

The oPEN Lab Open Call for Innovators

D1.3 Description of the open challenges for innovators, process, and evaluation criteria





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Abbreviations and Acronyms

Acronym	Description
BAPV	Building Applied Photovoltaics
BIM	Building Information Modelling
BIPV	Building-Integrated Photovoltaic
САМ	Computer Aided Manufacturing
DC/AC	Direct Current/Alternating Current
EMS	Energy Management Systems
EV	Electric Vehicle
GWP	Global Warming Potential
HVAC	Heating, Ventilation & Air Conditioning
IR	Infrared Thermography
LCA	Life Cycle Assessment
LEC	Local Energy Communities
PEN	Positive Energy Neighbourhoods
RES	Renewable Energy Systems
WP	Work Package



Executive Summary

The oPEN Lab project aims at designing and implementing replicable and commercially viable services of Positive Energy Neighbourhoods in a set of three European urban contexts, and finally integrating these technologies and packages in different Living Labs.

In oPEN Lab, the Cities of Genk (Belgium), Tartu (Estonia) and Pamplona (Spain) will contribute to make interventions and test combinations of different close-to-market ready innovative solutions and study their performance as a unique operating system.

This document provides the approach and methodology on how innovators – beyond the oPEN Lab project consortium partners – can be involved via the Open Call. This to test and validate their innovative solutions with end-users under real market conditions at one or more of the three oPEN Living Lab sites. This document presents the foundations of the oPEN Lab Open Call and the considerations made by the consortium during its co-design and developing phase to achieve the end objectives.

The methodological approach to set out the process of the Open Call for innovators revolves around the <u>ENoLL Living Lab framework</u> for enacting open innovation of Positive Energy Neighbourhoods in Europe.

The process identified by this document for the oPEN Lab Open Call will lead to a series of activities in the upcoming months within the project, and more in detail with the aim to:

- Launch the call for innovators on 16 January 2023.
- Evaluate the applications between 21 February and 21 March 2023.
- Select the innovators in collaboration with the three oPEN Living Labs in March 2023.
- Start the implementation phase from April 2023 onwards.

Depending on the response to the first round of Open Calls and the remaining solution gaps, the oPEN Lab consortium will evaluate if an additional open call has to be launched based on the needs of the 3 oPEN Living Labs.





Figure 1 oPEN Lab process for the Open Call

This document includes the following chapters:

- **Chapter 1 "Introduction"**: sets the scene by providing an overview of the document, the Open Call context, and relations to other project activities.
- **Chapter 2 "oPEN Living Labs":** offers a detailed overview of the three oPEN Living Labs at the core of the Open Call, also presenting their goals and identified Technical Challenges to be addressed by the solutions selected through the Open Call.
- **Chapter 3 "oPEN Lab Open Call Process"**: details the key principles and approaches to be applied over the entire Open Call process. The content of this Chapter forms the key information and content included in the Guideline for Applicants (Annex D) to inform interested candidates, in a user-friendly and clear manner for the application process.
- Chapter 4 "Conclusions and next steps": offers a summary of the reflections on future work, outlining the activities to be carried out in the upcoming months for successfully exploiting the Open Call.

The following documents are provided in Annex to this document:

- Annex A Technical challenges of Tartu oPEN Living Lab.
- Annex B Technical challenges of Pamplona oPEN Living Lab.
- Annex C Technical challenges of Genk oPEN Living Lab.
- Annex D Guideline for Applicants.
- Annex E Open Call Application Template.



1. Introduction

The oPEN Lab project has the ambition to change the landscape of urban areas in small to medium size cities across Europe. oPEN Lab aims to mobilise innovation and system integration within a combined construction and energy value chain leading existing buildings and neighbourhoods towards positive energy level. Its participatory approach is rooted in the Open Innovation 2.0 methodology, where industry, government, academia and participants from the civil society co-create and drive structural changes far beyond the scope of what any organisation could do alone.

^oPEN Lab aims to demonstrate multi-building and district level renovation measures and energy systems allowing to deliver replicable designs and solutions packages for renovating the existing urban contexts into Positive Energy Neighbourhoods. Three open innovation Living Labs in Genk, Tartu and Pamplona will contribute to make interventions and test combinations of different solutions and study their performance as a unique operating system for accelerating service innovation by adopting cross-sectoral integration.



Figure 2 oPEN Lab context and objectives



oPEN Lab foresees to solve three main challenges for the PEN¹ technologies:

- 1. Showcase the integration of novel technologies.
- 2. Accelerate PEN developments in existing neighbourhoods.
- 3. Upscale and replicate the solutions implemented.

The three oPEN Living Labs will implement and test the alignment between a series of innovative technologies, enabling existing individual buildings to become inherent pillars of Positive Energy Neighbourhoods.

Examples of these (beyond) state-of-the-art technologies on individual building level are heat pump technologies with low GWP refrigerants, fast charging vehicle-to-grid and vehicle-to building connection points, user control optimisation, BAPV and BIPV, facade integrated ventilation, electric (second life) or thermal energy storage, direct current hybrid DC/AC bus microgrid with supervision control, etc.

Each oPEN Living Lab comprises a diverse ecosystem representing the quadruple helix of stakeholders, thus including commercial actors and SMEs working on innovative solutions in oPEN Lab, as well as local governments, academia and associations of citizens (e.g. neighbourhoods). To further increase their innovation capacity, this Open Call gives the opportunity to external innovators to test solutions for specific challenges and to integrate additional ideas and concepts into the oPEN Living Labs with end-users under real market conditions with the support of PEN experts.

More in details, the oPEN Lab open call will have a twofold objective:

- Broaden the innovation capacity of the oPEN Living Labs.
- Enable dynamic response to the rapidly changing market.

The challenge of the oPEN Lab's ambition to lever the testbeds beyond state of the art is on integrating these technologies both on building and neighborhood level and balancing them within the wider energy system by providing minimum energy consumption, minimum cost, maximum comfort, as well as an optimal generation and storage of energy.

The oPEN Lab project creates time and resource efficiency conditions for route-to-market approaches through its open-innovation and co-creation environment in its three oPEN Living Labs.

The three real-life open innovation living lab environments will test combinations of different prototypes and close-to-market solutions (TRL 5-8) and study their performance as a unique operating system.

¹ Positive Energy Neighbourhoods are **energy-efficient** and **energy-flexible** groups of connected buildings or urban areas which produce net zero greenhouse gas emissions and actively manage an **annual local or regional surplus production of renewable energy**. PENs seek an **integrated**, **participatory**, **neighbourhood-based approach** to maximise the benefits of innovative energy systems.



2. oPEN Living Labs

The three oPEN Living Labs in Tartu, Pamplona, and Genk are the hearth of the project and of the Open Call.

The innovations to be selected through the Open Call should address specific technical challenges identified by the three oPEN Living Labs.

These challenges have been designed through a co-creation process within each oPEN Living Lab, based on citizens' needs and stakeholders' ambitions, taking into consideration the respective urban context and goal towards achieving Positive Energy Neighbourhoods.

The specificity of each oPEN Living Lab is summarised in the sections here below.

2.1 Tartu oPEN Living Lab (Estonia)

The urban context

The City of Tartu is located in the South-East of Estonia (186 km from the capital Tallinn).



Figure 3 Tartu oPEN Living Lab location

Tartu is an EC Smart Cities and Communities Lighthouse City and joined the Covenant of Mayors in 2014. The goal of Tartu is to become climate neutral by 2050 and to reduce CO_2 emissions by 50% by 2030 (compared to 2017). With this aim, the City council of Tartu has



approved the first draft of the City's new Sustainable Energy and Climate Action Plan "Tartu Energy 2030".



Figure 4 Annelin apartment blocks

The Annelinn neighbourhood is the largest apartment building neighbourhood in Tartu with over 30,000 citizens (1/3 of Tartu's population) and is constructed between 1971 and 1990. Within oPEN Lab, oPEN Living Lab Tartu aims to renovate 3 building units, for a total of 288 apartments in the Annelinn area. All flats are privately owned, but with housing associations already formed by the owners themselves. The population of the area is mixed, both in terms of languages spoken (there are both Estonian and Russian speakers, but there are also several temporary workers coming from Ukraine), and in terms of cultural approaches. A large part of the inhabitants are elderly people, while there are also several youngsters looking for affordable flats.

Purpose

The oPEN Living Lab Tartu has a very ambitious goal to become a positive role model for Estonia by increasing the quality of life in the Annelinn neighbourhood through the renovations implemented via the oPEN Lab project. The final objectives are to:

- revive the Annelinn area by making it more liveable, creating a new community and increasing its attractiveness.
- Activate the community, promote renovation, understand residents' attitudes towards renovation.
- Co-create the best tools and strategies for renovation and improve existing technologies and processes for implementing a real and effective positive energy transition in the neighbourhood.
- Increase the indoor comfort and quality of life of the people living there to re-populate the area by creating a sense of community.
- Develop a smart, optimal and more inclusive renovation model for indoor climate, which is currently not up to standards





Figure 5 oPEN Living Lab Tartu Timeline

Tartu oPEN Living Lab Technical challenges

Through a co-creation process involving all relevant stakeholders, Tartu Living Lab has identified two main technical challenges to be addressed by the Open Call (details below):

- 1. Demand-based ventilation management: the City of Tartu aims to renovate three to four buildings with total of 288 apartments. The buildings to be renovated will be selected by beginning of 2023. Parallel to the renovation of the buildings in the Annelinn area, it has been identified the need for providing secure bike storage solutions (at least one for each apartment) that should help reducing the challenge of having not enough parking slots in the neighbourhood, as well as improving the carbon footprint of the community. The location of the storage system will be chosen during the construction design in 2023. The footprint of the solution must be minimal to not lose any greenery in the area. Storage should also not reduce the space for private car parking that could hinder the renovation process. The storage should be accessible to apartment owners only if possible (not for renters). Moreover, the access to the bike storage should be compatible with the overall security system of the buildings in the area.
- 2. Efficient and secure bike storage: a demand-based ventilation management system in the Annelinn area in the City of Tartu is requested to be applied in 9 floors building



of 144 apartments. The building ventilation system will be operated by one central ventilation machine per staircase serving 38 apartments equipped with temperature and CO2 sensors. The solution is required to operate central ventilation system by analysing individual apartment indoor air quality data and optimising the central ventilation machine operation. The system must be managed centrally without using VA-valves or individual in and/or exhaust ventilation pipes from the apartments. The management system can operate on location or remotely if needed and should provide cost-efficiency results.

