The Energy Community (EC) is of high success and the Municipality of Kozani also examines the possibility of "net - metering" part of that PV energy to the most vulnerable population of the city.





ProLight

ProLight – Better quality of life and affordable housing: Our smart neighbourhood approach will be demonstrated in 6 European Lighthouse and pocket districts, and the results will provide blueprints for replication.

Analysed districts include:

- Building and renovating in an energy and resource efficient way in [Austria](#), [Finland](#) & [Greece](#).
- Energy communities in [Spain](#), [Italy](#) & [Portugal](#) combined in so-called Innovation clusters

Follow us



[/prolight_EU](#)



[/prolight-project](#)



www.prolight-project.eu



Co-funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them.



The Gernika-San Fidel TEK, Spain, GAIA and Gernika City Council Pilot

Carlos Gangoiti Kalea, 11, 48300 Gernika-Lumo, Bizkaia, Spain

<https://www.prolight-project.eu/demo-case/gernika-lumo-spain/>



Overall summary:

General description

Energy community promoted by the San Fidel Teaching Centre, according to the TEK–CEL model designed by Edinor (Energy Broker Entity).

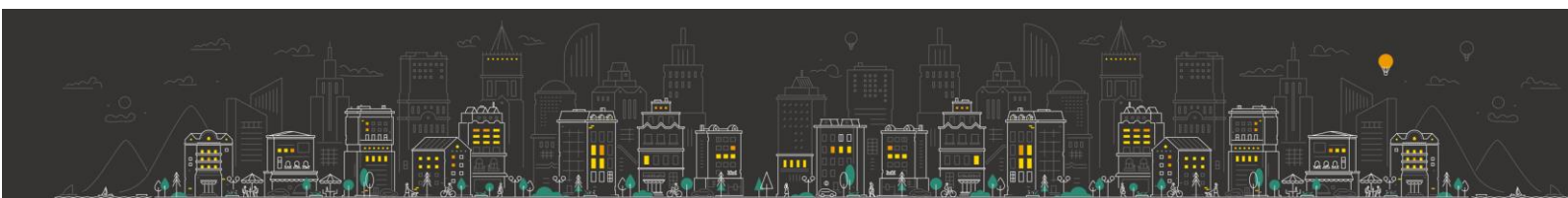
Tokiko Energia Komunitateak (TEK) in Basque means Local Energy Community in English.

Participants

The promoting entity (Ikastola San Fidel) and citizens, businesses and SMEs, located within 500 meters of the facility, who join the association as members

Energy model

Solar installation on the roof of a building owned by San Fidel for collective self-consumption. This roof is located in the Ikastola San Fidel sports center



Operation model

Edinor supports the Ikastola San Fidel in the phase of constitution of the TEK-CEL (San Fidel TEK) and in the campaign for the adhesion of members. Subsequently, Edinor supports San Fidel Tek in obtaining public aid, financing, selection of companies (preferably local) that will execute the facilities and their maintenance, and in the other procedures and actions that require the execution and legalization of the facilities.

Governance

The highest decision-making body is the Assembly, consisting of all energy community members, which gives one vote to each participant. Ordinary management is entrusted to a Board of Directors made up of 5 members who are elected annually by lottery among the members. The Board of Directors is supported by Edinor in the operational, administrative and energy management of TEK-CEL, during an initial period of three years.

Origin and participants (cont.)

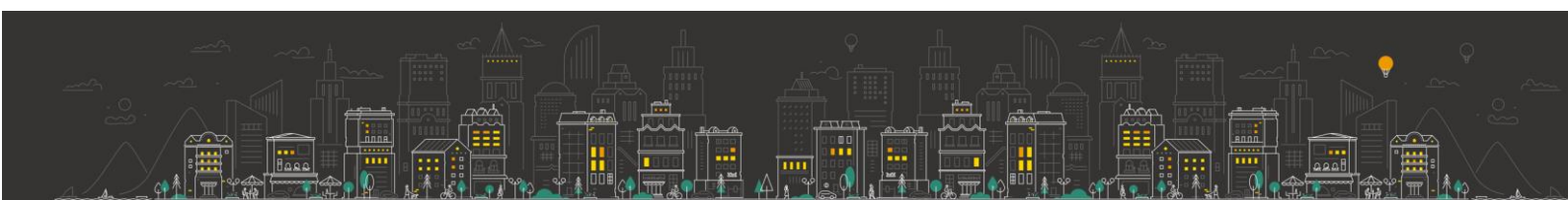
The impulse and promotion correspond to the entity that owns the roofs (Ikastola San Fidel). The participants in the San Fidel TEK are, in addition to the entity that owns the roofs, citizens, small businesses and, the Gernika Casa de Cultura-Kulturetxea, whose homes, businesses or companies are located within 500 meters of the facility. Depending on the total installed power, which is the sum of all PV installations owned by the energy community San Fidel, the number of partners will be defined. It can be from 30 to more than 1,000 members.

Innovation activities

The San Fidel TEK APP allows partners to monitor consumption and use of the facility. R&D projects aim at developing new aggregation solutions, as well as demand management and flexibility.

Barriers and challenges identified

The limit of 500 meters for shared self-consumption is considered a barrier to the development of local energy communities. In other countries, this limit is situated at 1 km or 2 km, which would make it possible to reach all homes and small businesses in many municipalities.



ProLight Demo district – GENERAL DATA

Pilot description and expected performance results:

The so-called Tokiko Energia Komunitateak (TEK) in Basque, which in English means Local Energy Community, will allow users who choose to 'hook up' to the installation to reduce their environmental footprint and save on electricity bills. Gernika-TEK differentiates 4 types of public and private beneficiaries:

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

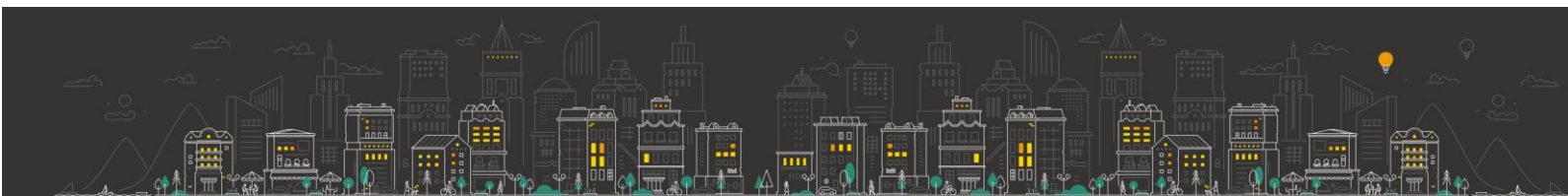
The implementation of the project will specifically contribute to avoid the emission of 885 tons of CO₂ per year, which is equivalent to planting 3,500 trees that absorb carbon dioxide emissions for 25 years.

Gernika TEK will have a “living” 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 analyzed.

Climate area, Location urban/suburban

The climate of the municipality of Gernika-Lumo is classified within the temperate oceanic climate. The average temperature is 14.5°C and it is characterized by not suffering large oscillations during the year. The difference between the average temperatures of the months warmest and the coldest is only about 10°C, approximately. The average annual rainfall is close to 1200mm, and despite the fact that the maximums usually occur in the autumn and winter months, it rains throughout the year.

In the short, medium and long-term future, however, these climatic variables may be altered because of the effects of climate change. In the long term, despite great uncertainty, models indicate that average maximum temperatures could rise by up to 3°C. The minimum temperature is expected to suffer a similar rise.



Overview of site specific economic, energy & environmental related indicators of pilot districts.

Key Performance Indicators	Lighthouse district
Number of dwellings	200
Primary energy savings [MWh /year]	25% of energy consumption
Renewable energy production [kWh /year] -> KPI5 in the project	109.400kwh/year
GHG emission savings [TnCO ₂ eq/year]	885 TnCO ₂ eq/year
Number of TRL 6 to TRL 8 technologies	1
KPI7: Investment costs [Euro/m ²]	191,67€/m ²

ProLight figures for the New European Bauhaus

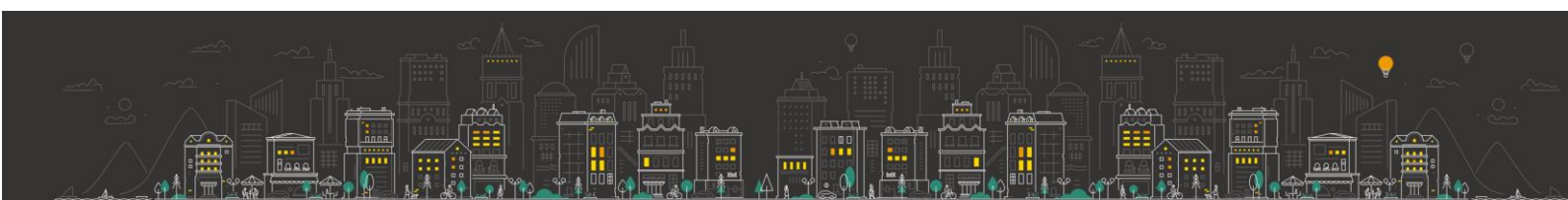
GERNICA TEK, Spain
1 educational centre, 150 homes & businesses
App. 770 Occupants

Integrated Renovation Status: Installation of 200 solar panels

Liveability: Gernika TEK will be a cooperative. Via solar panels 25% of the electricity consumption will be covered. An amount that is deducted from the bill w/o additional fees being fully autonomous.

Technological advancement: Gernika TEK installation will be monitored. 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).



Which business model is used (e.g. ESCO, PPP, one-stop shop, others)?

Public private partnership (PPP)

Utilised financial supporting instruments:

Edinor (Brokerage energy entity) supports the Ikastola San Fidel in the phase of constitution of the Energy Community (San Fidel TEK) and in the campaign for the adhesion of members. Subsequently, Edinor supports San Fidel TEK in obtaining public aid, financing, selection of companies (preferably local) that will execute the facilities and their maintenance, and in the other procedures and actions that require the execution and legalization of facilities.

