PED DATABASE

Data Collection Template

for Case Studies

Funded by the European Union

Co-funded by the European Union

SECTION A1 - Global Characteristics

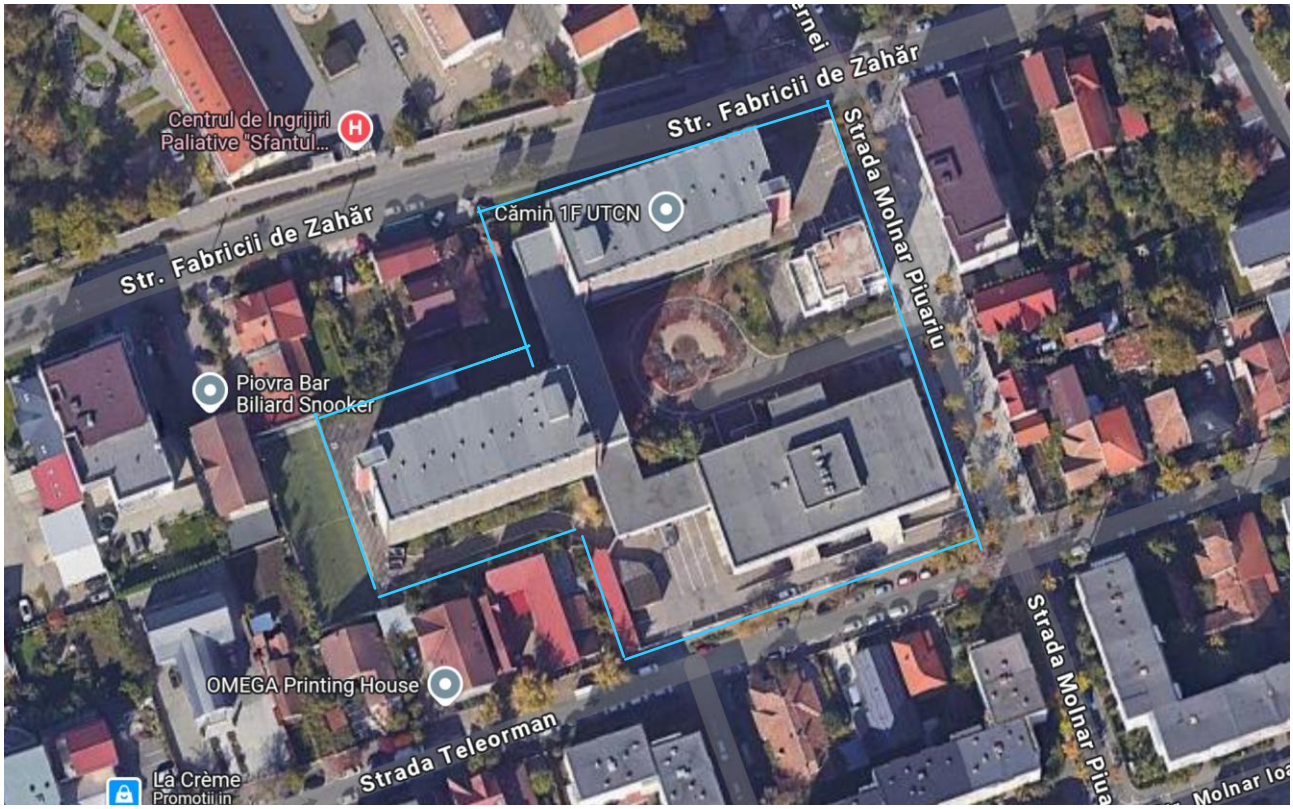
*A1P001: Name of the PED case study / PED Lab

Name the city/neighbourhood/district where the case study is located. Ideally find a standard picture format and attach it as a separate file to an e-mail together with this template.

UTCN Dormitories

*A1P002: Map / aerial view / photos / graphic details / leaflet

Please upload or attach by email at least one file.



*A1P003: Categorisation of the PED site

What is the categorisation of your PED site? Choose one of the following answers. If you choose either "PED case study" or "PED/PED relevant case study" then Section B1 is relevant for you. If you choose "PED Lab" option, then Section B2 is relevant for you. In some cases, the case study can be both PED/PED relevant case and PED Lab at the same time.