The technical details of these challenges are described in Annex A and will be available as reference to Applicants on the oPEN Lab website: <u>https://openlab-project.eu/living-labs/tartu/open-call-tartu/.</u>



2.2 Pamplona oPEN Living Lab (Spain)

The urban context

The City of Pamplona is located in the North-East of Spain, close to the Pyrenees.



Figure 6 Pamplona oPEN Living Lab location

Pamplona is an EC Smart Cities and Communities Lighthouse City and adhered to the Covenant of Mayor in 2009. The City of Pamplona has set an Urban Strategy 2030 aimed at addressing 5 strategic dimensions among which the development of a green ecological and socially inclusive transition.

The oPEN Living Lab Pamplona will develop activities within the Rochapea neighbourhood with a population of 25.000 inhabitants and a poverty risk rate of 11,3%. (the highest rate of Navarra Region). The renovation process will involve the IWER complex and 2 social housing blocks from the San Pedro group owned by Pamplona City Council.



Figure 7 Rochapea neighbourhood: the IWER complex (left) and the San Pedro Group (right)



The **IWER complex** is a former industrial building constructed between 1945 and 1967, first abandoned and then renovated in the early 2000s for meeting the minimum energy standards. Now the complex hosts several companies and offers office space in an area of 33.000 m².

The **San Pedro Group** is a social housing complex with 235 dwellings, built in 1948 and retrofitted in 1985. The energy performance does not meet the current standards and residents buy energy from traditional suppliers. The Rochapea neighbourhood is socially diverse, being inhabited by people of different nationalities, cultures and socio-economic status. It is mainly composed by a working class and presents higher rates of poverty than the average of Pamplona.

Purpose

The main objectives of the oPEN Living Lab Pamplona are twofold:

- Implement one of the first operational PEN concepts in Spain, demonstrating an advanced, scalable, and replicable urban energy model, as well as developing and validating innovative solution packages for renovation and energy services.
- Drive a local economic transformation, generating new business opportunities and employment related to deep energy renovations and renewable energy, improving living conditions in the city.

As part of the city's energy transition strategy, one of the main goals of oPEN Living Lab Pamplona is to create a Local Energy Community as well as empowering and engaging citizens and stakeholders involved in the neighbourhood, creating a neighbourhood that is more inclusive and active in the development of Rochapea towards PEN.

For this purpose, it is proposed to create an energy management office (PEN office) for the district to support all stakeholders, paying special attention to citizenship, in understanding the relevance of reducing energy consumption, through deep energy renovation of buildings, and the benefits of local renewable energy generation, being part of the urban transition. The final objective for the energy management office is also to carry out dissemination, promote and assist new local initiatives and projects related to energy efficiency and energy production, as well as co-design on future projects related to Living Labs activities. A result of the oPEN Living Lab Pamplona initiatives is also to improve neighborhood's welfare and enable it to achieve energy autonomy, turning it into a positive energy district. At the same time, a secondary result is to make the district more heterogeneous by attracting different social profiles to live in the area, thus demonstrating new economies development for the vulnerable categories of the district.





Figure 8 oPEN Living Lab Pamplona Timeline

Pamplona oPEN Living Lab Technical challenges

Pamplona oPEN Living Lab has identified three main technical challenges to be addressed by the Open Call (as briefly presented below):

- Support tools for co-creation and management of Local Energy Communities (LECs): within the project, the Pamplona oPEN Living Lab, will implement a LEC needing a series of user-friendly interactive tools to manage the energy flexible demand and reduce the reliance on the grid and carbon footprint. The tools must be made available to the different actors involved in the LEC of the Pamplona oPEN Living Lab and provide both energy and monetary savings to all the quadruple helix stakeholders. The support tools can focus on (but not limited to):
 - *Innovative digital systems* to promote dissemination, awareness raising, trainings and participation to the LEC.
 - <u>Tools for flexibly managing the demand of the assets</u> contributing to provide energy to the buildings (e.g. EV chargers, storage technologies, etc.).
 - <u>Operable and accessible web services provided to carry out billing management in</u> <u>LECs</u>, including flexible accounting, billing, expense, spreadsheet for balances, documents and reports, sign, etc..
 - <u>Shared mobility management system as part of the services of the LECs</u>: The proposal must include the user management system, fleet (cars, bikes, scooters, etc...) and recharge systems.



- 2. Innovative energy solutions for energy generation and storage: to give robustness to the demand, and enhance services of energy flexibility, thus taking advantage from regeneration and storage systems profitability. Innovative energy solutions are sought in the following areas:
 - <u>Novel PV elements</u> to be installed in building façade during and/or after refurbishment (e.g. PV windows, flexible PV modules, semi-transparent modules, specially coloured). The innovation component of the proposal can be related to novel PV technologies, flexibility feature, decorative motifs, inclusion of new aesthetics components in the device, etc...
 - *Innovative re/generation systems* to install in buildings (e.g. roadside vertical wind turbines capture, energy recovery in pavements, etc.).
 - <u>Innovative storage systems</u> to install in buildings. The system should be able to communicate with the EMS in site. The operation modes will be compatible with building and district demand. Power and capacity should be compatible with projected installations. Environmental considerations and hazardousness should be preventable and compatible with district habitability policy.
- 3. Innovative and cost-effective user interfaces for management and remote maintenance systems of the building's energy systems. At least 3 of the following solutions should be provided:
 - Appropriate information about their historic and <u>real time consumption of electric-</u> <u>ity, gas and water</u>, and an estimate of their energy and water bills.
 - <u>Information about abnormal consumption patterns</u>, as well as providing them with an array of corrective measures to implement.
 - <u>Corrective measures</u> as a series of progressive challenges to drive behavioural changes and achieve over time ambitious goals.
 - <u>Forecasts and recommendations</u> to take informed decision concerning the most appropriate timeslot to schedule energy intensive tasks.
 - <u>Timely information about last minute incentives or rewards to provide flexibility.</u>
 - <u>Interoperability with usual home automation systems and actuators</u> to activate blinds and solar protection elements.
 - <u>Greater potential for flexibility of demand applied to the houses/building through</u> <u>a flexible control of the facilities</u> according to the needs of the user and the increase of their efficiency with subsequent energy savings.
 - <u>Demonstration of innovative control systems to achieve energy flexibility</u> through demand response of legacy, or non-smart, home appliances.

The technical details of these challenges are described in Annex B and will be available as reference to Applicants on the oPEN Lab website: <u>https://openlab-project.eu/living-labs/pamplona/open-call-pamplona/.</u>

2.3 Genk oPEN Living Lab (Belgium)

The urban context

The City of Genk is located in the North-East of Belgium, in the Flemish region.





Figure 9 Genk oPEN Living Lab location

Genk has developed a climate strategy which sets ambitious climate targets for 2030^2 , and includes the reduction of the CO₂-emissions by 40%. The City of Genk, in collaboration with EnergyVille, is also drafting an energy roadmap to become climate neutral by 2050^3 , with a key role for improving social housing and private homes.

The oPEN Living Lab Genk is situated in an existing sub-urban old neighbourhood, Waterschei, where the Living Lab will test, monitor, and compare different renovation measures, energy technologies and systems at large-scale in residential buildings.



Figure 10 Waterschei: social housing neighbourhood Nieuw-Texas (left) and former mine housing district (right).

The neighbourhood history is linked to the former coal mine of Waterschei in Genk (closed in 1987), which housed miners and their families since the early 1920s. The neighbourhood is characterised by semi-detached houses (made of a total of 1250 dwellings), partly built in the 1920s as miner dwellings (Garden City), and partly built in the 1990s (social housing Nieuw Texas). The district shows a common geometry, building materials and equipment, as well as

² <u>https://www.genk.be/klimaatplan</u>

³ <u>https://www.genk.be/geenkool</u>



the same thermal characteristics. Within oPEN Lab, 33 out of 1370 houses in the Waterschei district will be renovated, transforming the community towards a Positive Energy Neighbourhood. Of these 33 houses, 25 are social houses (Nieuw Texas) and 8 are privately owned (Waterschei).

GENK Context



Figure 11 Genk oPEN Living Lab context

Purpose

The main goals of the oPEN Living Lab Genk are to:

- develop affordable and sustainable solutions.
- Boost the innovation through renovation of buildings.
- Work on the energy transition.
- Offer strategies to involve citizens in this process.

These objectives will be achieved within the oPEN Living Lab Genk by implementing innovative energy transition technologies to the Waterschei district known in the past as a mine area and raising awareness on why this transition is so important.