Main economic activities in your city/region:

Automation spare parts; Tourism; Agriculture

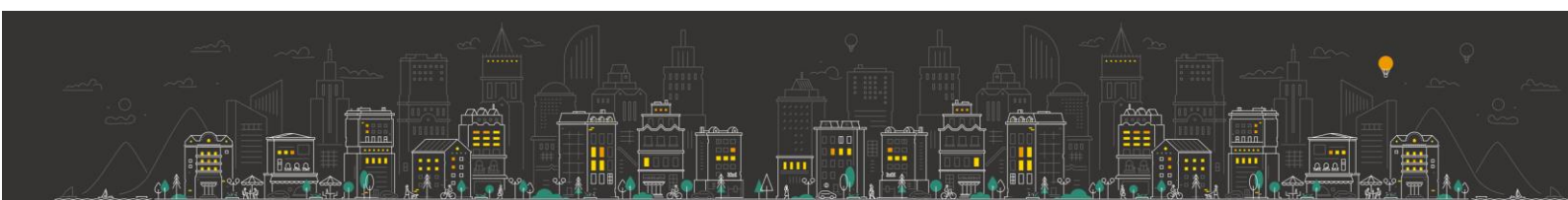
Envisaged local dissemination activities:

Art and Culture related activities for sensitization are the ones envisaged.

LEGISLATION

How are energy communities regulated in your country/region?

San Fidel TEK 's model has been adopted by entities of various kinds (town halls, chambers of commerce, educational centers...) that have promoted the creation of Local Energy Communities in their respective areas. The CE Implementa 2022 call, published in January 2022, and the self-consumption aid programs (within the framework of Royal Decree 477/2021), that have been in effect in the different Autonomous Communities since November 2021 have provided a strong boost to this model.



What else is important, having impact?

There are currently 16 projects similar to San Fidel TEK constituted in 3 Autonomous Communities (Euskadi, Navarra and Cantabria) that group 43 municipalities. The projects executed and/or presented by these Communities to the IDAE call “CE IMPLEMENTA 2022” and to the aid programs for self-consumption RD477, add up to 108 photovoltaic installations with a total installed power of 7.3 MW, and an investment of 8.3 million euros.

- There are a total of 13 projects in the Basque Country: 5 in Bizkaia (TEK Zierbena ; TEK Athletic; TEK San Fidel -Ikastola in Gernika-; TEK Somorrostro – Vocational Training Center in Muskiz -; and TEK Barakaldo) and 8 in Gipuzkoa (TEK Zumárraga, TEK Larraul , TEK Berrobi, TEK Andoain, TEK Pasaia, TEK Lasarte, TEK Urnieta, TEK Berio - in Donostia),
- 2 projects in Cantabria: CEL Santullán and CEL Torrelavega,
- and one in Navarra: TEK TODA Navarra, promoted by the Chamber of Commerce of Navarra, which encompasses 29 Navarre municipalities, 27 of which have a population of less than 5,000 inhabitants.

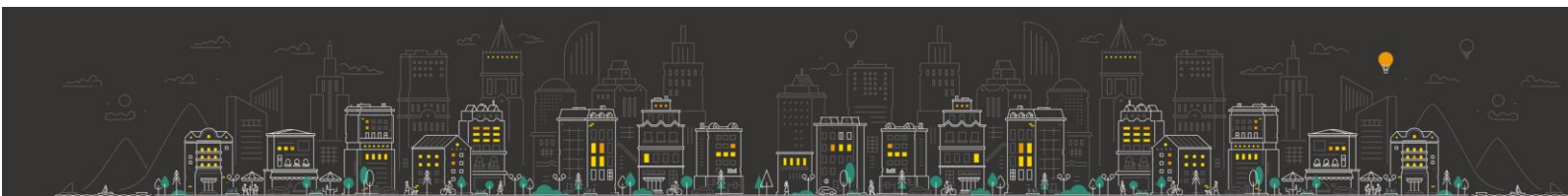
The model, in this way, adapts to municipalities of different sizes. From the 250 inhabitants of Larraul or the 177 of Ujue to those of more than 100,000 of Barakaldo or to capitals such as Bilbao (TEK Athletic) or Donostia-San Sebastián (TEK Berio).

MAIN ACTORS/STAKEHOLDERS

Local stakeholders and partners:

The highest decision-making body is the Assembly, made up of all energy community members, which gives one vote to each participant. Ordinary management is entrusted to a Board of Directors made up of 5 members who are elected annually by lottery among the members. The Board of Directors is supported by Edinor in the operational, administrative and energy management of TEK-CEL, during an initial period of three years.

The impulse and promotion correspond to the entity that owns the roofs (Ikastola San Fidel). The participants in the San Fidel TEK are, in addition to the entity that owns the roofs, citizens, small businesses and, the Gernika Casa de Cultura-Kulturetxea whose homes, businesses or companies are located within 500 meters of the facility. Depending on the total installed power, which is the sum of all PV installations owned by the energy community San Fidel , the number of partners will be defined. It can be from 30 to more than 1,000 members



What are the advantages that the stakeholders may have when they contribute to or are involved in the project?

A characteristic of the model proposed by Edinor is accessibility, in the sense that participation in San Fidel TEK neither requires investment, nor does it require commitment to permanence.

As San Fidel TEK is a shared self-consumption project (object of public aid programs under Royal Decree 477/2021), it allows all community members to buy energy produced by the panels without paying tolls or electricity charges, making it possible for a participant of San Fidel TEK to pay a maximum of €150 entry fee and a monthly fee of €9. These amounts include the amortization of the credit requested to execute the installation, its maintenance and insurance, and the operational and energy management of San Fidel TEK, which covers all the aforementioned services provided by Edinor to the energy community.

REQUIREMENTS

Energy poverty (redistribution of benefits)

- How do you address energy poverty?
- How do you redistribute the benefits generated by the project to the tenants?
- How do you prevent gentrification after the renovation?

Response:

- Working together with the municipality government in subsidizing energy provision to poor families.
- No financial benefits are envisaged for the cooperative, which is non-profit in the legal form. The benefits are directly passed over to members by the provision of cheap, clean energy.
- Through legislative decrees from the Government. Once the public aid to the project has been confirmed, San Fidel TEK as the promoting entity carries out the work of social revitalization so that the residents and small businesses of the town become members of San Fidel TEK.

Circular economy and local value chains

- How do you include principles of circular economy in your project? (i.e. specific local value chains like for example timber wood construction etc.)
- Do you use or are you interested in using by-products from other value chains for your renovation? (i.e. alternative materials for insulation)

Response: The circular economy is applied since San Fidel School Center is an active member of Udalsarea 21, the Basque Network of Municipalities for Sustainability, and an actor in the development of Agenda 21, which is working towards its accession to the Charter of Sustainable Tourism. This network is linked with the development of SDG in the areas of good health, well-being, affordable and clean energy as well as sustainable cities and communities.



Industrialization and prefabrication

- How is your renovation process including or is compatible with industrialization, standardization and prefabrication? (i.e. modular cladding, prefabrication of modules with integrate BIPV BAPV, Lean process construction... etc.)

Response: After conducting an energy diagnosis and considering the recommendations, the City Council is aligning its actions with the Euskadi Climate Change Strategy 2050. The energy sector significantly contributes to the municipality of Gernika-Lumo's total emissions. Therefore, it is advisable to continue focusing efforts on mitigation within this sector.

The recommended actions in this regard include:

1. Continuing to implement energy efficiency measures in municipal facilities, setting an example with initiatives like San Fidel Tek.
2. Promoting the adoption of energy efficiency measures throughout the municipality by providing greater support and guidance to residents.
3. Encouraging the use of renewable energy sources in the municipality by supporting and assisting residents in the adoption process.
4. Exploring the feasibility of implementing more ambitious economic incentive programs than the current ones to encourage the use of energy-efficient measures and renewable energies within the municipality. Environmental taxation can be a useful tool for this purpose.
5. Monitoring energy consumption at municipal energy generation facilities and facilitating the implementation of management and control systems for these facilities.
6. Planning and promoting the generation of renewable energy in public spaces, such as installing solar panels on canopies, establishing cogeneration microstations, and creating spaces for biomass storage.
7. Conducting awareness campaigns to encourage reduced energy demand, the use of durable materials, reduction, and reuse practices, and discouraging the consumption of items with planned obsolescence.

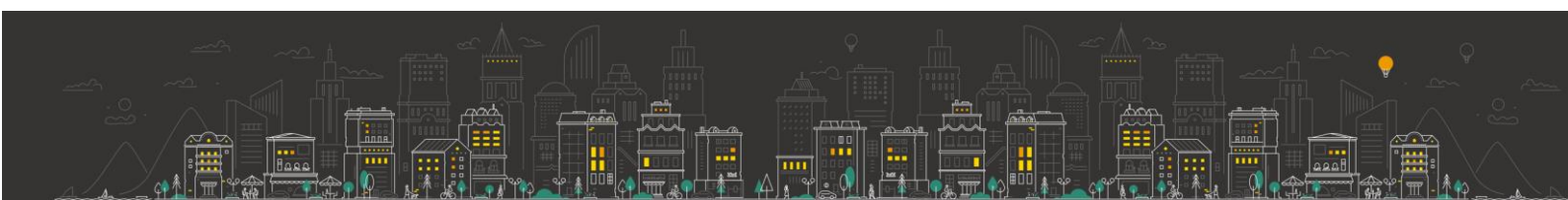
Energy communities (ict and/or social driven)

- How your project promotes the activation of energy communities based on ICT and Social Innovation?

Response: The Gernika-Lumo's council is committed to the field of new technologies as a means to foster social cohesion and integration, while also creating opportunities for advancement for all who want to contribute to the culture, economy or coexistence.

On the other hand, an important part of Edinor's activity is dedicated to R&D. This enabled various Energy Communities initiatives to have energy management systems specifically designed to implement demand management and provide information and services to their members.

The system consists of a software platform that handles communication between control algorithms and hardware devices, as well as with different external sources of data (weather, prices).



This system also monitors all the facilities owned by San Fidel TEK, both photovoltaic facilities, charging points or other types of assets that are gradually incorporated. This will allow progress in demand side management and aggregation solutions.

In this regard, the Edinor network, by having a monitoring platform covering all facilities, opens ways to advance towards independent aggregators of distributed energy resources. This aligns with the objectives outlined by the Self-Consumption Roadmap approved by the Spanish Ministry for Ecological Transition and Demographic Challenge (MITECO).