☐ PED case study

District-level project with high level of aspiration in terms of energy efficiency, energy flexibility and energy production. The project has to address most of the aspects listed in the JPI UE PED Framework Definition, including the ambition to achieve annual energy positive balance ("Positive Energy Districts are energy-efficient and energy-flexible urban areas or groups of connected buildings which produce net zero greenhouse gas emissions and actively manage an annual local or regional surplus production of renewable energy. They require integration of different systems and infrastructures and interaction between buildings, the users and the regional energy, mobility and ICT systems, while securing the energy supply and a good life for all in line with social, economic and environmental sustainability.")

☐PED relevant case study.

District-level project with high level of aspiration in terms of energy efficiency, energy flexibility and energy production. The project does not necessarily have to meet annual energy positive balance, but it has to address some aspects listed in the JPI UE PED Framework Definition ("Positive Energy Districts are energy-efficient and energy-flexible urban areas or groups of connected buildings which produce net zero greenhouse gas emissions and actively manage an annual local or regional surplus production of renewable energy. They require integration of different systems and infrastructures and interaction between buildings, the users and the regional energy, mobility and ICT systems, while securing the energy supply and a good life for all in line with social, economic and environmental sustainability.")

☒PED Lab

ED Labs are pilot actions that provide opportunities to experiment with planning and deployment of PEDs, as well as provide seeding ground for new ideas, solutions and services to develop. PED Labs follow an integrative approach including technology, spatial, regulatory, financial, legal, social and economic perspectives.

A1P004: Targets of the PED case study / PED Lab

Check all that apply.

☐ Air quality and urban comfort

The objective of improving air quality is aimed in reducing the concentration of the 5 main pollutants: O_3, NO_2, SO_2, PM2.5 and PM10

☐ Circularity

Circular systems employ reuse, sharing, repair, refurbishment, remanufacturing and recycling to create a closed-loop system, minimizing the use of resource inputs and the creation of waste, pollution and carbon emissions. In the case of PED, the revalorization of waste (such as residues from the different sectors) for the energy production is prioritized, but many other pathways could be taken, considering the cycle of water, food, etc.

☐ Climate neutrality

Climate neutrality means that on a period basis the carbon dioxide emissions within the limits of the district are compensated with the exported energy or by carbon capture.

☒ Electrification

Electrification is the process in which the supply of any energy needs of a district and/or city, such as the heating needs or the mobility sector, are supplied by electricity-driven technologies.

☒ Energy Community

Energy community refers to a wide range of collective energy actions that involve citizens' participation in the energy system. Energy communities can be understood as a way to 'organize' collective energy actions around open, democratic participation and governance and the provision of benefits for the members or the local community.

☐ Net-zero emission

A net-zero emissions building produces at least as much emissions-free renewable energy as it uses from emissions-producing energy sources.

☐ Net zero energy cost

The amount of money the utility pays the building owner for the energy the building exports to the grid is at least equal to the amount the owner pays the utility for the energy services and energy used over the year.

☐ Annual energy surplus

The total annual energy balance is positive; therefore, the area will deliver, on average, an energy surplus to be shared with other urban or peri-urban zones.

☐ Self-sufficiency (energy autonomous)

Self-sufficiency means that within a year, the district will never import energy from outside the boundaries (e.g. consume electricity or gas from the grids).

☐ Maximise self-sufficiency.

Maximise self-sufficiency means that within a year, the district is allowed to import energy from outside the boundaries, however the energy content of the imported energy products to the district should be less than (or equal to) the energy content of the energy products exported from the district. Thus, the "net imports" is zero or negative.

☐ Others.

Please specify here:

A1P005: Phase of the PED case study / PED Lab

Choose one of the following answers.

☒ Planning stage

Case Study or LAB is being designed

☐ Implementation stage

Case Study or LAB is being deployed

☐ Completed

Case Study or LAB is already finalized

☐ In operation

Case Study or LAB is being used

A1P006: Start Date

Please specify starting date from planning (month/year)

01.03.2024

A1P007: End Date

Please specify end date to commissioning (month/year). If not available, provide estimate.

31.12.2026

A1P008: Reference Project

Indicate if the case study/PED lab is part of any publicly funded project (e.g. Horizon 2020 project, Interreg project, etc..).