The result will be the investigation and testing of collective investments, energy as a service for citizens directly involved in the co-creation process towards improving the energy transition, compared with traditional individual approaches.





Figure 12 oPEN Living Lab Genk Timeline

Genk oPEN Living Lab Technical challenges

Genk oPEN Living Lab has identified three main technical challenges to be addressed by the Open Call (briefly presented below):

- 1. BIM from scan to as-built: provide a cost-efficient process of combining relevant GIS, Lidar, etc... for renovation of private homeowners in Genk into a reliable and accurate BIM model that can be fed into the processes of each stakeholder, eliminating the need for each actor to create their own BIM model. The final goal is to move from scans to a Digital Twin of the current built situation on building level to be used for simulations and as a starting point for CNC production, as well as improve precision and accuracy in the assessment of the current situation and BIM set up.
- 2. Educational Neighborhood infrastructure: design, install and maintain an innovative (nearly) off-grid installation for educational purposes in the Genk community generating its own energy, stores it locally and available for safe use in the neighbourhood. The item should be mobile, and the size limited to approximately one parking spot, to allow for its installation in various locations, where it can serve as an outpost (or precursor) of neighbourhood transition plans, thus supporting behavioural change in the Genk community.



3. DC heat pump: provide, install and monitor a DC heat pump in one (or more) of the energy boxes that are built in Nieuw Texas. In a first round, all dwellings will be fitted with commercially available AC heat pumps. After a first heating system, a test can be done where some of those are replaced by a DC powered version, to validate the calculated energy savings. Depending on both source and heating capacity of the DC heat pump, an appropriate dwelling or a set of dwellings, in case of a collective energy box, will be selected for the demonstration. The duration of the demonstration and its iterations, as well as various other options can be determined in mutual agreement, to the extent that this does not compromise the comfort of the inhabitants.

The technical details of these challenges are described in Annex C and will be available as reference to Applicants on the oPEN Lab website: <u>https://openlab-project.eu/living-labs/genk/open-call-genk/</u>



3. oPEN Lab Open Call Process

This chapter provides a detailed overview of the key principles and approaches to be applied over the entire oPEN Lab Open Call process.

The methodology of the Open Call has been identified through co-design and exchanges within the consortium partners, and especially the three oPEN Living Labs, aimed at further detailing the approach in view of maximising the Open Call results and impact.

The oPEN Lab Open Call intends to involve innovators based in Europe that are eager to contribute to the development of Positive Energy Neighbourhoods in one or more of the participating cities.

Applicants can apply alone as a **single entity**, or as a **Pilot Group** formed of two organisations or more, in which case they will designate a Lead Applicant.

There are no restrictions on the number of organisations that can become part of a Pilot Group. However, applicants need to demonstrate the partners have complementary skills and can deliver the project within the timeline set by the project (see section 3.3 of this document).

In order to set the stage, the three Living Labs have set out the technical challenges they are already facing in chapter 2. However, they would like to invite the Applicants to challenge them: maybe you have the solution that they were not even thinking of yet.

3.1 Key principles

Through the co-design process, the oPEN Lab partners have identified a set of key principles driving the applied Open Call methodology, presented in the paragraphs below.

• Learning from the past.

Based on the principle that making progresses do not require to "re-invent the wheel", oPEN Lab has actively pursued inspiration from other similar and successful EU open innovation processes organised by the ENoLL project partner, such as SynchroniCity (GA n. 732240) and VITALISE (GA n. 101007990). This knowledge was transferred into the context of the Open Call, adopting valuable best practices, avoiding known barriers, and simplifying processes when possible.

• Transparency

Transparency is considered as a core value for this open innovation process. Transparency inspires trust, as essential for the well-functioning of the entire Open Call process, from the pre-engagement phase to the closure of the pilot projects, and possibly beyond.

This value has informed the way the Open Call has been designed and planned. The provision of all information at the different Open Call stages during the application phase is important to ensure applicants' expectations are managed and there are no surprises for them at the end of the process. These will thus be provided in a detailed "Guide for Applicants" available on the project website and included for reference in Annex D of this document.



• Privacy and personal data protection

Several personal data (e.g., name, contacts, sex, nationality, age, etc.) will be collected within the oPEN Lab Open Call as well as during the Pilot implementation. Compliance with GDPR and applicable national legislations will be ensured over the entire project.

On one side, personal data of applicants will be collected during the application phase. Such data will be safely stored and maintained by the oPEN Lab partners only for the purpose of this Open Call.

In the framework of the implementation of the pilot, Lead Applicants or Pilot Groups will collect or access different data, possibly containing personal information. Compliance with GDPR will thus be requested to Lead Applicants and Pilot Groups and will represent a primary admissibility criterion.

• Intellectual Property Rights (IPR) and Dissemination

Involving innovators, it's of utmost importance that accurate IP management provisions are set and implemented over the entire process. In the oPEN Lab Open Call, the following principles will be applied:

- Each involved party either on the Applicants or oPEN Lab consortium side remains the sole owner of background results, products, and processes (patented or not).
- Management and ownership of the results obtained and/or validated within the context of the oPEN Lab Open Call, as well as eventual access to existing background necessary to implement the Pilot project will be negotiated bilaterally between the Lead Applicant and/or Pilot Groups and the oPEN Living Lab through a legally binding Pilot Agreement.

oPEN Lab or the European Commission may request Lead Applicants and/or Pilot Groups to present their work as part of our public relations and networking events to showcase the benefits of the oPEN Lab project.

3.2 Target audience

Who can apply?

oPEN Lab Open Call is aimed at innovators from the whole quadruple helix ecosystem: **SMEs**, **start-ups**, **large enterprises**, **research institutes**, **governments and associations representing citizens**. Application from SMEs and start-ups is highly encouraged and favoured in the evaluation and scoring phase. Applications from individuals will not be accepted.

Applicants need to be based in any of the European Union member states or countries Associated to Horizon 2020. It is not necessary for the applicant organisations to be located in one of the three oPEN Lab Cities (i.e., Tartu, Pamplona, Genk). In fact, oPEN Lab actively encourages demonstrations from organisations coming from different locations with the aim to increase the potential for scalability and replicability of PENs in Europe.

The focus of oPEN Lab is on the enhancement of solutions starting from a Technological Readiness Level (TRL) > 5-6 to achieve an expected pre-commercial readiness by project end with TRL of 7-8. Based on this, the main eligibility criteria for the innovators applying to the



oPEN Lab Open Call is to have a solution that has been already demonstrated in a relevant controlled environment (**TRL 5 or above**).

Why apply?

Apply to the call if you are passionate about contributing to Positive Energy Neighbourhoods.

You are confident that innovative solution you have developed and/or are developing is a key part of it.

Get the chance to enhance your capacity to tailor and validate your proposal by collaborating and engaging with the quadruple helix stakeholders in the project. As a selected Innovator you will get the possibility to participate in the oPEN Lab framework.

Access to the oPEN Lab infrastructure will give you the opportunity to set up validated studies, collect information and get feedback from end-users as well as industrial partners and knowledge institutes. This will allow you to increase your visibility and access to the market through the oPEN Lab network.

An Accelerator programme will be set up within oPEN Lab to support the development of your roadmap for the commercialization and market entry of the demonstrated solutions. They will be linked to future potential clients (e.g., local authorities, project developers but also "integrators" such as engineering companies and contractors), as well as with existing business support programmes from EIT KICs and marketplaces (e.g. Smart Cities Marketplace). The Accelerator programme is supported by the oPEN Lab network of innovation clusters across the EU that will support with expertise and network.

Funding

Please consider any funding is granted by the oPEN Lab open call.

3.3 Open call stages and timeline

The Open Call process is structured over six main stages:

- 1. Call publication
- 2. Application
- 3. Evaluation
- 4. Award and publication of call results
- 5. Implementation of awarded solutions
- 6. Follow-up and evaluation of the solutions





Figure 13 oPEN Lab Open Call timeline

Depending on the response to the first round of Open Call and the remaining solution gaps, the oPEN Lab consortium will evaluate if an additional Call needs to be launched, or if a **more** "**flexible**" **approach** can be set. In the latter case, the consortium will consider different options such as: an Open Call without a specific deadline with fixed cut-off dates to facilitate the evaluation process or a more targeted open call with a shorter list of technical challenges focusing on those not yet addressed in the first round, etc.

Stage 1: Call opening

The Open Call is launched on 16 January 2023 via the oPEN Lab project website: <u>https://openlab-project.eu/</u>.

While the application guidelines, template and form are available on a common area, three specific sub-sections summarise the context, specificity, and technical challenges to be addressed within each of the oPEN Living Labs.

A set of 2 webinars will be offered by each of the three oPEN Living Labs, both in English and in local languages (if needed) from 16 January 2023 to 15 February 2023, to present the Open Call process, the different technical challenges, as well as allow participants to ask specific questions on the expected technical implementations and services to be provided via the Open Call.



Stage 2: Application

The application must be submitted online by the Lead Applicant through the "Open Call Application Form" accessible via the oPEN Lab website.

The Application Form has been designed to:

- Collect all the necessary information to evaluate the feasibility and relevance of the proposed solution/s.
- Provide detailed and clear guidance on each section to the Applicants.

The Application Form includes two sections:

- **Admin** collecting the administrative information about the Lead Applicant and, if applicable, partners involved in a Pilot Group.
- **Technical proposal** detailing the technical information of the proposed solution/s, including additional optional attachments.

A template of the Application Form will be available for download in both PDF and editable format (ODT format to ease compatibility with open-source applications) in the oPEN Lab website with the Open Call Guidelines to ease Applicants preparation. The Application form is provided for reference in this document in Annex E, while the Guidelines for the Applicants are included in Annex D.