New European Bauhaus

How your city – or local context hosting the project – is promoting the New European Bauhaus concept?

5. **sustainability**, from climate goals, to circularity, zero pollution, and biodiversity
6. **aesthetics**, quality of experience and style, beyond functionality
7. **inclusion**, from valorising diversity, to securing accessibility and affordability:
 - a. reconnecting with nature:
 - b. regaining a sense of belonging:
 - c. prioritising the places and people that need it most:
 - d. fostering long term, life cycle and integrated thinking in the industrial ecosystem

Response:

1. As climate change will drastically affect the Biosphere Reserve of Urdaibai, the City Council of Gernika-Lumo has developed an energy diagnosis and its corresponding GHG inventory that shows that there is still a great potential for action in the City Council itself, because a considerable part of emissions comes from municipal buildings and public lighting. The City Council begun to transform the latter, through an audit and the replacement of a significant number of luminaires.
2. With respect to the consumption of buildings, the City Council has included the culture house (kulturetxea) as part of the Energy Community in Gernika to implement smart and efficient technologies. It faces special difficulty, because many of these buildings are classified as historical buildings.
3. For enhanced inclusion we are developing different activities. Our objective is to train and empower the citizens of our urban districts through culture so that they become active and responsible partners of the necessary European green transition”, says Jokin Garatea, coordinator of the ProLight project at the Casa de Cultura del Gernika-Lumo Town Hall. The districts of the participating cities are diverse, have different approaches and will develop digital applications or adapt other cultural participatory activities to improve the energy literacy of their inhabitants. The different places will share their experiences and inspire each other, so that also other districts and cities can learn and benefit from the results of this project.

On the 31st of March 2023, Gernika-Lumo presented the case of good practices of the local energy community in the Ikastola San Fidel to the European partners. Good practices involve the creation of the first solar energy community in the Busturialdea and Lea Artibai area.

The kulturetxea and the Ikastola San Fidel presented the Energy Community project to the European partners through cultural and technological projects, such as the projects awarded in the Lego-League Contest of the Ikastola San-Fidel and a storyteller in the Library.



AMBITIONS

What are the demos' visions?

After this first project, San Fidel TEK will progressively address new projects.

Do you have a statement, which?

Once the public aid to the project has been confirmed, San Fidel Tek as the promoting Entity carries out the work of social revitalization so that the residents and small businesses of the town become members of San Fidel TEK.



ESTABLISHING AN ENERGY COMMUNITY

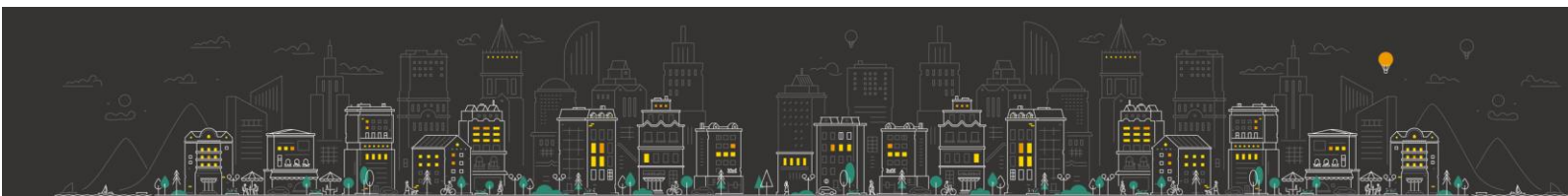
How was it to establish an energy community?

The model is characterized by the fact that, from the initial shared self-consumption project that has been executed and put into operation, it seeks to progressively incorporate initiatives related to the generation of renewable energy through sources other than photovoltaic energy, sustainable mobility, renewable thermal energy, energy efficiency and demand management.

Operation model

The development of each of the Energy communities (called San Fidel TEK) follows the following phases.

- 1. Constitution of the community.** In this phase, San Fidel TEK is constituted with the founding partners (a minimum of three individuals or legal entities) including the owner of the roofs. In this phase, in addition, San Fidel TEK requests aid for the project with the support of Edinor.
- 2. Social revitalization.** Once the public aid to the project has been confirmed, San Fidel TEK as the promoting Entity carries out the work of social revitalization so that the residents and small businesses of the town become members of San Fidel TEK. Edinor supports the promoting entity in this task.
- 3. Execution of the project.** Once the interest of citizens and small businesses in the initiative has been confirmed, San Fidel TEK approaches the financing of the project and its execution. Edinor supports San Fidel TEK in the financing and tenders on behalf of San Fidel in the execution of the project, giving input to local installers, so that it is San Fidel, who finally choose the company, who will be awarded the project.
- 4. Commissioning.** Commissioning supposes, on the one hand, that San Fidel TEK legalizes the installation and starts to supply energy to the partners (approximately 25% of their consumption). On the other hand, it supposes that, at the same time, it carries out a joint negotiation so that the partners receive the remaining energy (approximately 75%) with a guarantee of renewable origin. Edinor supports San Fidel TEK in the legalization process and annually negotiates with market vendors to present San Fidel TEK partners to the most advantageous of them.



What is the feasibility of an energy community?

A characteristic of the model proposed by Edinor is accessibility, in the sense that participation in San Fidel TEK neither requires investment, nor does it require commitment to permanence.

As San Fidel TEK is a shared self-consumption project (object of public aid programs under Royal Decree 477/2021), it allows all community members to buy energy produced by the panels without paying tolls or electricity charges, making it possible for a participant of San Fidel TEK to pay a maximum of €150 entry fee and a monthly fee of €9. These amounts include the amortization of the credit requested to execute the installation, its maintenance and insurance, and the operational and energy management of San Fidel TEK, which covers all the services provided by Edinor to the energy community.





ProLight

ProLight – Better quality of life and affordable housing: Our smart neighbourhood approach will be demonstrated in 6 European Lighthouse and pocket districts, and the results will provide blueprints for replication.

Analysed districts include:

- Building and renovating in an energy and resource efficient way in [Austria](#), [Finland](#) & [Greece](#).
- Energy communities in [Spain](#), [Italy](#) & [Portugal](#) combined in so-called Innovation clusters

Follow us



[/prolight_EU](#)



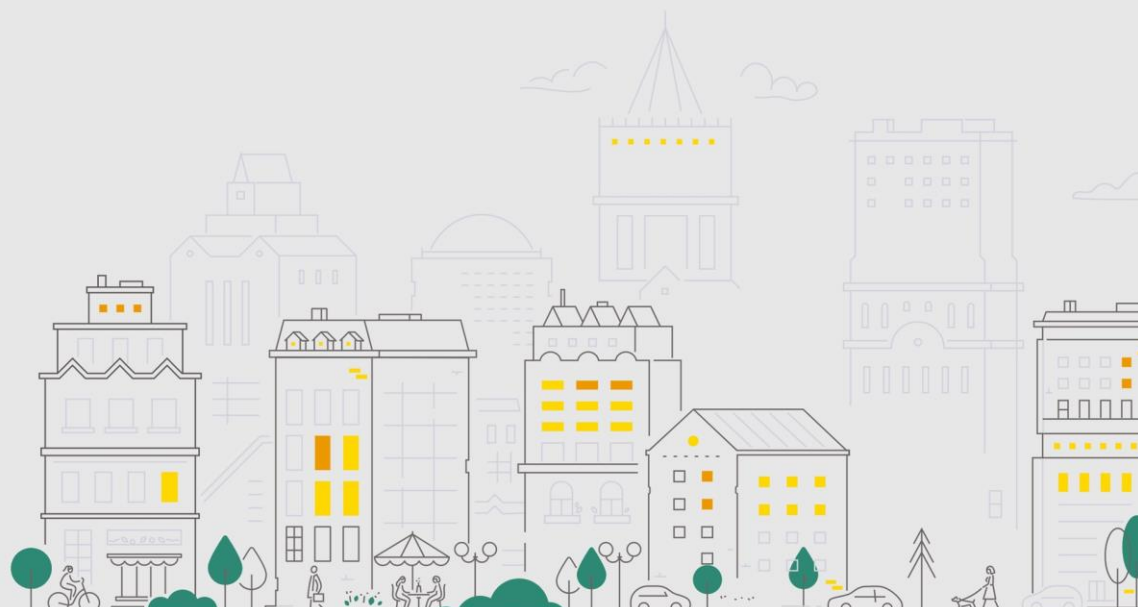
[/prolight-project](#)



www.prolight-project.eu



Co-funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them.



The Italian Pilot

Via dell'Abetone, 38068 Rovereto, Italy

<https://www.prolight-project.eu/demo-case/rovereto-italy/>



ProLight Demo district – GENERAL DATA

Pilot description and expected performance results (incl. No. of buildings, Building type, Renewables, Others):

The pilot is located in the so called Ex-Marangoni area, in the southern part of Rovereto. The property has an area of 4,300 m² and is situated within a larger 18,100 m² lot called the Ex Marangoni Meccanica that will eventually host various functions: commercial, residential and services.

Following a deep reclamation operation and involving numerous stakeholders, both private and public ones, an innovative living setting has been created, which is almost unique in its kind in Italy. It consists of 2 wooden buildings, nine and five storeys high, counting a total of 68 flats which are entirely designated to social housing purposes.

From an architectural and construction point of view the renovated buildings were conceived to meet modern concepts enhancing social and lively atmosphere, with close attention to environmental footprint (embedded and operational) and overall, to the economical sustainability of the project during both the construction and operational phases. Special attention was paid to sustainability in building materials throughout the whole life cycle and



to Renewable Energy Sources (RES) provision, to cover thermal and electrical energy needs for the residential part of the development.

In addition, by authorizing this real estate investment, the Municipality of Rovereto wanted to ensure a new opportunity to young people and families who wish to live in a balanced and green environment. The intervention is unique as it involves the tallest building with a wooden structure in Italy, moreover the wood used for its construction comes from the trees knocked down by the Vaia storm on the 29th of October, 2018.

The reclamation intervention can leverage on about 20 smart solutions in different macro-areas (Environment, Social Innovation, Planning & Architecture, Technological Systems) such as: urban gardens, lockers, library-of-things, intelligent irrigation, free Wi-Fi, etc. that have been conceived for the Ex-Marangoni area on top of the property redevelopment. The first inhabitants moved in at the beginning of 2022.