DUT - PERSIST

A1P000: Overview Description of the case study

Please provide an overview description of the case study.

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A1P010: Sources

Please provide any additional resources with details about your case study / PED Lab.

Any publication, link to website, deliverable referring to the PED/PED Lab. You can attach it as a separate file to an e-mail together with this template

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*A1P011: Geographic coordinates

You can learn the coordinates by clicking on map on the Google Maps or other map portal. Please, consider district central point.

X Coordinate (longitude): 23.6221175

Y Coordinate (latitude): 46.7821175

*A1P012: Country

Romania

*A1P013: City

Cluj-Napoca

*A1P014: Climate Zone - Köppen Geiger classification

Select Climate Zone form here: https://ggis.un-igrac.org/layers/igrac:other_climate_2007_koppen_geiger)

The most widely used climate classification system. It divides climates into five main climate groups based on seasonal precipitation and temperature patterns. Please choose one of the following answers]

☐ Af Tropical-Rainforest

☐ Am: Tropical-Monsoon

☐ Aw: Tropical-Savanna

☐ BSh: Arid-Steppe-Hot

☐ BSk: Arid-Steppe-Cold

☐ BWh: Arid-Desert-Hot

☐ BWk: Arid-Desert-Cold
☐ Cfa: Temperate-Without_dry_season-Hot_Summer
☐ Cfb: Temperate-Without_dry_season-Warm_Summer
☐ Cfc: Temperate-Without_dry_season-Cold_Summer
☐ Csa: Temperate-Dry_Summer-Hot_Summer
☐ Csb: Temperate-Dry_Summer-Warm_Summer
☐ Cwa: Temperate-Dry_Winter-Hot_Summer
☒ Cwb: Temperate-Dry_Winter-Warm_Summer
☐ Dfa: Cold-Without_dry_season-Very_Cold_Winter
☐ Dfb: Cold-Without_dry_season-Warm_Summer
☐ Dfc: Cold-Without_dry_season-Cold_Summer
☐ Dsa: Cold-Dry_Summer-Hot_Summer
☐ Dsb: Cold-Dry_Summer-Warm_Summer
☐ Dsc: Cold-Dry_Summer-Cold_Summer
☐ Dsd: Cold-Dry_Summer-Very_Cold_Winter
☐ Dwa: Cold-Dry_Winter-Hot_Summer
☐ Dwb: Cold-Dry_Winter-Warm_Summer
☐ Dwc: Cold-Dry_Winter-Cold_Summer
☐ Dwd: Cold-Dry_Winter-Very_Cold_Winter
☐ EF: Polar-Frost
☐ ET: Polar-Tundra

A1P015: District boundary

Choose one of the following answers.

☐ Functional

Buildings are not close to each other, but they are interconnected, thanks to a gas, electric, or heating network.

☒ Geographic

The boundaries are delimited by spatial–physical limits, including delineated buildings, sites, and infrastructures.

☐ Off-Grid

District is self-sufficient or autonomous, that means it is not connected to any utility grids (e.g., electricity, water, gas, and sewer networks). This is advantageous in isolated locations where normal utilities cannot reach and is attractive to those who want to reduce environmental impact and cost of living.

☐ Virtual

Energy demand is covered by a generation unit (e.g., a wind turbine), which is typically shared with other consumption points and located outside the geographical boundaries of the district, then it could be considered a virtual boundary

☐ Other, please specify……

*A1P016: Ownership of the case study/PED Lab

Choose one of the following answers.

☐ Private

The fact of being owned by a private individual or organization.

☒ Public

Ownership of an industry, asset, or enterprise by the state or a public body representing a community as opposed to an individual or private party.

☐ Mixed

Ownership of the assets within the PED by both public and private entities.

*A1P017: Ownership of the land / physical infrastructure

Choose one of the following answers.