Stage 3: Evaluation

Evaluation committee and evaluation process

Evaluation will be carried out by the oPEN Lab partners in each oPEN Living Lab, in collaboration with the Coordination team and the Executive Board. Evaluation will be carried out by the oPEN Lab partners of the respective oPEN Living Lab technical challenge submitted, in close collaboration with the Coordination Team and the Executive Board. In case Applicants identified a general challenge or solution, representatives of all three Living Labs will make the assessment.

The applications will be scored against the evaluation criteria of "Excellence, Impact and Implementation" (further detailed below) and verifying their alignment to the Technical Challenges identified by each oPEN Living Lab.

All applications will be evaluated and ranked based on the highest score. Only applications meeting the threshold criteria of 12 points will be approved if no potential conflict with other applications arise (e.g., covering the same solution). In case of proposals with the same score, the one providing the best fit to the technical challenge and most innovative solution will be selected.

Proposals with a score above the threshold and included in the winning list will undergo an ethics review by the Eligibility Committee who will revise the Ethics self-assessment to ensure compliancy with ethical principles and relevant legislations.

Selected applicants will be informed via email, possibly requesting eventual additional clarification regarding Ethics & Privacy issues within a fixed deadline for the Eligibility



Committee to finalise the review. Notwithstanding other merits, proposals may be rejected on the grounds of ethical and privacy reasons.

Notifications of acceptance or rejections together with any evaluation feedback will be sent out to all participants by 22 March 2023. Feedback and any possible complaints must be sent to the Open Call team by 27 March 2023 at 17:00 CEST – Brussels time.

Eligibility criteria

The applications will be assessed by the Evaluation Committee to evaluate whether all the eligibility criteria set in the oPEN Lab open call are met.

There are seven eligibility criteria as listed below:

- 1. Applicant(s) are SMEs, start-ups, large enterprises, research institutions, governments or associations.
- 2. Applicant(s) are located in the European Union Member States or countries Associated to Horizon 2020.
- 3. Application submitted on time (First open call deadline: 20 February 2023, 17:00 CEST, second open call deadline to be decided if needed).
- 4. Technical feasibility should be ensured to show the replicability and scalability of PEN solutions at a wider European level. Therefore, proposals could be rejected only based on poor technical feasibility, amongst the other criteria of Excellence, Impact, and Implementation.
- 5. The proposal is providing solutions to the technical challenges identified by the oPEN Living Labs or relates an innovative product or service relevant for Positive Energy Districts with Technology Readiness Level 5 to 8.
- 6. Completeness of the proposals (i.e., all fields included within the space and page limit).
- 7. The language of the applications must be in English, Spanish or Estonian.
- 8. Applications are aligned with the scope of the oPEN Lab Open Call, the technical challenges identified by the three oPEN Living Labs and all the supporting documentation provided.
- 9.

Evaluation criteria

If eligible, evaluators will evaluate and rank proposals based on 3 different criteria: Excellence, Impact, and Implementation. Each criterion is scored from 1 to 5 and has a different weight in the total evaluation. The elements included below will be taken into consideration while evaluating the three main criteria.

Excellence (weight: 30%)

- Ambition of the proposed solution.
- Innovative nature of the technologies, products or services offered.
- Soundness of the approach within the context of developing Positive Energy Neighbourhoods and TRL level.
- Novel use of value chains inside and outside the energy field.

Impact (weight: 40%)



- Market opportunity and market readiness level.
- Commercial Strategy and Scalability (generation of new business).
- Positive Energy Neighbourhoods impact (value added, service quality and outcome improvement).
- Economic impact (e.g., cost saving and job transformation, skill enhancement etc.).
- Environmental impact (e.g. energy efficiency, CO2 savings, co-benefits, renovation depth, workflows, consumption reduction, improvement of users' quality of life).
- Development of business model and funding plan.
- Reusability of existing solutions.

Implementation (weight: 30%)

- Team capabilities and management capacity of action.
- Reach of end users and alignment with citizen centric co-creation approach.

Scores

For each criterion, each proposal will be given scores from 0 to 5, as per the detailed list of scores detailed below. The total score that can be achieved by the Applicants is 15 maximum with a threshold of 12. Applicants scoring over 12 points will subsequently be ranked on highest weighted score.

- **0 Very poor:** the proposal fails to address the criterion or cannot be assessed due to missing or incomplete information.
- 1 Poor: the criterion is inadequately addressed or there are serious inherent weaknesses.
- **2 Fair:** the proposal broadly addresses the criterion but there are significant weaknesses.
- **3 Good:** the proposal addresses the criterion well but with several shortcomings.
- 4 Very good: the proposal addresses the criterion very well but with a small number of shortcomings.
- **5 Excellent:** the proposal successfully addresses all relevant aspects of the criterion; any shortcomings are minor.

Stage 4: Award and publication of Call results

Following the eventual rescoping with the three oPEN Living Labs in discussion rounds and before the start of the Pilot, awarded Lead Applicants or Pilot Groups will be requested to sign a legally binding "**Pilot Agreement**".

Such agreement will define the terms whereby the Piloter/Pilot Group will implement the Pilot Project in collaboration with the Living Lab(s) in the framework of the oPEN Lab project, including detailed IPR provisions. The conditions and full text of the Pilot Agreement will be shared between the Lead Applicant/Pilot Group and the relevant oPEN Living Lab.

Following the signature of the Pilot Agreement (i.e., April 2023 onwards), the oPEN Lab partners will publish the results of the Open Call through different tools, as presented below.



Share & Connect newsletter au- tumn edition	A special edition of the newsletter will be published in Spring 2023, announcing the results of the open call, and presenting the selected commercial partners and their technologies
oPEN Lab website & oPEN Lab	A news item about the results of the open call, including
news / blogs	short portraits of the selected commercial partners and their technologies.
Press releases	Based on the input from the consortium members, the commu- nications team will prepare informative press releases to in- form about the open calls. A press release will be drafted an- nouncing the results of the open call
oPEN Lab social media	As a follow up of the dedicated social media campaign, a series of social media activities presenting the selected in- novators.

Stage 5: Management and follow up of the projects

Following the awarding of the selected solutions, the projects will start in April 2023. It is the responsibility of the **Lead Applicant** to provide the three oPEN Living Labs with a series of reports on the advancement of the activities performed. Each oPEN Living Lab manager in the three cities will be responsible to check the status of advancement of the work carried out by the Open Call winners. Bi-weekly meetings will be organised between the oPEN Living Lab Manager and the main Lead Applicant of the solution awarded. In terms of deliverables, the following 3 reports must be produced from the Lead Applicant: the initial action plan of activities, a mid-term and a final report. These documents should be concise (no more than 30 pages) and detail the activities to be performed and provide a clear timeline.



4. Conclusions and Next Steps

The oPEN Lab project aims at designing and implementing replicable and commercially viable services of Positive Energy Neighbourhoods in a set of three European urban contexts, and finally integrating these technologies and packages in different Living Labs.

The oPEN Living Labs of Genk (BE), Tartu (EE) and Pamplona (ES) will contribute to make interventions and test combinations of different close-to-market ready solutions and study their performance as a unique operating system.

This report has described the process of the oPEN Lab Open Call for innovators outside the consortium to test and validate their solutions with end-users under real market conditions at the Living Labs premises. The report has included the structure of the oPEN Lab Open Call, criteria for selection, market opportunities and promotion plan.

In fact, considering the status of the three oPEN Living Labs, the **first Open Call** will be launched on 16 January 2023 and remain open until 21 February 2023, with evaluations happening from 20 February 2023 until 21 March 2023. The implementation planning will be agreed with the Living lab leads, and is planned from April 2023 onwards.

Depending on the response of the first round of Open Call and the remaining solution gaps, the oPEN Lab consortium will discuss if an additional open call needs to be launched, or if a **more "flexible" approach** can be set whereas the second round of Open Call is open without any specific deadline.







Annex A – Technical challenges: Tartu oPEN Living Lab

TECHNICAL CHALLENGE 1: Demand-based ventilation management			
Site profile			
Application scenario	During or after deep renovation works	Location in the city	Mõiavahe 35, 36, 37, 38, 42, 43, 45, 47 Tartu Kaunase pst 80 Nõlvaku 15
Current situation / bottlenecks			

Estonian Soviet-era apartment buildings have not been equipped with an indoor climate system for increasing energy efficiency and inhabitant comfort. Currently, the Estonian national financing scheme for apartment buildings requires buildings to be renovated at least to c-energy class to qualify and by adding heat recovering mechanic ventilation systems.

The oPEN Lab projects aims to bring the renovation processes to a further level, by providing the best energy efficiency level possible to the buildings and the neighbourhood towards PENs. Standard heat recovering ventilation in renovated buildings is set up according to the standard consumption patterns. This in not optimal for reducing energy consumption and does not consider the actual behaviour of the inhabitants. Creating a demand-based ventilation system for renovated apartment buildings will optimize energy consumption by providing fresh air where and when it is most needed.

At the moment, in the Annelinn buildings, there is a centralized ventilation unit with heat recovery combined with an individual ventilation piping and air pressure control based on Variable Airflow Valves (VA valves). The solution is highly efficient, but very expensive and cannot be implemented in current renovations due to high investment cost, difficult maintenance and long pay-off period. Moreover, for apartments in buildings higher than 5 floors, the VA-valve based solution cannot be used.