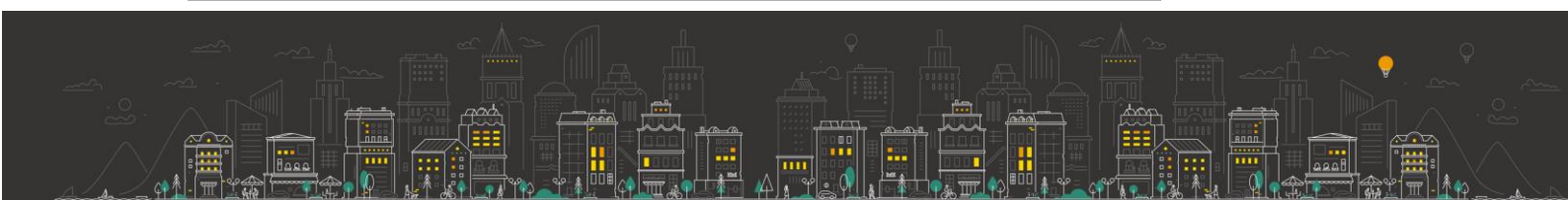
In addition, the ProLight project, by proposing activities and tools to stimulate attention on the topic of energy, will be a further opportunity to bring together a large group of citizens on common topics of discussion. To foster the emergence of cohesive communities of residents, Planet Idea provides the district with the expertise of its community managers team which acts as a catalyst for awareness and capacity building among residents. Digitized tools empower residents with awareness and capacity to use services and/or to promote social or economic development initiatives.

Climate area, Location urban/suburban

E (DPR n. 412 26/o8/1993), Sub-urban, 200 – 250 / 30

Overview of site specific economic, energy & environmental related indicators of pilot districts.

Key Performance Indicators	Lighthouse district
Number of dwellings	68
Primary energy savings [MWh /year]	NA
Renewable energy production [kWh /year] -> KPI5 in the project	$= (11.7+10.2) * 1200 = 26280$
GHG emission savings [TnCO2eq/year]	$= 26280*0.3 = 7884$
Number of TRL 6 to TRL 8 technologies	8
KPI7: Investment costs [Euro/m2]	NA



ProLight figures for the New European Bauhaus

Rovereto, Italy

Number of Dwellings 68

Number of Residents 240

Integrated Renovation Status: 2 social housing residential wooden buildings (nine & five storeys) out of a previous industrial brownfield

Liveability: The intervention can leverage on about 20 smart solutions in different macro-areas such as mobile app (residents + community level) urban gardens, lockers, library-of-things, intelligent irrigation, free Wi-Fi, etc.

Technological advancement:

Social Innovation/Business Models: Planet Idea provides the district with the expertise of its community manager team, which acts as a catalyst for awareness and capacity building among residents. Digitized tools (such as a mobile app) will empower residents with awareness & capacity to use services and/or to promote social or economic development initiatives.

Which business model is used (e.g. ESCO, PPP, one-stop shop, others)?

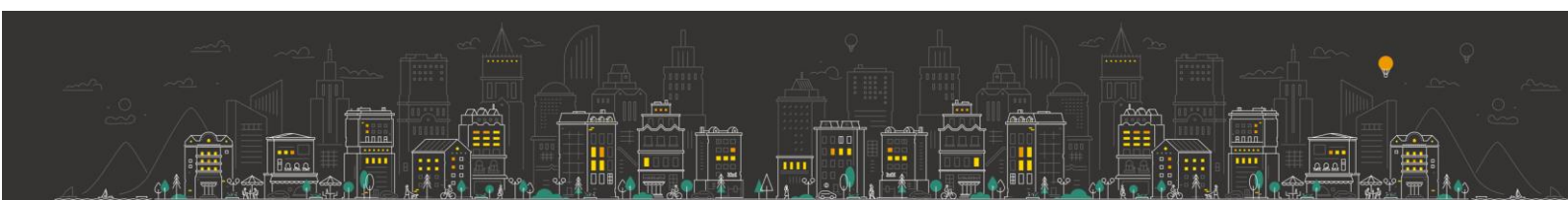
Since the beginning of 2015, the Finint Fund (that owns the ex-Marangoni district, hosting ProLight's piloting activities) has assigned a total of 147 dwellings for rent at moderate rates (about one third of the 500 dwellings envisaged as the Fund's objective) just in the Trentino region. Finint is the first investor in the Trentino Social Housing Fund, managed by Finint Investments SGR, conceived and promoted by the Autonomous Province of Trento, with the partnership of CDP (Cassa Depositi e Prestiti Group) and the Fondo Investimenti per l'Abitare. The business model underlying these real estate investments envisages a strong mix of public-private partnership, supported by cooperative credits and public financial institutions. The mission of the Finint SGR is renting apartments to the 'grey' segment of the population that does not have the possibility of satisfying its housing needs by accessing the free market, but at the same time does not have the requisites to access public social housing.

The flats are therefore promoted as rent-controlled leasing (rent reduced by 30% compared to the market) and are fully fledged with smart solutions paying special attention to social and environmental issues.

By executing and validating ProLight's approaches and demonstrating its sustainability (in terms of social wellbeing and robustness of business models) it is envisaged the possibility to replicate the solutions to other social dwellings owned by Finint and scale them among the Real Estate developers partners of Planet Smart City group both both in Europe and world-wide.

Utilised financial supporting instruments:

Private investments and secured loans.



Main economic activities in your city/region:

Agriculture, manufacture, construction, tourism, transport

Envisaged local dissemination activities:

Planet's vision is that places and technology help to create an intelligent urban context, but the way in which the inhabitants use those places, and that technology makes the difference in realizing the promises of the smart city. For this reason, Planet aims to involve the people who live in the city to enhance their participation in the innovation processes. Community activation is focused on a micro-initiative level. Dissemination activities are therefore envisaged by Planet leveraging on two complementary strategies: on the one hand interacting and working closely with residents and end users within field activities, and on the other hand leveraging on digital tools to enhance, promote and show-off the benefits of the smart solutions implemented.

The Community management activities intend to promote bottom-up approaches to offer to the end users enhanced tools or services in response to their needs. From a higher perspective the Community managers will promote and focus their interventions spotting the light on energy and environmental related issues.

Creating informational guidelines can help to promote lifestyle changes by discouraging wasteful habits and increasing general public awareness (residents, commercial businesses, public sector, hotels, schools, associations, etc.). The guidelines can be distributed via advertisements in public areas or directly delivered to residents as informational pamphlets. A digital format will also be created with a section dedicated to practical advice on how to reduce various wasteful habits.



LEGISLATION

How are energy communities regulated in your country/region?

The Milleproroghe Decree concretises in Italy some of the indications of the European Directive “Renewable Energy Directive” (RED II), precisely those in Article 42bis, which legally defines energy communities.

The Italian Decree establishes the possibility of creating communities that exchange energy for the purpose of collective self-consumption, both instantaneous and deferred.

The goal of this self-consumption is not profit, but the benefit of all at an economic, social and environmental level. This underlines the importance of the sense of community, in which everyone does their part for the benefit of all, which also coincides with the advantage of the individual. The income from the sale of energy must therefore not be the primary source of income.

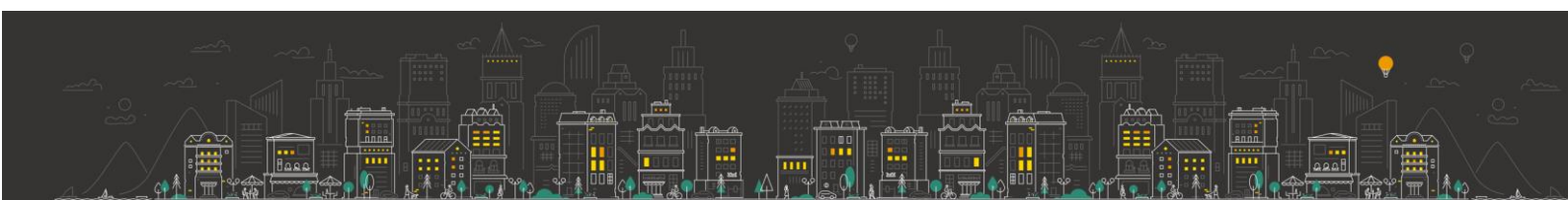
Anyone who consumes energy can participate in these communities, regardless of whether they own a photovoltaic system, a storage system or are a simple supporter of clean energy. The two forms of aggregation for collective self-consumption are the energy communities (many-to-many) and groups of self-consumers who live in the same building or condominium (one-to-many).

At the moment, the energy communities in Italy can only be established downstream of the same medium voltage (MV) / low voltage (LV) transformer substation. Power of single plants has to be lower than 100kW and overall (all plants accumulated) may not exceed 200kW. The rule has been in effect since 1 March 2020, when the Decree entered the Law. In the future, however, this model will expand, with greater chances for everyone to be part of this energy revolution.

STAKEHOLDERS

What are the advantages that the stakeholders may have when they contribute to or are involved in the project?

- Improved energy literacy
- Information to support business models on energy communities (e.g: power profiles, digital twinning and attended consumption from the whole district (68 housing units))
- Contribute to creating a broader community that goes beyond the district participatory regeneration actions



REQUIREMENTS

Energy poverty (redistribution of benefits)

- How do you address energy poverty?
- How do you redistribute the benefits generated by the project to the tenants?
- How do you prevent gentrification after the renovation?

Response: The energetic and environmental issues will be the spotlight for the activation of the community towards efficiency in the use of resources and cost savings. An optimized use of energy will pave the ground for an enhanced energy management and energy quality (voltage).

The quantification of savings will be the lever to promote further improvement actions and to consolidate the tenant's motivation towards the desirable creation of an energy community or towards the promotion of collective investments schemes.