☒ Single Owners
☐ Multiple Owners

A1P020: Total ground area
The ground space including green areas and streets within the defined physical boundaries.
Please specify number of square metres for this area.
10.345 m^2

A1P022: Financial schemes (multiple choice)
Please select the adopted funding scheme and if available, add the value in EUR.
☐ Financing - PRIVATE - Real estate *(Please add the value in EUR if available: …)*
☐ Financing - PRIVATE - ESCO scheme (*Please add the value in EUR if available: …)*
☐ Financing - PRIVATE - Other (*Please add the value in EUR if available: …)*
☒ Financing - PUBLIC - EU structural funding *(Please add the value in EUR if available: …)*
☐ Financing - PUBLIC - National funding *(Please add the value in EUR if available: …)*
☐ Financing - PUBLIC - Regional funding *(Please add the value in EUR if available: …)*
☐ Financing - PUBLIC - Municipal funding *(Please add the value in EUR if available: …)*
☐ Financing - PUBLIC - Other, *please specify…. (Please add the value in EUR if available: …)*
☒ Financing - RESEARCH FUNDING - EU *(Please add the value in EUR if available: …)*
☐ Financing - RESEARCH FUNDING - National *(Please add the value in EUR if available: …)*
☐ Financing - RESEARCH FUNDING - Local/regional *(Please add the value in EUR if available: …)*
☐ Financing - RESEARCH FUNDING - Other, *please specify….(Please add the value in EUR if available: …)*

A1P025: Estimated PED case study / PED LAB costs
…. mil. €

*A1P026: Contact person for general enquiries – name
Name of the person who filled in the form
Stefan CIRSTEA

*A1P027: Contact person for general enquiries – organization
Organization of the person who filled in the form (e.g., Municipality of …., University of…)
Technical University of Cluj-Napoca

A1P028: Contact person for general enquiries – affiliation
Affiliation of the person who filled in the form
☒ Research Center / University
☐ Municipality / Public Bodies
☐ SME / Industry
☐ Other – Please specify

*A1P029: Contact person for general enquiries - e-mail
Contact e-mail of the person who filled in the form
Stefan.cirstea@enm.utcluj.ro

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SECTION A2 - Technological Aspects

A2P001: Fields of application

Check all that apply.

☒ Energy efficiency

Energy efficiency simply means using less energy to perform the same task – that is, eliminating energy waste

☒ Energy flexibility

In the electricity system, flexibility helps to maintain or restore the stability of a system, because only by reacting flexibly to constantly changing conditions - fluctuating electricity consumption, fluctuating electricity generation – the system is balanced.

☒ Energy production

In terms of Renewable Energy production.

☐ E-mobility

E-mobility refers to clean and efficient transport, using electric vehicles, powered either by batteries or by hydrogen fuel cells.

☐ Urban comfort (pollution, heat island, noise level etc.)

☒ Digital technologies

Digital technologies are set to make energy systems around the world more connected, intelligent, efficient, reliable and sustainable. Stunning advances in data, analytics and connectivity are enabling a range of new digital applications such as smart appliances, shared mobility, and 3D printing. Digitalized energy systems in the future may be able to identify who needs energy and deliver it at the right time, in the right place and at the lowest cost

☐ Water use

Water use refers to water actually used by end users (e.g. households, services, agriculture, industry) within a territory for a specific purpose such as domestic use, irrigation or industrial processing.

☐ Waste management

The new agenda for waste management thus focuses upon the development of more appropriate, sustainable definitions so that what is now commonly perceived as being waste will in fact be increasingly seen as resource-rich, 'non-waste'. The role of waste management is explained as control of all waste-related activities, with the aim of preventing, minimising or utilising waste.

☐ Indoor air quality

In order to protect human health and the environment as a whole, it is particularly important to combat emissions of pollutants at source and to identify and implement the most effective emission reduction measures at local, national and Community level. Therefore, emissions of harmful air pollutants should be avoided, prevented or reduced and appropriate objectives set for ambient air quality taking into account relevant World Health Organisation standards, guidelines and programmes

☐ Construction materials

☐ Other – *Please specify*

A2P007: Annual energy demand in buildings / Thermal demand

National standards, national statistical data (with estimated energy demand per square meter dependent on the climate zone of the area, etc.), measured data (if available), or bills can be used to calculate the thermal demand. Furthermore, when structural data of the building and data from the existing system are available, an energy modelling tool can be useful to estimate the demand.

Please specify energy demand in GWh/annum.