Objective



- Create a centralized heat recovering ventilation system relying on CO2 sensors in the apartments to efficiently manage centrally provided air flow.
- Reduce costs of ventilation management in buildings of the Annelinn area, thus improving maintenance systems.

Demonstration description

A demand-based ventilation management system in the Annelinn area in the City of Tartu is requested to be applied in 9 floors building of 144 apartments. The building ventilation system will be operated by one central ventilation machine per staircase serving 38 apartments equipped with temperature and CO2 sensors.

The solution is required to operate central ventilation system by analysing individual apartment indoor air quality data and optimising the central ventilation machine operation.

The system must be managed centrally without using VA-valves or individual in and/or exhaust ventilation pipes from the apartments. The management system can operate on location or remotely if needed and should provide cost-efficiency results.



TECHNICAL CHALLENGE 2: Efficient and secure bike storage			
Site profile			
Application scenario	On private or public land	Location in the city	Mõiavahe 35, 36, 37, 38, 42, 43, 45, 47 Tartu Kaunase pst 80 Nõlvaku 15
Current situation / bottlenecks			

In the Annelinn area in Tartu, currently only one private car spot is available every two apartments. Nowadays, Tartu has reached the level of requiring at least one private car spot for each apartment. The bike infrastructure is increasing in Tartu City, however, bike storage in Annelinn area is still lagging. Citizens in Annelinn area need solutions for private car parking, as well as there is a strong lack of secure and convenient bike storage, that could support and promote a larger use of cycling within the community.

Objectives

- Create secure bike storage solutions providing at least one bike storage spot per apartment, next to the buildings at the street level.
- Increase the use of bikes towards cars in the Annelinn area in Tartu City.

Demonstration description

The City of Tartu aims to renovate three to four buildings with total of 288 apartments. The buildings to be renovated will be selected by beginning of 2023.

Parallel to the renovation of the buildings in the Annelinn area, it has been identified the need for providing secure bike storage solutions (at least one for each apartment) that should help reducing the challenge of having not enough parking slots in the neighbourhood, as well as improving the carbon footprint of the community. The location of the storage system will be chosen during the construction design in 2023.



The footprint of the solution must be minimal to not lose any greenery in the area. Storage should also not reduce the space for private car parking that could hinder the renovation process. The storage should be accessible to apartment owners only if possible (not for renters). Moreover, the access to the bike storage should be compatible with the overall security system of the buildings in the area.



Annex B – Technical challenges: Pamplona oPEN Living Lab



TECHNICAL CHALLENGE 2: Innovative energy solutions for energy generation and			
storage			
Site profile			
Application scenario	PV tech manufacturer or developer installs its technology at IWER building Other buildings in Rochapea	Location in the city	lwer building Rochapea district
Current situation / bott	lenecks		
The project has the ambition to successfully demonstrate the implementation of innovative energy technologies and systems both at building and neighbourhood level. Therefore, the aim is to broaden the innovation capacity and demonstrate the viability of new solutions for generation, storage and regeneration, such as roadside vertical wind turbines capture, energy recovery in pavements, PV in façades and energy storage.			
Objective			
 Test generation/regeneration solutions in a real-life large area Living Lab in Pamplona. Test potential installation issues. Monitor real generation performance in a Living Lab. Increase capacity building on energy generation of quadruple helix stakeholders in Pamplona. Increase RES penetration in the power grid at district level. Increase operationalisation of positive energy districts. Demonstrate innovative storage technologies capability in a large area of Pamplona and in a real-life environment 			
Demonstration description			
oPEN Living Lab Pamplona is seeking for innovative generation and regeneration solutions to give robustness to the demand, and enhance services of energy flexibility, thus taking advantage from regeneration and storage systems profitability.			
 <u>Novel PV elements</u> to be installed in building façade during and/or after refurbishment (e.g. PV windows, flexible PV modules, semi-transparent modules, specially coloured). The innovation component of the proposal can be related to novel PV 			



technologies, flexibility feature, decorative motifs, inclusion of new aesthetics components in the device, etc.

- Innovative re/generation systems to install in buildings (e.g. roadside vertical wind turbines capture, energy recovery in pavements, etc.).
- Innovative storage systems to install in buildings. The system should be able to communicate with the EMS in site. The operation modes will be compatible with building and district demand. Power and capacity should be compatible with projected installations. Environmental considerations and hazardousness should be preventable and compatible with district habitability policy.

TECHNICAL CHALLENGE 3: Innovative and cost-effective user interfaces for management and remote maintenance systems of the building's energy systems Sito profilo

Application scenario	Social housing apartments for elderly people in the San Pedro neighbourhood, as well as offices, commer- cial spaces and areas of the future nursing home at the IWER complex	Location in the city	San Pedro neighbourhood and IWER complex in Ro- chapea district in Pam- plona
Current situation / bottlenocks			

urrent situation / pollieneck

Europe is immersed in an unprecedented challenge to mitigate climate change, decarbonize the energy sector, and promote a more rational and efficient use of energy resources. The decarbonisation of the energy sector also brings the opportunity for citizens to participate in this endeavour by investing in renewable energy sources across the urban fabric, and particularly in residential buildings.

Over the next 2 years, targeted areas of the IWER complex and an apartment block in the San Pedro neighbourhood in Pamplona will be renovated to be equipped with innovative technical systems to increase their energy efficiency towards the creation of a Positive Energy Neighbourhood (PEN).

Renovation must be supported by users' behavioural change for acquiring a more active role with regards to the energy system. Users should be able to take informed decision for reducing their energy consumption and related energy bills by taking advantage of the renewable energy generated, thus controlling the consumption through home appliances.

Objectives

- Raise awareness on a more efficient use of energy resources.
- Increase users' knowledge about their energy consumption patterns, as well as provide advice and corrective measures.
- Offer cost-effective and user-friendly control systems for all the stakeholders of the quadruple helix, with a special attention to vulnerable and marginalised communities

Demonstration description

Proposals should provide an innovative and cost-effective interface to support final users in their new active role by providing at least 3 of the following solutions:



- Appropriate information about their historic and <u>real time consumption of electricity, gas and</u> <u>water</u>, and an estimate of their energy and water bills.
- <u>Information about abnormal consumption patterns</u>, as well as providing them with an array of corrective measures to implement.
- <u>Corrective measures</u> as a series of progressive challenges to drive behavioural changes and achieve over time ambitious goals.
- *Forecasts and recommendations* to take informed decision concerning the most appropriate timeslot to schedule energy intensive tasks.
- <u>Timely information about last minute incentives or rewards to provide flexibility.</u>
- <u>Interoperability with usual home automation systems and actuators</u> to activate blinds and solar protection elements.
- <u>Greater potential for flexibility of demand applied to the houses/building through a flexible</u> <u>control of the facilities</u> according to the needs of the user and the increase of their efficiency with subsequent energy savings.
- <u>Demonstration of innovative control systems to achieve energy flexibility</u> through demand response of legacy, or non-smart, home appliances.

Main target for the demonstration is composed of two buildings in the San Pedro neighbourhood, six apartment each, for a total of twelve. Interfaces could be installed in all the twelve apartments or in a single building of six apartments. The areas targeted for renovation in the IWER complex comprise a nursing home and multiple office spaces, as well as commercial areas.



Annex C – Technical challenges: Genk oPEN Living Lab

GENK TECHNICAL CHALLENGE 1: BIM from scan to as-built				
Site profile				
Application scenario	Renovation of private home owners	Location in the city	Waterschei	
Current situation / both	lenecks			
Postponing detailed modelling to the production phase increases the workload and thus costs currently attributed to the prefabrication process. This inefficiency limits the roll out of prefab concepts to small scale renovation programs, as opposed to large and repetitive projects where modelling costs can be absorbed.				
Objectives				
 Increase efficiency for the private homeowners in Genk by linking GIS, (airborne), Lidar, etc. to move from scans to a Digital Twin of the current built situation on building level to be used for simulations and as a starting point for CNC production. Improve precision and accuracy in the assessment of the current situation and BIM set up. 				
Demonstration description				
Prefabrication is often put forward to speed up renovations whilst cutting costs. In reality, cost reduction is often not fully achieved. Although standardization and automation at sufficiently large scale, indeed have the potential to reduce costs for setting up an accurate BIM model. With sufficient granularity it can be used in all steps (from design to execution with the link to an as-built file and monitoring), but it is labour intensive. Increasing the precision tends to be postponed as far back in the process as possible. Consequently, every next step for which an additional level of precision is required, is obliged to at least modify the existing model or, in the worst case, start with a new BIM model altogether. This is typically the case when Computer Numerical Control (CNC) machines are used in a computer aided manufacturing (CAM) process to produce prefabricated building elements.				



often too inaccurate to feed into the production process. Existing tools and data sources should be explored to enable seamless data integration in the design process and data exchange among practitioners.

The Genk oPEN Living Lab is looking for a cost-efficient process of combining relevant GIS, Lidar, etc... into a reliable and accurate BIM model that can be fed into the processes of each stakeholder, eliminating the need for each actor to create their own BIM model.