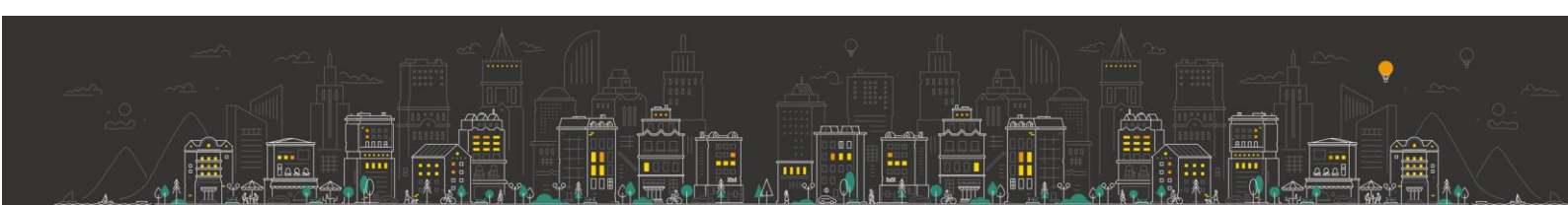
Energy production from RES will be certified throughout the integration with inverters and or POD¹. Cost savings are directly referred and accounted to end-users, and will be quantified throughout metering points and converted into economic value tanks to a customised energy management software. Data elaboration will be available for the end-users through a web app. Aggregated information at community level will be elaborated and investments to energy efficiency will be proposed and discussed upon ROI consideration and capital availability (savings related).

Circular economy and local value chains

- How do you include principles of circular economy in your project? (i.e. specific local value chains like for example timber wood construction etc.)
- Do you use or are you interested in using by-products from other value chains for your renovation? (i.e. alternative materials for insulation)

Response: The reclamation operations have allowed the total remediation of the subsoil, with the disposal of 11 thousand square metres of asbestos and 750 quintals of solid urban waste. The social dwelling is paying particular attention to circularity and sustainability, the buildings are surrounded by five thousand square metres of parks where cycle paths are planned to promote healthy and environmentally friendly ways of living. Where possible a special attention is payed to construction materials (secondary raw materials). For example the five thousand of cubic metres of firewood felled by the Vaia storm, are now part of the buildings themselves which are amongst the highest wooden residential structure in Italy.

¹ [https://en.wikipedia.org/wiki/Point_of_delivery_\(networking\)](https://en.wikipedia.org/wiki/Point_of_delivery_(networking)): "module of network, compute, storage, and application components"



Industrialization and prefabrication

- How is your renovation process including or is compatible with industrialization, standardization and prefabrication? (i.e. modular cladding, prefabrication of modules with integrate BIPV BAPV, Lean process construction... etc.)

Response: Deep renovations or refurbishment projects are conceived and deployed by Planet with close attention to reduction of resources (primary or secondary raw material utilization), impacts (ESG related) and cost optimization.

Construction and execution phases follow a similar approach oriented to efficiency and cost savings, by making use of parametric design for construction).

This standardized approach provides Planet and its partners with enhanced capabilities of replication and scaling of RE interventions.

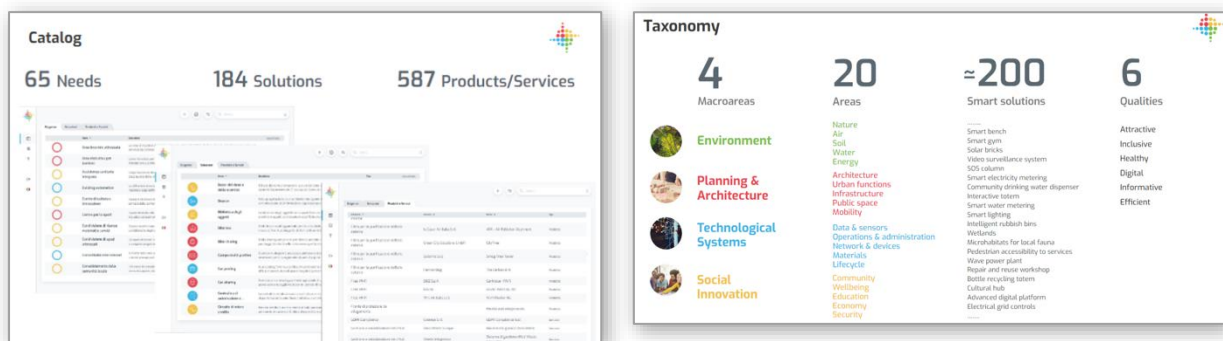


Fig. Catalog User Interface and taxonomy

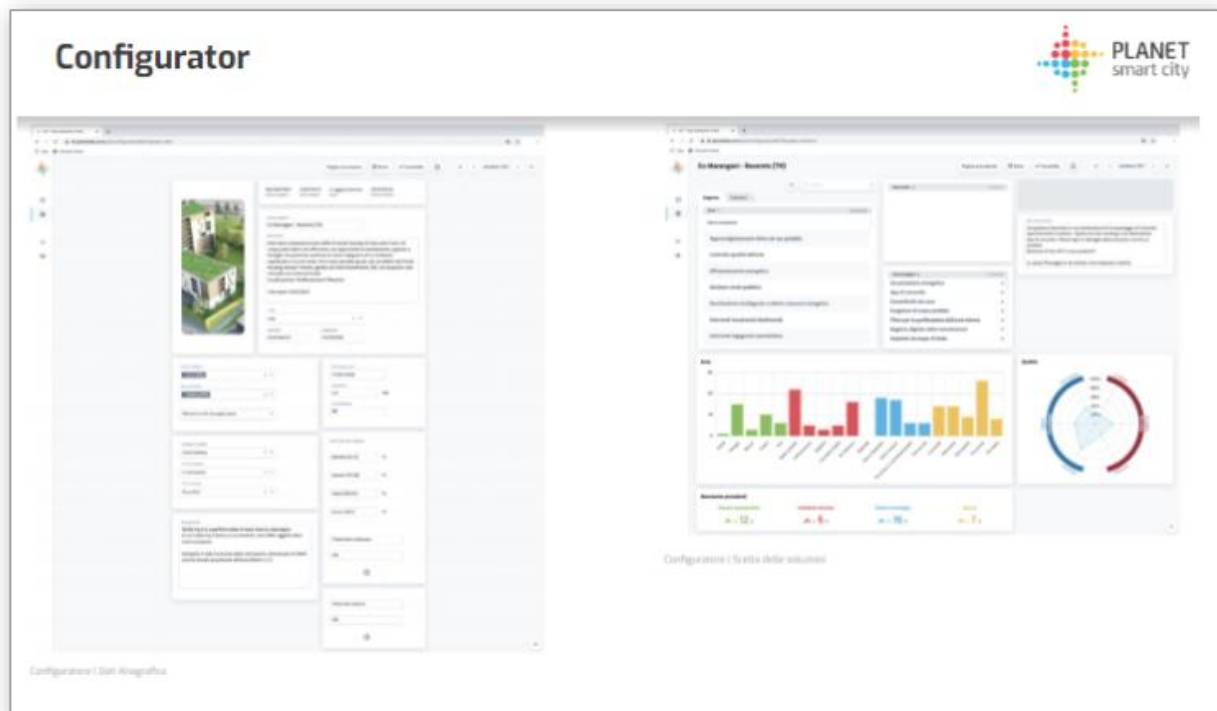
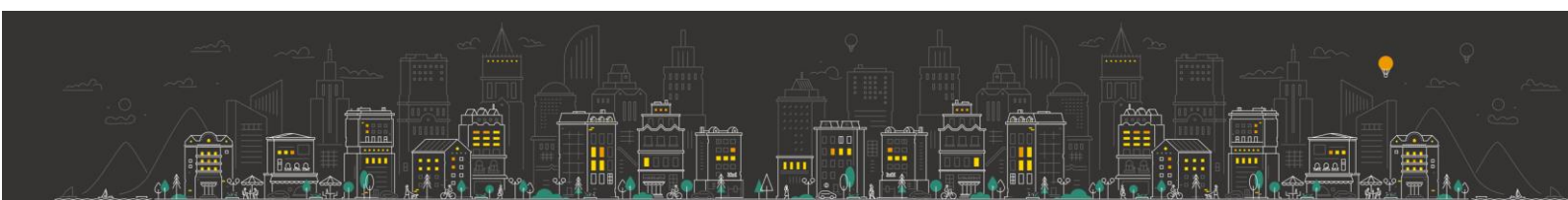


Fig. Configurator User Interface



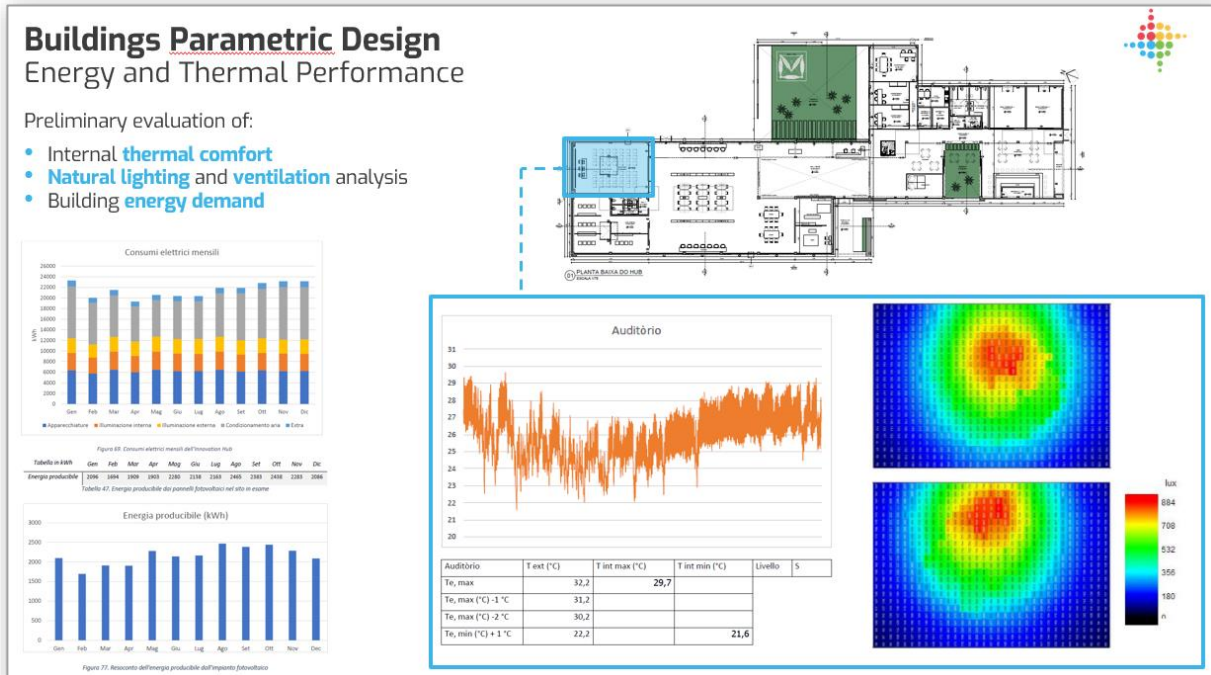


Fig. Construction parametric modelling and design

Energy communities (ict and/or social driven)

- How your project promotes the activation of energy communities based on ICT and Social Innovation?