3.308 GWh/annum

A2P008: Annual energy demand in buildings / Electric Demand

National standards, national statistical data (with estimated energy demand per square meter dependent on the climate zone of the area, etc.), measured data (if available), or bills can be used to calculate the electric demand. Furthermore, when structural data of the building and data from the existing system are available, an energy modelling tool can be useful to estimate the demand.

Please specify energy demand in GWh/annum.

0.650 GWh/annum

A2P009: Annual energy demand for e-mobility

Please specify energy demand in GWh/annum.
0 GWh/annum (No mobility within the PED Lab)

A2P010: Annual energy demand for infrastructure
Public infrastructure (all except building and mobility)
Please specify energy demand in GWh/annum.
0 GWh/annum (No additional infrastructure)

A2P022: KPIs related to the PED case study / PED Lab (multiple choice)
Do you have any KPIs related to the PED case study/PED Lab? If yes, please specify the associated KPIs next to each relevant category.
☐ Safety & Security *(please specify the associated KPIs: …)*
☐ Health *(please specify the associated KPIs: …)*
☐ Education *(please specify the associated KPIs: …)*
☐ Mobility *(please specify the associated KPIs: …)*
☒ Energy *(please specify the associated KPIs: …)* *(To be Defined)*
☐ Water *(please specify the associated KPIs: …)*
☐ Waste *(please specify the associated KPIs: …)*
☐ Economic development *(please specify the associated KPIs: …)*
☐ Housing and Community *(please specify the associated KPIs: …)*
☐ Other (Please specify)

A2P023: Technological Solutions / Innovations - Energy Generation
Check all that apply.
☒ Photovoltaics
☐ Wind turbines
☐ Solar thermal collectors
☐ Geothermal energy system
☐ Waste heat recovery
☐ Waste to energy
☐ Polygeneration
☐ Co-generation
☒ Heat Pump
☐ Hydrogen
☐ Hydropower plant
☐ Biomass
☐ Biogas
☐ Other – *Please specify*

A2P024: Technological Solutions / Innovations - Energy Flexibility
Check all that apply.
☒ Information and Communication Technologies (ICT)
Information and Communication Technologies (ICTs) is a broader term for Information Technology (IT), which refers to all communication technologies, including the internet, wireless networks, cell phones, computers, software, middleware, video-conferencing, social networking, and other media applications and services enabling users to access, retrieve, store, transmit, and manipulate information in a digital form.
☒ Energy management system

☒ Demand-side management

DSM is the concept of influencing consumers' energy demand in respect to the consumed amount of energy in general and the time dependent consumption behavior, with the purpose of changing the load-shape according to the concurrent availability of electricity in the grid. the typical DSM concept was extended towards the idea of Dual Demand Side Management (2DSM), a concept controlling electrical and thermal energy flows on the local and on the city district level in a holistic way

☐ Smart electricity grid
☐ Thermal Storage
☐ Electric Storage
☐ District Heating and Cooling
☐ Smart metering and demand-responsive control systems
☐ P2P – buildings
☐ Other – Please specify

A2P025: Technological Solutions / Innovations - Energy Efficiency

Check all that apply.

☐ Deep Retrofitting
☐ Energy efficiency measures in historic buildings
☐ High-performance new buildings
☐ Smart Public infrastructure (e.g. smart lighting)
☐ Urban data platforms
☐ Mobile applications for citizens
☒ Building services (HVAC & Lighting)
☐ Smart irrigation
☐ Digital tracking for waste disposal
☐ Smart surveillance
☐ Other – *Please specify*

A2P026: Technological Solutions / Innovations - Mobility

Check all that apply.

☐ Efficiency of vehicles (public and/or private)
☐ Measures to reduce traffic volume (e.g. measure to support public transportation, shared mobility, measure to reduce journeys and distances)
☐ e-Mobility
☐ Soft mobility infrastructures and last mile solutions
☐ Car-free area
☐ Other – *Please specify*

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SECTION A3 - Non-technological aspects

A3P006: Economic strategies

Check all that apply.