GENK TECHNICAL C	HALLENGE 2: Educat	tional Neighbourhood	Infrastructure
Site profile			
Application scenario	Publicly accessible charging points for EV (scooters, bicycles, cars)	Location in the city	One station to be moved in several areas of the city of Genk
Current situation / bott	lenecks	-	
To switch from the consideration of energy as an always-on commodity towards a concept of smart energy consumption, a behaviour change should be encouraged.			
Objectives			
 Promote an efficient use of energy and stimulate critical thinking in the Genk community by creating a Renewable Pioneer installation that can be moved throughout the city as an ambassador. Generate and store renewable energy through the installation and make it available to the community. Inspire behavioural change in the Genk community, thus educating the citizens on energy saving and consumption themes. 			
Demonstration descrip	otion		
Nowadays, engaging the community on energy themes is not always easy. To inspire the neighbours and provide an effective behavioural change in the community, there is the need to create a fun way to engage with the citizens. The Genk oPEN Living Lab is looking for an innovative (nearly) off-grid installation which embodies the core principles of the transition at hand by being both useful and educational, combining clear visual use of innovative energy technologies with everyday use. Ideally, this Renewable Pioneer should promote the use of renewable energy solutions, as well as reducing complications for its installation, thus generating its own energy, storing it locally and making it available for safe use in the neighbourhood. By being a mobile installation of limited dimensions (one parking spot), it can serve first as a focal point in the neighbourhoods in transition (Nieuw Texas and Waterschei) and can later be moved around the city as an ambassador to other neighbourhoods.			
Some ideas for which the energy generated and stored can be used:			



- Charging point for electric bikes and scooter.
- EV charging point (albeit limited capacity vs vehicle needs).
- Open air public space with power sockets for kettle, radio.
- Reading nook with lights



GENK TECHNICAL CHALLENGE 3: DC heat pump			
Site profile			
Application scenario	Installation of DC powered heat pump in one or more of the energy boxes to replace existing AC heat pump	Location in the city	Nieuw Texas
Current situation / bottlenecks			

The dwellings in the Genk oPEN Living Lab will receive either an individual or a collective prefabricated energy box instead of a dedicated technical room. Most of the technical installations, such as the heat pump, multi-energy buffer, ventilation unit and electrical cabinet will be included in this plug-and-play technical room. The energy box is created in such a way that it allows flexibility during the entire duration of the Living Lab. Ease of installation and if necessary, ease of replacement is key. A mix of technologies is implemented in the different energy boxes throughout the neighbourhood to allow the testing of a wide variety of solution packages. To produce renewable energy locally, solar panels are provided for each dwelling. In some cases, there will also be an electric battery installed in the energy box. To produce heat, the dwellings will either be equipped with air-water heat pumps or water-water heat pumps to analyse the advantages and disadvantages of a particular setup.

Within this context, Genk oPEN Living Lab has provided a study based on the following three different scenarios to compare the annual savings in power conversion capacity (CAPEX) and power conversion losses reflecting the efficiency (OPEX):

- Scenario 0: Base scenario covering AC coupled Solar PV, AC coupled Battery and AC coupled Heat pump. This a traditional grid topology where all components are interfaced with an AC bus.
- Scenario 1: State-of-the-art scenario where Solar PV and the Battery are DC coupled to exchange energy via a hybrid inverter powering an AC bus where a heat pump is coupled.
- Scenario 2: Future scenario where all components are DC coupled on a main DC bus

The study showed that compared to Scenario 0, by connecting Solar PV and Battery storage to a DC bus via a DC/DC converter, the power conversion capacity was reduced by 9 kW and the power conversion losses were reduced by 52.6%. As a result, the total annual energy losses decrease from 350 kWh to 166 kWh. Therefore, it is recommended from an efficiency point of view to consider a Solar PV coupled battery setup with an internal DC bus.



Furthermore, Scenario 2 showed that connecting the heat pump to the DC bus results in an additional reduction of 6 kW less installed power conversion capacity and 60 kWh energy consumption savings. While these reductions are less as compared with coupling a battery and solar PV to a DC bus, the further increase of 2% in system efficiency is still worthwhile for the future to deploy. Today, the limited commercial availability is the main concern to deploy a DC heat pump in the oPEN Lab project.

Objectives

- Increase annual energy savings in power conversion capacity.
- Reduce power conversion losses

Demonstration description

In a traditional setup, the solar panels and battery will run DC based and will make use of a converter to supply the heat pump. Thus far, supplying **heat pumps** from a DC grid is uncommon and definitely not commercially available, although the built-in inverter (to operate the compressor at variable speeds) contains an AC/DC power conversion unit, which may be bypassed to make heat pumps support direct DC supply.

This technical challenge is aiming at providing, installing, and monitoring a DC heat pump in one (or more) of the energy boxes that are built in Nieuw Texas.

In a first round, all dwellings will be fitted with commercially available AC heat pumps. After a first heating system, a test can be done where some of those are replaced by a DC powered version, to validate the calculated energy savings.

Depending on both source and heating capacity of the DC heat pump, an appropriate dwelling or set of dwellings, in case of a collective energy box, will be selected for the demonstration.

The duration of the demonstration and its iterations, as well as various other options can be determined in mutual agreement, to the extent that this does not compromise the comfort of the inhabitants.



oPEN Lab Open Call Guide for Applicants

oPEN Lab Open Call

Call open: 16 January 2023 Call closed: 20 February 2023 17:00 Brussels time





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oPEN Lab project

oPEN Lab is a project funded by the European Union under the <u>Horizon 2020 Framework Programme for Research and</u> <u>Innovation (2014-2020)</u> leading the transition to Positive Energy Neighbourhoods (PENs) in Tartu (Estonia), Pamplona (Spain) and Genk (Belgium).

The oPEN Lab project has the ambition to change the landscape of urban areas in small to medium-sized cities across Europe by mobilising innovation and system integration within a combined construction and energy value chain leading existing buildings and neighbourhoods towards positive energy level.

oPEN Lab aims at designing and implementing replicable and commercially viable services of Positive Energy Neighbourhoods in a set of three European urban contexts, and finally integrating these technologies and packages within existing urban contexts.

oPEN Lab foresees to solve three main challenges for PEN Technologies:

- 1. Showcase the integration of novel technologies.
- 2. Accelerate PEN developments in existing neighbourhoods.
- 3. Upscale and replicate the solutions implemented.

Under the coordination of VITO, 32 partners from 7 countries are working together in oPEN Lab. More details on the oPEN Lab partners are available on the oPEN Lab website: <u>https://openlab-project.eu/about/partners/</u>

What are the objectives and scope of oPEN Lab Open Call?

Objectives

The oPEN Lab Open Call is aimed at involving innovators based in Europe and interested in enhancing their innovation capacity by exploiting solutions for Positive Energy Neighbourhoods in one or more of different oPEN Living Labs in Genk (Belgium), Tartu (Estonia) and Pamplona (Spain).

More in details, the oPEN Lab Open Call will have a twofold objective:

- Broaden the innovation capacity of the oPEN Living Labs
- Enable dynamic response to the rapidily changing market.

The challenge of the oPEN Lab's ambition to lever the testbeds beyond state of the art is on integrating these technologies both on building and neighborhood level, and balancing them within the wider energy system by providing minimum energy consumption, minimum cost, maximum comfort, as well as an optimal generation and storage of energy.

The oPEN Lab project creates time and resource efficiency conditions for route-to-market approaches through its openinnovation and co-creation environment in its three oPEN Living Labs.

oPEN Living Labs

In oPEN Lab, three open innovation Living Labs in Tartu (Estonia), Pamplona (Spain), and Genk (Belgium) will contribute to make interventions and test combinations of different close-to-market ready technologies and services and study their performance as a unique operating system for accelerating service innovation by adopting cross-sectoral integration.



The three Living Labs will demonstrate a PEN design integrating PEN energy systems and enabling 50% of building demand reduction and maximise local capacity of installed RES covering beyond 100% of the primary energy demand (Genk and Pamplona) or preparing for this (Tartu).

The innovations to be selected from the Open Call will be requested to address specific technical challenges identified by the oPEN Living Labs in the different application scenarios.

Details on the context, goals and identified Technical Challenges to be addressed by innovations selected through the Open Call are available for each oPEN Living Lab on the oPEN Lab website:

- Tartu Living Lab <u>https://openlab-project.eu/living-labs/tartu/open-call-tartu/</u>
- Pamplona Living Lab <u>https://openlab-project.eu/living-labs/pamplona/open-call-pamplona/</u>
- Genk Living Lab <u>https://openlab-project.eu/living-labs/genk/open-call-genk/</u>

Target audience

Who should apply?

The oPEN Lab Open Call intends to involve innovators based in Europe and interested in enhancing their innovation capacity by exploiting innovative solutions for Positive Energy Neighbourhoods in one or more of different local contexts in Genk (Belgium), Tartu (Estonia) and Pamplona (Spain).

oPEN Lab Open Call is aimed at innovators from the whole quadruple helix ecosystem: **SMEs**, **start-ups**, **large enterprises**, **research institutes**, **governments and associations representing citizens**. Application from SMEs and start-ups will be highly encouraged and favoured in the evaluation and scoring phase. Applications from individuals will not be accepted.

For each application there will always be a Lead Applicant.

Applicants can apply alone as a **single entity**, or as a **Pilot Group** formed of two organisations or more. Individuals cannot apply to the Open Call.

In the latter case, the Lead Applicant will coordinate the Pilot Group and is responsible for providing the oPEN Lab project management with reports and feedback for the relevant European Commission auditing.

There are no restrictions on the number of organisations that can become part of a Pilot Group. However, applicants need to demonstrate the partners have complementary skills and can deliver the project within the timeline set by the project (see section below).

Applicants need to be based in any of the European Union member states or countries Associated to Horizon 2020. It is not necessary for the applicant organisations to be located in one of the three oPEN Cities (i.e., Tartu, Pamplona, Genk). In fact, oPEN Lab actively encourages demonstrations from organisations coming from different locations with the aim to increase the potential for scalability and replicability of PENs in Europe.