Response: In the Ex-Marangoni social dwelling site it is envisaged to ground the basis for a lively and cohesive community. In fact, Planet Idea has been contracted by the real estate owner to sparkle the community by engaging them to self-analyse the most urgent needs and accompanying them throughout the realization of value-added projects. One of the highly sensitive domains are of course related to energy. Leveraging on IoT hardware and ICT tools an in-depth analysis of energy use will be promoted, and the inhabitants will be informed on their energy performances and nudged to adopt virtuous behaviours.

Planet's vision is that places and technology help to create an intelligent urban context, but the way in which the inhabitants use those makes the difference in realizing the promises of the smart city. For this reason, Planet aims to involve the people who live in the city to enhance their participation in the innovation processes.

Community activation has the dual effect of creating or reinforcing the cooperative and participatory fabric of a community (positive value in its own right) and of creating the conditions needed to foster more complex social innovation processes like energy communities. The slow but comprehensive approach will increase the effectiveness and duration of the impacts over time.

An effective tool to reach this goal will be the Planet App, developed to provide a simplified way to manage the services included in the newly developed neighbourhoods. The Planet App is designed as a tool to interpret data and produce value-added statistics for all stakeholders. It allows citizens to fully experience the benefits of smart solutions implemented in their home and neighbourhood.

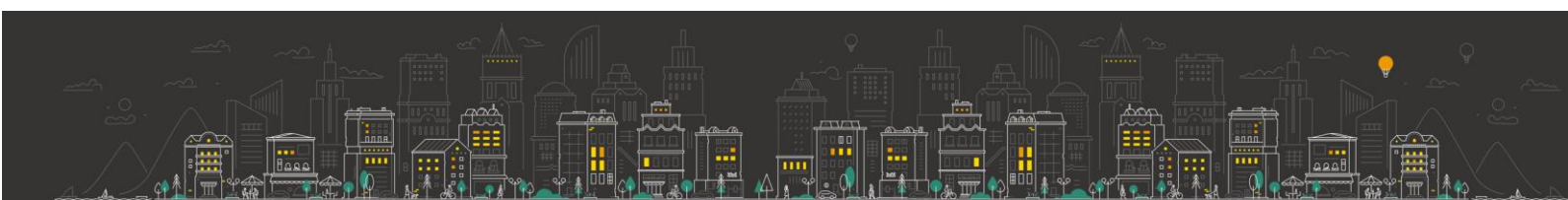




Fig. Utility consumption

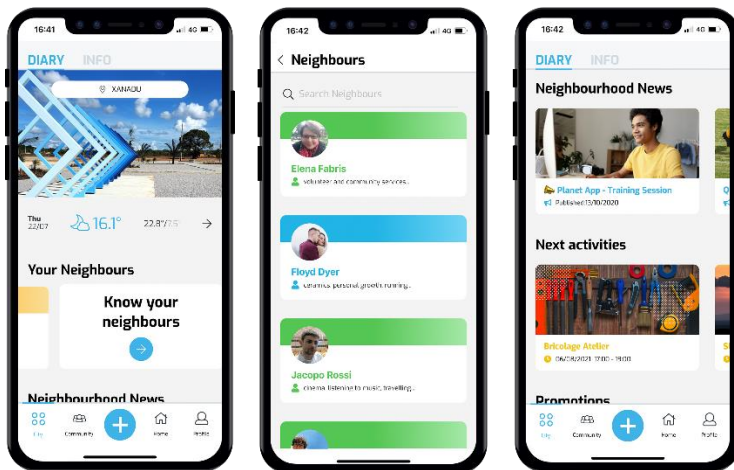
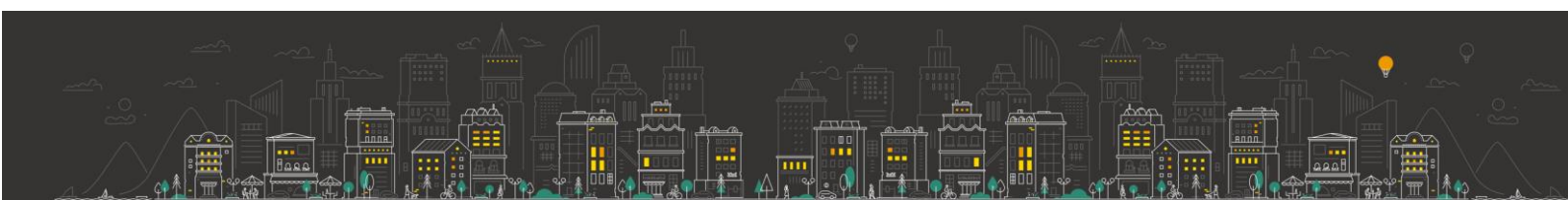


Fig. Know your Neighbours

For this project Planet Idea will focus on providing innovative services to residents in the district. They will be implemented at different scales and will provide residents with "tangible" benefits (i.e. better housing standards, economic savings from reduced utility consumption) as well as "intangible" benefits such as belonging to a community, being involved and informed. This is made possible by services that are digitized and prioritize inclusion, innovation, environmental sustainability, and social progress.

Planet is interested in deepening the contribution that IoT technologies play in reducing the environmental impact of these target districts and refine methods of monitoring the impacts in the mentioned areas. Key Performances Indicators will be set, and consumption trends will be constantly analysed throughout a software tool named Interactive Impact Assessment tool (image below), in order to transform data into information and raise awareness among residents. Data driven capabilities will assess the profitability of new investments and possibly verify the viability of initiatives of community such as energy communities and/or collective self-consumption schemes.



Although the intervention is focused on energy and community awareness this does not correspond entirely to the EU definitions of ‘citizen energy communities’ which is included in the revised Internal Electricity Market Directive (EU) 2019/944 (European Parliament & Council of the European Union, 2019), and ‘renewable energy communities’ which is included in the revised Renewable Energy Directive (EU) 2018/2001 (European Parliament & Council of the European Union, 2018), as they are preceding the Clean Energy Package, but is intended to emerge as pilot project intending to reach a legal entity.

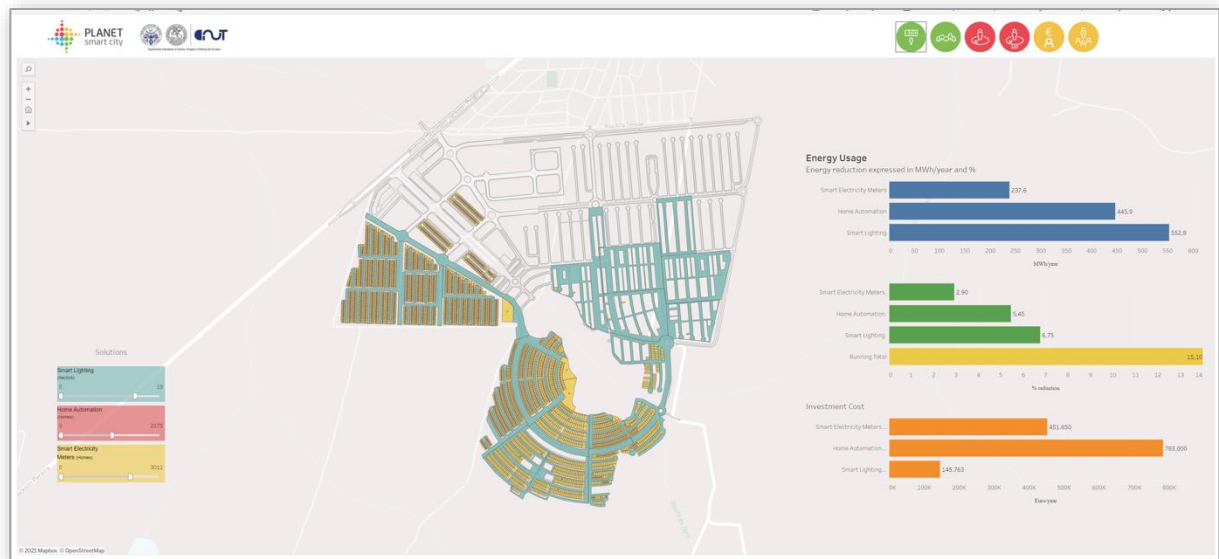


Fig. Interactive Impact Assessment Tool

New European Bauhaus

How your city – or local context hosting the project – is promoting the New European Bauhaus concept?

1. sustainability, from climate goals, to circularity, zero pollution, and biodiversity
2. aesthetics, quality of experience and style, beyond functionality
3. inclusion, from valorising diversity, to securing accessibility and affordability:
 - a. reconnecting with nature:
 - b. regaining a sense of belonging:
 - c. prioritising the places and people that need it most:
 - d. fostering long term, life cycle and integrated thinking in the industrial ecosystem

Response: The city of Rovereto has not officially started joining the "New European Bauhaus" (NEB) initiative, as other Italian cities have done (Turin, Milan, Bologna, Rome), but in fact it supports the initiatives that carry forward the principles of sustainability, aesthetics and inclusion.



The city of Rovereto, which approved the Ex-Marangoni project, had embraced the real estate intervention following three basic principles fully in line with the NEB initiative:

sustainability - the Master Plan had foreseen the redevelopment of a former industrial site and supporting the use of innovative construction technologies, such as the wooden supporting structure (circularity principles), still not common in Italy. Furthermore, the buildings are highly performing working capital ratio (WCR) to energy efficiency and needs (class A+), targeting to achieve climate mitigations goals and zero pollution. The inclusion of large green areas will be an incentive to maintain or increase biodiversity.