☐ Open data business models
☐ Innovative business models
☐ PPP models
☐ Life Cycle Cost
☐ Circular economy models

☐ Blockchain
☒ Demand management Living Lab
☐ Local trading
☐ Existing incentives
☐ Other – *please specify*

A3P007: Social models
Check all that apply.
☐ Strategies towards (local) community-building
☐ Co-creation / Citizen engagement strategies
☒ Behavioural Change / End-users engagement
☐ Citizen Social Research
☐ Policy Forums
☐ Social incentives
☐ Quality of Life
☐ Strategies towards social mix
☐ Affordability
☐ Prevention of energy poverty
☐ Digital Inclusion
☐ Citizen/owner involvement in planning and maintenance
☒ Educational activities and trainings (including capacity building towards technology literacy, energy efficient behaviour)
☐ Other – *please specify*

A3P008: Integrated urban strategies
Check all that apply.
☐ Strategic urban planning
☒ Digital twinning and visual 3D models
☐ District Energy plans
☐ City Vision 2050
☐ SECAP Updates
☐ Building / district Certification
☐ Other – *please specify*

A3P009: Environmental strategies
Check all that apply.
☐ Energy Neutral
☒ Low Emission Zone
☐ Net zero carbon footprint
☐ Carbon-free
☐ Life Cycle approach
☐ Pollutants Reduction
☒ Greening strategies
☐ Sustainable Urban drainage systems (SUDS)
☐ Cool Materials
☐ Nature Based Solutions (NBS)
☐ Other – *please specify*

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SECTION C - Drivers and barriers

C1P001: Unlocking Factors

Please provide importance level from 1 to 5: 1 - Unimportant; 2 - Slightly important; 3 - Moderately important; 4 - Important; 5 - Very important

	Unlocking Factors	Importance Level.
a)	Recent technological improvements for on-site RES production -	4
b)	Innovative, integrated, prefabricated packages for buildings envelope / Energy efficiency of building stock -	2
c)	Energy Communities, P2P, Prosumers concepts -	4
d)	Storage systems and E-mobility market penetration -	2
e)	Decreasing costs of innovative materials -	2
f)	Financial mechanisms to reduce costs and maximize benefits -	3
g)	The ability to predict Multiple Benefits -	4
h)	The ability to predict the distribution of benefits and impacts -	3
i)	Citizens improved awareness and engagement on sustainable energy issues (bottom-up) -	5
j)	Social acceptance (top-down) -	4
k)	Improved local and national policy frameworks (i.e. incentives, laws etc.) -	3
l)	Presence of integrated urban strategies and plans -	3
m)	Multidisciplinary approaches available for systemic integration -	4
n)	Availability of grants (from EC or other donors) to finance the PED Lab projects -	5
o)	Availability of RES on site (Local RES) -	4
p)	Ongoing or established collaboration on Public Private Partnership among key stakeholders -	4
q)	Any other UNLOCKING FACTORS – *please specify and rank on the scale* - /	

C1P002: Driving Factors

Please provide importance level from 1 to 5: 1 - Unimportant; 2 - Slightly important; 3 - Moderately important; 4 - Important; 5 - Very important

Driving Factors		Importance Level
a)	Climate Change mitigation need (local RES production and efficiency)	5
b)	Climate Change adaptation need	4
c)	Rapid urbanization trend and need of urban expansions	1
d)	Urban re-development of existing built environment -	2
e)	Economic growth need	1
f)	Territorial and market attractiveness	2
g)	Improved local environmental quality (air, noise, aesthetics, etc.)	4
h)	Energy autonomy/independence	5
i)	Any other DRIVING FACTOR - *please specify and rank on the scale*	

C1P003: Administrative barriers

Please provide importance level from 1 to 5: 1 - Unimportant; 2 - Slightly important; 3 - Moderately important; 4 - Important; 5 - Very important

Administrative barriers	Importance Level
a) Difficulty in the coordination of high number of partners and authorities	2
b) Lack of good cooperation and acceptance among partners	3
c) Lack of public participation	4
d) Lack of institutions/mechanisms to disseminate information	4
e) Long and complex procedures for authorization of project activities	2
f) Time consuming requirements by EC or other donors concerning reporting and accountancy	3
g) Complicated and non-comprehensive public procurement	2
h) Fragmented and or complex ownership structure	1
i) City administration & cross-sectoral attitude/approaches (silos)	3
j) Lack of internal capacities to support energy transition	4
k) Any other Administrative BARRIER - please specify and rank on the scale	