The focus of oPEN Lab is on the enhancement of solutions starting from a Technological Readiness Level (TRL) > 5-6 to achieve an expected pre-commercial readiness by project end with TRL of 7-8. Based on this, the main eligibility criteria for the innovators applying to the oPEN Lab Open Call is to have a solution that has been already demonstrated in a relevant controlled environment (TRL 5 or above).



Why apply?

The oPEN Lab Open Call will enhance the selected innovators capacity by offering them the opportunity to collaborate and engage with end users and other industrial parties in a real-life setting within the three oPEN Living Labs for solutions' enhancement, tailoring and validation.

Funding is not provided for the oPEN Lab Open Call but, the innovators will have the opportunity to take advantage of the oPEN Lab infrastructure by collaborating with quadruple helix stakeholders involved in the project, accessing users to collect information and testing preferences in our oPEN Lab network, thus increasing their promotion, visibility, and access to the market.

Moreover, within oPEN Lab, we will set up an Accelerator Programme aiming to support the innovators selected in the Open Call in developing a roadmap for commercialisation and market entry of those solutions demonstrated in the oPEN Living Labs, and linking them with future potential clients (e.g., local authorities, project developers but also "integrators" such as engineering companies, utilities), as well as with existing business support programmes from EIT KICs and marketplaces (e.g., Smart Cities Marketplace). The Accelerator programme is supported by the oPEN Lab network of innovation clusters across the EU that will support with expertise and network.

Open call stages and timeline

The Open Call process will be structured over six main stages:

- 1. Call publication
- 2. Application
- 3. Evaluation
- 4. Award and publication of call results
- 5. Implementation of awarded solutions
- 6. Follow-up and evaluation of the solutions



This timetable may be amended as required at the discretion of the oPEN Lab team. The most updated version will be available on oPEN Lab website: www.openlab-project.eu



Intellectual Property Rights

- Each involved party either on the Applicants or oPEN Lab consortium side remains the sole owner of background results, products, and processes (patented or not).
- Management and ownership of the results obtained and/or validated within the context of the oPEN Lab Open Call, as well as eventual access to existing background necessary to implement the Pilot project will be negotiated bilaterally between the Lead Applicant and/or Pilot Groups and the oPEN Living Lab through a legally binding Pilot Agreement.
- oPEN Lab or the European Commission may ask Lead Applicants and/or Pilot Groups to present their work as part of our public relations and networking events to showcase the benefits of the oPEN Lab project.

Privacy and personal data protection

Several personal data (e.g., name, contacts, sex, nationality, age, etc.) will be collected within the oPEN Lab Open Call, as well as during the Pilot implementation. Compliance with GDPR and applicable national legislations will be ensured over the entire project.

Personal data of applicants will be collected during the application phase. Such data will be safely stored and maintained by the oPEN Lab partners only for the purpose of this Open Call.

In the framework of the implementation of the pilot, Lead Applicants or Pilot Groups will collect or access different data, possibly containing personal information. Compliance with GDPR will thus be requested to Lead Applicants and Pilot Groups and will represent a primary admissibility criterion.

Application

Step 1: Download and read all the relevant documentation

The Lead Applicant or Pilot Group should read the Open Call information available on the oPEN Lab website providing an overview of the main parameters of the open call, relevant to decide if they would like to proceed further with the Open Call application.

In case the Lead Applicant or Pilot Group decides to proceed with the application, next step is to read the full instructions under oPEN Lab Open Call - Guide for Applicants. It is important the Applicants familiarise with the conditions of the oPEN Lab open call.

Lead Applicants or Pilot Groups should also consult:

- The technical challenges identified by the oPEN Living Labs to be addressed by the Open Call.
- The oPEN Lab Open Call Application Template providing all the application form with instructions to be filled to apply.

All documentation is available for download on the oPEN Lab project website: www.openlab-project.eu

Step 2: Identify challenges to be addressed and informative sessions

The Lead Applicant or Pilot Group should ensure the offered solutions are relevant to the technical challenges identified by the three oPEN Living Labs and select one or more that is most relevant for them. The projects must be deployed in at least one of the three oPEN Living Labs.

A set of 2 webinars will be offered by each of the three oPEN Living Labs, both in English and in local languages from 16 January 2023 to 15 February 2023, to present the Open Call process, the different technical challenges, as well as allow participants to ask specific questions on the expected techni- cal implementations and services to be provided via the Open Call.



Step 3: Complete and submit the application

The application form is available on the oPEN Lab project website (www.openlab-project.eu) and includes both an administrative and a technical section. Applicants must complete all required fields of the applica- tion form.

Only complete applications will be considered for evaluation. All applications must be submitted either in English, Spanish, Dutch or Estonian (in compliance with the three oPEN Living Labs languages). Proposals written in any other language will not be eligible. After the call deadline, chan-ges or additions are no longer possible. Within the

application process, Applicants will be asked to:

- provide general information about their institutions/organisations, partners, and other Pilot Group applicants.
- Complete all fields in the online application form within the space limits.

Step 4: Receive notification

All Lead Applicants will be notified of the results of their application via email on 22 March 2023. It is the responsibility of the Lead Applicant to communicate the results to other members of the Pilot Group.

Evaluation process

Evaluation will be carried out by the oPEN Lab partners in each oPEN Living Lab in collaboration with the Coordination team and the Executive Board. Representatives of each of the three oPEN Living Labs will review and score the applications related to the respective Living Lab (Evaluation Committee).

The applications will be reviewed by the Evaluation Committee, who will evaluate and score them against the evaluation criteria of "Excellence, Impact and Implementation" detailed below and verifying their alignment to the Technical Challenges identified by each oPEN Living Lab.

Technical feasibility will be of critical importance in this Open Call, which aims to show the replicability and scalability of PEN solutions at a wider European level. Therefore, proposals could be rejected only based on poor technical feasibility, amongst the other criteria of Excellence, Impact, and Implementation.

All applications will be evaluated and ranked in terms of the highest score. Only applications meeting the threshold criteria of 12 points will be approved if no potential conflict with other applications (e.g., covering the same solution). In case of proposals with the same score, the one providing the best fit to the technical challenges and identified as the most innovative will be selected. Proposals with a score above the threshold and included in the winning list will undergo an ethics and privacy review by the Eligibility Committee who will revise the Ethics self-assessment to ensure compliancy with ethical principles and relevant legislations.

Selected applicants will be informed via email, possibly requesting eventual additional clarification regarding Ethics & Privacy issues within a fixed deadline for the Eligibility Committee to finalise the review. Notwithstanding other merits, proposals may be rejected on the grounds of ethical and privacy reasons.

Notifications of acceptance or rejections together with any evaluation feedback will be sent out to all participants by 22 March 2023. Feedback and any possible complaints must be sent to the Open Call team by 27 March 2023 at 17:00 CEST.



What are the eligibility criteria?

There are eight eligibility criteria as listed below:

- 1. Applicant(s) are SMEs, start-ups, large enterprises, research institutions, governments, and associations.
- 2. Applicant(s) are located in the European Union Member States or countries Associated to Horizon 2020
- 3. Application submitted on time by 20 February 2023, 17:00 CET.
- 4. The proposal is providing solutions to the technical challenges identified by the oPEN Living Labs.
- 5. Completeness of the proposals (i.e., all fields included within the space and page limit).
- 6. The language of the applications (i.e., English, Spanish, Dutch, Estonian).
- 7. Compliance with ethical principles and relevant legislations.
- 8. Applications are aligned with the scope of the oPEN Lab Open Call.

What are the evaluation criteria?

If admissible and eligible, evaluators will evaluate and rank proposals based on 3 different main criteria: Excellence, Impact, and Implementation. Each criterion has a different weight in the scoring and includes several sub-criteria defined here below.

Excellence (weight: 30%)	Impact (weight: 40%)	Implementation (weight: 30%)
 Ambition of the proposed solution. Innovative nature of the technologies, products or services offered. Soundness of the technical approach within the context of developing Positive Energy Neigh-bourhoods and TRL level. Novel use of value chains inside and outside the energy field. 	 Market opportunity and market readiness level. Commercial Strategy and Scalability (generation of new business). Positive Energy Neighbourhoods impact (value added, service quality and outcome improvement). Economic impact (e.g., cost saving and job transformation, skill enhancement etc.). Environmental impact (e.g. energy efficiency, CO2 savings, co-benefits, renovation depth, workflows, consumption reduction, improvement of users' quality of life). 	 Team capabilities and management capacity of action. Reach of end users and alignment with citizen centric co-creation approach. Resource utilisation and efficiency.
	 Development of business model and funding plan. Reusability of existing solutions. 	



For each criterion, each proposal will be given scores from 0 to 5, as per the detailed list of scores detailed below:

- **0 Very poor:** the proposal fails to address the criterion or cannot be assessed due to missing or incomplete information (unless the result of an "obvious clerical error").
- 1 Poor: the criterion is inadequately addressed or there are serious inherent weaknesses.
- **2 Fair:** the proposal broadly addresses the criterion but there are significant weaknesses.
- **3 Good:** the proposal addresses the criterion well but with several shortcomings.
- **4 Very good:** the proposal addresses the criterion very well but with a small number of shortcomings.
- **5 Excellent:** the proposal successfully addresses all relevant aspects of the criterion; any shortcomings are minor.