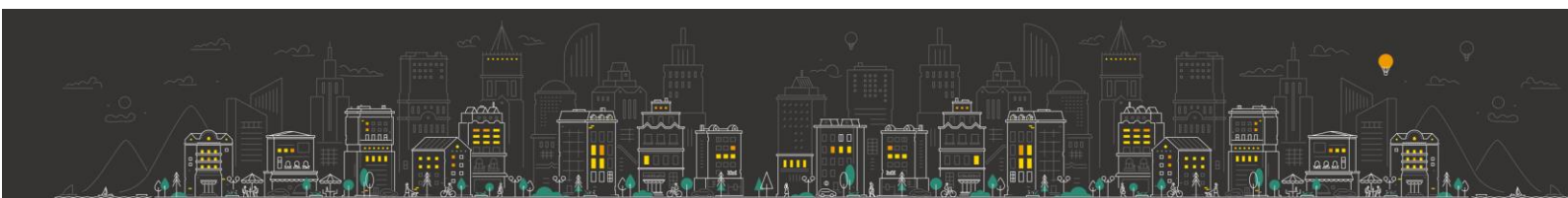
aesthetics - the ex-Marangoni social dwelling intervention has mended the residential with the urban fabric, filling the void left by the industry abandoned for years with a new and empowered dimension for residents. The layout of the new district proposes a dynamic relationship with open spaces, which will encourage the inhabitants to keep the district alive, through opportunities for meeting and exchange. The functional mix is ensured by the presence of commercial and service areas, which will generate spaces for collective use for community life, which will also benefit the residents of the houses adjacent to the new intervention.

inclusion - the ex-Marangoni district will be an opportunity for social inclusion for the target it is aimed at (social housing), and thanks to the smart solutions it is equipped with (urban gardens, smart lockers, library-of-things, intelligent irrigation, free Wi-Fi), which will be used for the growth of the district community. The same solutions will stimulate the participation of the residents of the neighbouring houses. In addition, the ProLight project, by proposing activities and tools to stimulate attention on the topic of energy, will be a further opportunity to bring together a large group of citizens on common topics of discussion.

AMBITIONS

What are the demos' visions?

The idea is to assess the feasibility of establishing an energy community in the district and ideally, to enlarge it to the neighbourhood.





ProLight

ProLight – Better quality of life and affordable housing: Our smart neighbourhood approach will be demonstrated in 6 European Lighthouse and pocket districts, and the results will provide blueprints for replication.

Analysed districts include:

- Building and renovating in an energy and resource efficient way in [Austria](#), [Finland](#) & [Greece](#).
- Energy communities in [Spain](#), [Italy](#) & [Portugal](#) combined in so-called Innovation clusters

Follow us



[/prolight_EU](#)



[/prolight-project](#)



www.prolight-project.eu



Co-funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority 1 be held responsible for them.



The Carcavelos Pilot, Portugal

AdEPorto/ EDP New, Matosinhos, Portugal

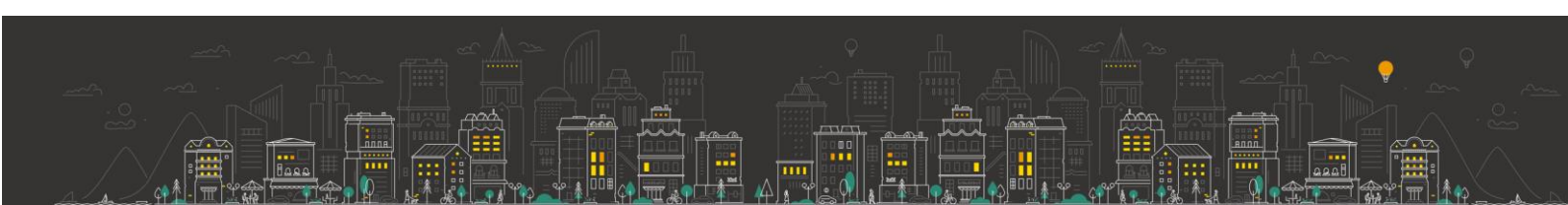
<https://www.prolight-project.eu/demo-case/matosinhos-portugal/>



Overall summary:

The Portuguese pilot, located in the municipality of Matosinhos, a coastal city in the district of Porto, Portugal, will focus on the Carcavelos social housing district. Carcavelos is divided into two building blocks, including 278 dwellings and several small businesses (ground floor), and was built in the 1980s. These buildings were refurbished in 2021 with an investment of almost four million euros, considerably improving the housing conditions. The overall goal of the ProLight project is to take advantage of the extensive rooftop areas of several municipal buildings in the area, produce renewable electricity for self-consumption and share surpluses with nearby entities. Moreover the existing mobility charging infrastructure can be integrated in the concept, exploiting local demand-side management options, and evaluating storage possibilities.

Carcavelos is located in the urban surrounding of the city of Matosinhos, which integrates housing, commerce, public equipment and public spaces. Caravelos is also part of the Matosinhos Living Lab. The overall objective of the city living lab is to create a smart, connected neighbourhood, which focuses on resilience, accessibility, CO2 neutrality and participation. It aims at testing technological solutions for low-carbon emissions, energy efficiency and reduction of pollutant emissions. It acts in areas such as mobility and transport,



buildings, environmental innovation, and the promotion of circular economy. Real context tests are performed for challenges like parking management, bike sharing, electrification of the fleet, or traffic monitoring. Besides decarbonizing of the city, the project's goals include decreasing energy consumption, and providing a testbed for solutions that can be scaled to the whole city, or to other cities and eventually other countries. Building on this already existing initiative, a positive energy district is being developed in the described area including several major facilities, including the Carcavelos neighbourhood.

ProLight Demo district – GENERAL DATA

Pilot description and expected performance results (incl. No. of buildings, Building type, Renewables, Others):

Carcavelos is a social housing district in an urban location, which is divided into two building blocks, including 278 dwellings and several small businesses (ground floor) with 24325 m² of living area. It is located in the centre of the city of Matosinhos and counts 690 residents spread over 278 dwellings. The preliminary technical studies foresee 212 kWp of solar PV capacity to be installed in the neighbourhood, corresponding to 335 MWh/year of renewable energy production. Given the consumption and production profiles, roughly 235 MWh could be self-consumed and the remaining 100 MWh are available as surplus. The surplus will be shared with nearby entities, taking advantage of the existing mobility charging infrastructure and exploiting local demand-side management options. Alternatively, storage possibilities are evaluated.

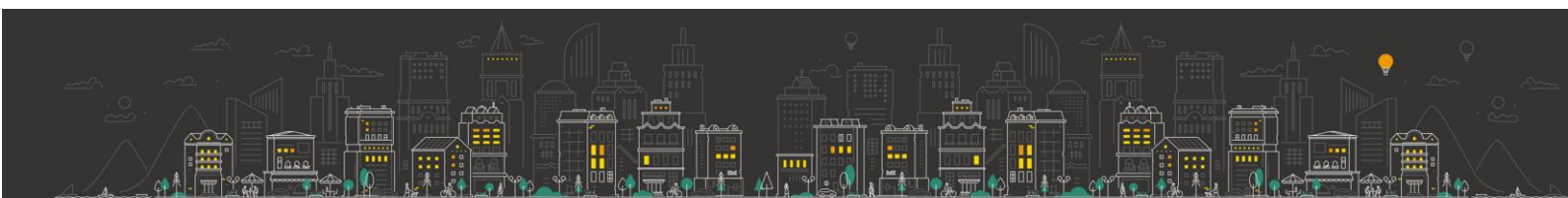
This installation is part of a broader project from the city, which includes the development of a PED.

Climate area, Location urban/suburban, Energy performance [kWh/m²*a]

The Carcavelos' social housing district is located and thoroughly integrated in a central and urban environment, roughly 200m from the City Hall.

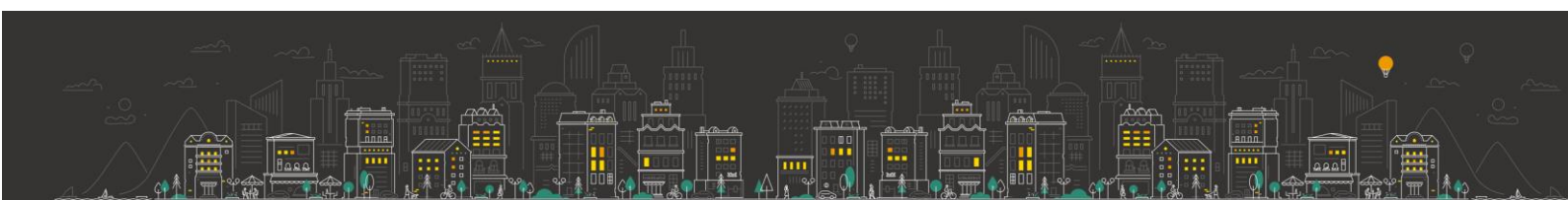
The local climate conditions are characterized by low annual temperature fluctuations, mild summers and winters (ranging from 7°C to 24°C throughout the year, rarely below 2°C or above 30°C). The climate is classified as "Csb" according the Koppen classification.

Carcavelos' buildings already had energy efficiency measures implemented, which improved their energy performance to 140 kWh/m².y (considering indoor heating and cooling as well as the preparation of hot water) of primary energy use, estimated under the Portuguese Energy Certification System following EPBD.



Overview of site specific economic, energy & environmental related indicators of pilot districts.

Key Performance Indicators	Lighthouse district	Specification
Number of dwellings	278	2 social housing building blocks
Primary energy savings [MWh /year]	235	Energy savings from self-consumption
Renewable energy production [kWh /year] -> KPI5 in the project	35 MWh/y	212 kWp solar PV panels
GHG emission savings [TnCO2eq/year]	60	
Number of TRL 6 to TRL 8 technologies	7	
KPI7: Investment costs [Euro/m2]	Technical studies are still under analysis. Estimated investment costs: 255 000 € (around 9,25 €/m2; only for Carcavelos)	For PV, an average cost of 1200€/kWp was considered. This value can be reduced if the tender is developed for all PED facilities.



ProLight figures for the New European Bauhaus

Carcavelos, Portugal

278 dwellings

690 residents

Integrated Renovation Status: Energy efficiency measures were implemented prior to ProLight. These included wall insulation, window replacement, roof insulation and the replacement of electric water heaters. A 212 kWp PV system is foreseen to be implemented, as well as further measures already discussed in the current template.