C1P004: Policy barriers

Please provide importance level from 1 to 5: 1 - Unimportant; 2 - Slightly important; 3 - Moderately important; 4 - Important; 5 - Very important

Policy barriers	Importance Level
a) Lack of long-term and consistent energy plans and policies	4
b) Lacking or fragmented local political commitment and support on the long term	4
c) Lack of Cooperation & support between national-regional-local entiies	2
d) Any other Political BARRIER - *please specify and rank on the scale*	

C1P005: Legal and Regulatory barriers

Please provide importance level from 1 to 5: 1 - Unimportant; 2 - Slightly important; 3 - Moderately important; 4 - Important; 5 - Very important

Legal and Regulatory barriers	Importance Level
a) Inadequate regulations for new technologies	3
b) Regulatory instability	2
c) Non-effective regulations	2
d) Unfavorable local regulations for innovative technologies	2
e) Building code and land-use planning hindering innovative technologies	2
f) Insufficient or insecure financial incentives	3
g) Unresolved privacy concerns and limiting nature of privacy protection regulation	2
h) Shortage of proven and tested solutions and examples	3
i) Any other Legal and Regulatory BARRIER - *please specify and rank on the scale*	

C1P006: Technical barriers

Please provide importance level from 1 to 5: 1 - Unimportant; 2 - Slightly important; 3 - Moderately important; 4 - Important; 5 - Very important

Technical barriers	Importance Level
a) Lack of skilled and trained personnel	3
b) Deficient planning	3
c) Lack of well-defined process	2
d) Retrofitting work in dwellings in occupied state	2
e) Inaccuracy in energy modelling and simulation	2
f) Lack/cost of computational scalability	2
g) Grid congestion, grid instability	3
h) Negative effects of project intervention on the natural environment	2
i) Energy retrofitting work in dense and/or historical urban environment	2
j) Difficult definition of system boundaries	1
k) Any other Technical BARRIER - *please specify and rank on the scale*	

C1P008: Social and Cultural barriers

Please provide importance level from 1 to 5: 1 - Unimportant; 2 - Slightly important; 3 - Moderately important; 4 - Important; 5 - Very important

Social and Cultural barriers	Importance Level
a) Inertia	3
b) Lack of values and interest in energy optimization measurements	5
c) Low acceptance of new projects and technologies -	4
d) Difficulty of finding and engaging relevant actors	3
e) Lack of trust beyond social network	3
f) Rebound effect	3
g) Hostile or passive attitude towards environmentalism	4
h) Exclusion of socially disadvantaged groups	4
i) Non-energy issues are more important and urgent for actors	3
j) Hostile or passive attitude towards energy collaboration	3
k) Any other Social BARRIER - *please specify and rank on the scale*	

C1P009: Information and Awareness barriers

Please provide importance level from 1 to 5: 1 - Unimportant; 2 - Slightly important; 3 - Moderately important; 4 - Important; 5 - Very important

Information and Awareness barriers	Importance Level
a) Insufficient information on the part of potential users and consumers	2
b) Perception of interventions as complicated and expensive, with negative socio-economic or environmental impacts	2
c) Lack of awareness among authorities	3
d) Information asymmetry causing power asymmetry of established actors	2
e) High costs of design, material, construction, and installation	3
f) Any other Information and Awareness BARRIER - *please specify and rank on the scale*	

C1P010: Financial barriers

Please provide importance level from 1 to 5: 1 - Unimportant; 2 - Slightly important; 3 - Moderately important; 4 - Important; 5 - Very important

Financial barriers	Importance Level
a) Hidden costs	3
b) Insufficient external financial support and funding for project activities	4
c) Economic crisis	3
d) Risk and uncertainty	4
e) Lack of consolidated and tested business models	4
f) Limited access to capital and cost disincentives	3
g) Any other Financial BARRIER - *please specify and rank on the scale*	

C1P011: Market barriers

Please provide importance level from 1 to 5: 1 - Unimportant; 2 - Slightly important; 3 - Moderately important; 4 - Important; 5 - Very important

Market barriers	Importance Level
a) Split incentives	3
b) Energy price distortion	3
c) Energy market concentration, gatekeeper actors (DSOs)	3
d) Any other Market BARRIER - *please specify and rank on the scale*	