For scoring and ranking, evaluators will consider the following aspects under each of the evaluation criteria:

Excellence	Impact	Implementation
(0-5 points)	(0-5 points)	(0-5 points)
 What is the vision, ambition, and value proposition of your solution? Is your project proposition clear in meeting the objectives of the Open Call/s? How innovative are your technological solutions, products or services offered? Has your solution been demonstrated in a relevant environment (with a starting TRL 6 or above)? Is your project offering an innovative use of value chains within and outside the energy domain? 	 Does your project address a challenge recognised or prioritised by the oPEN Living Labs or can you argue for another challenge that is as important for the city and its communities? Do you have evidence? How will you measure the quality of your outputs (methodology and key performance indicators)? Evidence of a sound commercial strategy. How credible is your methodology in proving the scalability of your solution, product or service? What's your exploitation/commercialisation plan for this solution? How clear is your revenue model and monetisation strategy? How big is the market you are addressing? Is your business model/plan clear and sound? What is the long-term social, environmental, and economic impact if your solution is implemented at a larger scale? How much is your project reusing existing, relevant, and validated technological components? 	 Is the proposal feasible in the time given? Is there an achievable deployment plan? Is the project achievable considering the skills and expertise of the team? Does the team have the capacity to run the project? Is the proposal feasible given the technological features and their maturity? Are there any additional infrastructure and resource requirements? Do you have a plan to unlock these assets?



Awarding process

What should I expect if I am successful?

Slight re-scoping of the awarded projects can be requested based on the feedback from the three oPEN Living Labs. The re-scoping period will take place in April 2023. After the rescoping period, if you are successful, you will:

- Receive an email communicating your success and feedback from the application.
- Slight re-scoping of the awarded projects can be requested based on the feedback from the three oPEN Living Labs. The re-scoping period will take place in April 2023.
- Be requested to formally sign a legally binding Pilot Agreement. Such agreement will define the terms whereby the Piloter/Pilot Group will implement the Pilot Project in collaboration with the Living Lab(s) in the framework of the oPEN Lab project, including detailed IPR provisions. The conditions and full text of the Pilot Agreement will be shared between the Lead Applicant/Pilot Group and the relevant oPEN Living Lab. Be aware that Pilot Groups will need to provide evidence that the Pilot Group has been formally established (e.g., Collaboration Agreement or other) before signing the Pilot Agreement. The Pilot Agreement will be shared with successful applicants only at the end of the awarding procedure.





oPEN Lab Open Call Application &

The Lead Applicant should complete the questionnaire with requested information to apply to oPEN Lab Open Call. All sections are mandatory for the application to be considered eligible. The questionnaire includes an Administrative section and a Technical section.

Please fill out one form per selected Technical Challenge.

This content is created by the Steinbeis Europazentrum for the oPEN Lab project. The data you submit will be sent to the Steinbeis Europazentrum and evaluated by the Evaluation Committee of this Call. We treat your personal data as confidential and in accordance with the statutory data protection regulations.

Contact: Gabi Kaiser Steinbeis-Europa-Zentrum info@openlab-project.eu

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The sole responsibility for the content of this form lies with the authors. It does not necessarily reflect the opinion of the European Union. Neither the CINEA nor the European Commission are responsible for any use that may be made of the information contained therein.

Title of your Application

Please think of a name you want to give your pilot project and state it below.

1. Name of your pilot project

Lead Applicant Partner

Please, provide the requested administrative information about the Lead Applicant and/or partners of the Pilot Group applying to the oPEN Lab Open Call.

2. Oganisation's legal name

3. Registration Number

4. Year founded

5. VAT Number

6. Address

7. City

8. Country

9. Website

10. Size of the Company

- Large: staff >250, Turnover > €50m (or Balance Sheet > €43m)
- Medium-sized: staff <250, Turnover ≤ €50m (or Balance Sheet ≤ €43m)
- Small: staff < 50, Turnover ≤ €10m (or Balance Sheet ≤ €10m)
- Micro: staff < 10, Turnover ≤ €2m (or Balance Sheet ≤ €2m)</p>

11. Sector

12. Staff Headcount

Staff headcount covers full-time, part-time, and seasonal staff and includes the following:

- Employees, persons working for the enterprise being subordinated to it and considered to be employees under national law.
- Owner
- Managers
- Partners engaged in regular activities and benefiting from financial advantages from the enterprise

Contact Details Lead Partner

13. Name

14. Position

15. E-mail

16. Phone Number

Declarations

17. I am authorised to represent the Pilot Group.

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18. I agree to provide data for the promotional and marketing purposes which may be published by the oPEN Lab project.

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19. Would you like to declare a potential conflict of interest?

Conflict of interest is any situation where the impartial and objective implementation of the project is compromised for reasons involving economic interest, political or national affinity, family or emotional ties or any other shared interest.

\bigcirc	Yes
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🔵 No

20. Please explain the potential conflict of interest.

Please include the type of conflict of interest, names of organisation(s) and people involved, the potential financial interests and rewards (if applicable), possible violation of legal requirements (if applicable), and any other information you wish to disclose.

Application

- 21. Are you applying as a single entity?
 - O Yes
 - 🔵 No
- 22. If no, how many partners are you applying with?
 - 1
 2
 3
 4
 5
 more than 5
- 23. Please state the names of your partner institutions/organisations.

Technical Proposal

Complete the Open Call technical questionnaire (please answer one per challenge).

Please take the following steps:

- 1. Enter the name of your pilot project.
- 2. Select the challenge/s that you are going to tackle with your pilot project.
- 3. Answer the 20 technical questions about your pilot project.

24. Name of your solution

Enter a title for your submission. This should be the same as in the Administrative Questionnaire.

25. Select a Technical Challenge

- TARTU TECHNICAL CHALLENGE 1: Demand-based ventilation management
- TARTU TECHNICAL CHALLENGE 2: Efficient and secure bike storage
- PAMPLONA TECHNICAL CHALLENGE 1: Support tools for co-creation and management of LECs
- PAMPLONA TECHNICAL CHALLENGE 2: Innovative energy solutions for energy generation and storage
- PAMPLONA TECHNICAL CHALLENGE 3: Innovative and cost-effective user interfaces for management and remote maintenance systems of the building's energy systems
- GENK TECHNICAL CHALLENGE 1: BIM from scan to as-built
- GENK TECHNICAL CHALLENGE 2: Educational Neighbourhood Infrastructure
- GENK TECHNICAL CHALLENGE 3: DC heat pump
- OPEN CHALLENGE: Your suggestion

26. Which oPEN Living Lab does your Open Challenge target?

- 🔵 Tartu
- 🔵 Genk
- Pamplona

27. Technology Readiness Level

- TRL 5- Technology demonstrated in relevant environment
- TRL 6 System prototype demonstration in operational environment
- O TRL 7 System completed and qualified
- O TRL 8 Actual system proven in operational environment

Excellence (0-5 points)

28. Describe your project/solution and objectives and explain how your project meets the Open Call aims?

500 words

Clearly and concisely describe your project idea. Explain how it meets the open call aims. Include the main motivation for the project. You may wish to include a visual representation as part of an appendix.

29. Describe how your proposed solution has been demonstrated in a relevant environment (TRL \geq 5).

200 words

Explain where your solution has been tested, under which conditions, how this happened and what were the outcomes.

30. What is the vision, ambition, and value proposition of your solution? 500 words

31. How is your solution better than other solutions in this challenge area?

200 words

Clearly articulate how your business/solution is beyond the state of the art. Demonstrate you know what is out there and who your competitors are. Show you understand their limitations. Compare your solution/project with the other solutions in the market and tell us why it will be able to scale and gain market share.

32. Explain how your project is offering an innovative use of value chain within and outside the energy domain.

200 words

Impact (0-5 points)

33. How is your solution addressing the challenge you selected?

200 words

Show you understand the challenge and demonstrate how your solution is appropriate to tackle this challenge.

34. What will the tangible output (s) of your project be?

200 words

Show the specific outputs of your six-month pilot project. This is about the product or service that you will be deploying.

35. How will you measure the quality of your outputs?

200 words

For each output describe how you are going to assess quality. Describe your methodology. It is important that you set pertinent key metrics.

36. Describe your exploitation/commercialisation plan for this solution.

500 words Please describe it for each challenge selected.

37. What impact will your solution have? Give a concrete example of the economic, societal and/or environmental impact.

200 words What are the wider impacts that your solution will have? Tell us about the economic impacts to customers, supply, broader industry, and the EU economy. Are there any expected environmental impacts, negative or positive? Be specific and give concrete examples. 38. Is your project reusing existing, relevant, and validated technological components?

- YesNo
- 39. If yes please describe which components and how they are re-used. 200 words

40. Describe your methodology to prove the scalability of your solution, product or service. 200 words

Implementation (0-5 points)

- 41. Describe your deployment plan considering the specific time frame of your project. 200 words
- 42. Describe the expertise of your team. 200 words

43. Describe the technological features and maturity of your project. 200 words

44. Provide information about any additional infrastructure and resource requirements, as well as related plan to unlock these assets.200 words

Ethics self-assessment

45. Identify ethics issues that should be taken into consideration in relation to your project, how these will be treated and the potential impact of your activities.

200 words

Explain in detail:

- the identified ethical issues (e.g., equity, gender balance, collection of personal data, environment, health and safety, etc.)

- methodology (e.g., protection of personal data, etc.)

- the potential impact of the activities (e.g., environmental damage, stigmatisation of particular social groups, political or financial adverse consequences, misuse, etc.)

46. Compliance with ethical principles and relevant legislations.

200 words

Describe how the issue(s) identified in the ethics issues table above will be addressed in order to adhere to the ethical principles and what will be done to ensure that the activities are compliant with the EU / national legal and ethical requirements of the country or countries where the tasks are to be carried out.