Liveability: Energy efficiency measures significantly improved the thermal performance of buildings and the comfort of the residents. On top of that, renewable energy production will help citizens (in already deprived social conditions) to reduce their energy bills, which will allow them to improve their overall economic and social conditions.

Technological advancement: Carcavelos will be part of a large-scale renewable energy community (REC), which builds on the already existing city living lab, contributing to the creation of a positive energy district in Matosinhos' city center. Short-, medium-, and long-term city strategies are being outlined based on this project.

Social Innovation/Business Models: Developed tools will also help to raise awareness & promote individual behavioural change in both residents and public buildings users, taking advantage of the co-creation & integration initiatives. This project is especially relevant in supporting and generating valuable information when evaluating different scaling-up solutions in the social housing stock of the Municipality, which consists of over 4607 dwellings at 53 different sites.

Which business model is used (e.g. ESCO, PPP, one-stop shop, others)?

Technical and economic studies are still being developed. Still, two business models are currently on the table. The first one consists of the municipality as investor of the PV panels. In this option, the municipality uses part of the city's budget to fund the installation, self-consumes part of the generated energy in municipal buildings and social housing and then trades (sells) the surpluses to local entities (other private buildings), or to electric mobility operators within the coverage area of the project. While it could be an interesting model for the city, public procurement rules could hamper it. The second option (more likely) consists of a PPA-type model in which a private entity (external to the municipality and selected based on a public tender) makes the investment in the PV panels and infrastructure and provides part of the energy generated to the municipality, at a reduced price. In addition, this entity can commercially exploit surplus production, making profit from it.

Utilised financial supporting instruments:

Own funds or private funds (PPA).



Main economic activities in your city/region:

Until recently, Matosinhos was predominantly an industrialized city with special focus on the fishing industry as well as, petrochemistry and the textile sector. Lately, it has transitioned to be mainly dedicated to the tertiary sector.

Envisaged local dissemination activities:

Local dissemination activities will be carried out by promoting capacity building and informative sessions with local residents to explain them the advantages of PV systems and the energy use adjustments they can make in order to maximize the benefit of PV production (e.g. time shifting the operation of washing machines to periods of sun availability).

LEGISLATION

How are energy communities regulated in your country/region?

Renewable Energy Communities (REC) are regulated by the Decree-Law 15/2022 (DL15/2022), that follows and transposes the EU Directive 2018/2001. According to this document, Portuguese REC have the possibility to:

- Produce, consume, store, buy and sell renewable energy with their members or with a third party;
- Share or commercialize between their members the energy generated within their premises;
- Access every energy market, including the system's services, both directly and through aggregation.

Moreover, DL15/2022 introduced the definition of Citizens Energy Communities

MAIN ACTORS INVOLVED, STAKEHOLDERS

Local stakeholders and partners:

AdEPorto is the facilitator among the partners and is responsible for PV studies. EDP-New cares about research and development and acts as technical consultant, MatosinhosHabit (Municipality services) is the social housing managing entity and communicates to Residents, who are final recipients of the implemented solutions.



What are the advantages that the stakeholders may have when they contribute to or are involved in the project?

The exploration of a large-scale regional energy community (REC) serves as fundamental layer for the development of a Positive Energy District and offers a very good opportunity to deploy new technical knowledge and business models with a mix of public and private entities. Also, the fruitful collaboration between the stakeholders presents as a very good opportunity to obtain experience and knowledge on working in such a hot topic that would enable replicability of the developed solutions to other projects. Further advantages are the development of the community's energy sustainability awareness and engagement, while also contributing to potential savings and increasing indoor environmental quality.

REQUIREMENTS

Energy poverty (redistribution of benefits)

- How do you address energy poverty?
- How do you redistribute the benefits generated by the project to the tenants?
- How do you prevent gentrification after the renovation?

Response: The project intends to address energy poverty through capacity building sessions, which intend to improve the energy literacy of its participants, as well as to shift their day-to-day behaviour to consume energy in an efficient way. Moreover, it foresees the implementation of solar PV panels, which will enable energy and financial savings to residents. The business model is still under development, however, from the analysis of other similar projects, the benefit distribution should be fixed, meaning that the energy generated in the PV system is shared according to a fixed allocation coefficient (an equal amount of energy is provided to each dwelling).

As for the possible gentrification issue, it should be noted that Carcavelos is a social housing neighbourhood owned by the municipality and the families allocated to occupy these buildings were not chosen based on their age, gender, sexual orientation, or race, but rather the family's income and composition, prioritizing the ones in most need. Thus, it is assumed that there is little risk of gentrification.

Energy communities (ict and/or social driven)

- How your project promotes the activation of energy communities based on ICT and Social Innovation?

Response:

- The project promoted the activation of energy communities based on ICT since a comprehensive ICT infrastructure (e.g. smart metering network) is required in order to keep track of energy flows;
- Regarding the social side, the project intends to contribute to the mitigation of potential energy poverty issues, reduction of energy literacy levels and improvement of the sense of belonging.



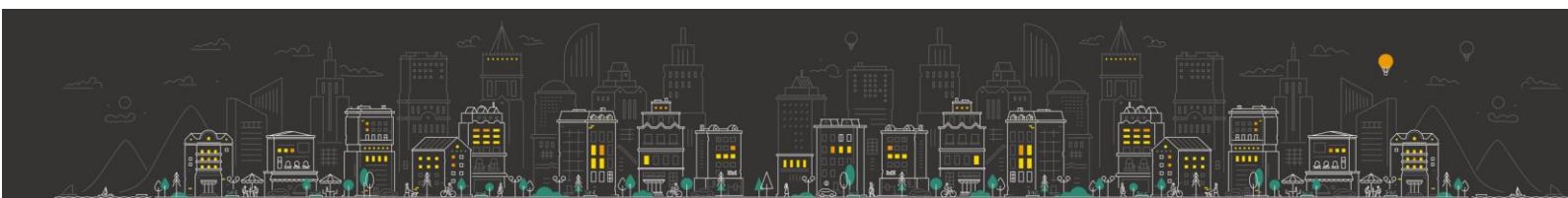
New European Bauhaus

How your city – or local context hosting the project – is promoting the New European Bauhaus concept?

1. sustainability, from climate goals, to circularity, zero pollution, and biodiversity
2. aesthetics, quality of experience and style, beyond functionality
3. inclusion, from valorising diversity, to securing accessibility and affordability:
 - a. reconnecting with nature:
 - b. regaining a sense of belonging:
 - c. prioritising the places and people that need it most:
 - d. fostering long term, life cycle and integrated thinking in the industrial ecosystem

Response:

1. The Portuguese lighthouse district will form a regional energy community (REC), which will be part of a positive energy district (PED). These new structures will enable its participants to save energy and to reduce the GHG emissions.
2. Some residents of the Carcavelos neighbourhood will be a part of the demand response activities, which will not only improve their energy literacy, but also influence their behaviours towards more efficient utilization of energy. This experience and acquired knowledge will contribute to the quality of life.
3. As the project will be implemented without the investment of residents, in addition to not being excluded from an initiative that could be denied to them due to the lack of investment capacity (accessibility), the residents of the neighborhood of Carcavelos also benefit financially from the installation, which will reduce their electricity bills.
 - a. Not applicable.
 - b. Residents from social housing neighborhoods were, since their beginning, subjected to social exclusion from several factors, including: the people's unattachment to the location generate uprooting; lack of intervention at a social action level; architecture homogeneity and lack of quality of the construction materials; and lack of maintenance. We believe that this unattachment and lack of sense of belonging will be improved by tackling some of these factors: i) the energy efficiency measures recently implemented will contribute to the comfort and reduction of energy poverty; ii) the participation of some residents in the demand response activities will improve the energy literacy and influence their behaviour, affecting the quality of life; iii) the reputation of the project will contribute to the sense of proudness to the neighbourhood's residents.
 - c. The very basis of the project is the improvement of the quality of life of the Carcavelos' residents, while serving as a replicability example to other similar neighborhoods.
 - d. By participating in the project, the Technical partners will gain integrated insights regarding the relationship between their technical solutions and the real time impact or eventual barriers they might encounter in the demo district's community.



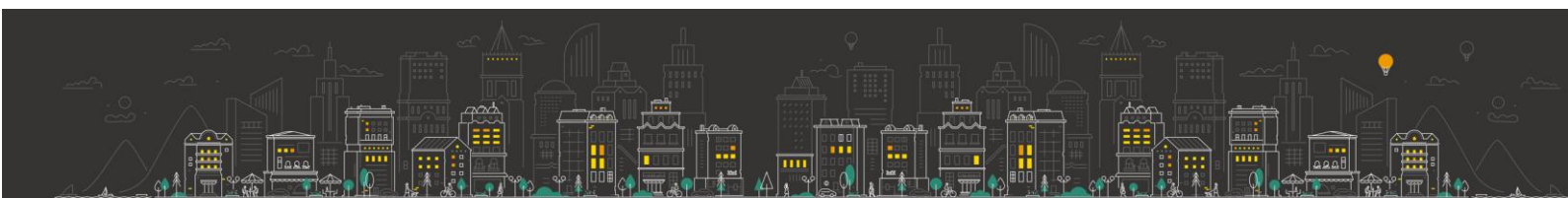
AMBITIONS

What are the demos' visions?

Matosinhos' demo is part of a broader strategy of the municipality which has the ambition to reach carbon neutrality by 2030. Thus, this implementation is the beginning of a city-wide plan which aims to expand the implantation to other parts of the city, transforming all municipality-owned buildings and facilities into renewable energy production hubs. This ambition and long-term vision are reflected in the municipality 2030 SECAP.

Do you have a statement, which?

First big-scale municipal renewable energy community (REC) in the municipality.





ProLight

ProLight – Better quality of life and affordable housing: Our smart neighbourhood approach will be demonstrated in 6 European Lighthouse and pocket districts, and the results will provide blueprints for replication.

Analysed districts include:

- Building and renovating in an energy and resource efficient way in [Austria](#), [Finland](#) & [Greece](#).
- Energy communities in [Spain](#), [Italy](#) & [Portugal](#) combined in so-called Innovation clusters

Follow us



[/prolight_EU](#)



[/prolight-project](#)



www.prolight-project.eu



Co-funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them.

