



POWERPOOR

Empowering Energy Poor Citizens through Energy Cooperative Initiatives

MODULE 4









Planning Energy Poverty Actions on the Local Level

NTUA, INZEB, ICLEI





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Module – Structure and content

-  Module goals
-  Module content
 -  PART I - Energy poverty challenges and opportunities in cities
 -  PART II - Tackling energy poverty in cities' SECAPS
 -  PART III - Climate and social innovation tools to drive energy poverty actions at the local level
-  Module summary
 -  Key takeaways
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Module 4 – Goals

-  To understand the importance of energy poverty actions as key inputs to local sustainable energy and climate action planning processes on a local level
-  To identify key climate and social innovation tools and methods to mainstream energy poverty in cities planning

PART I: Cities and energy poverty

Energy poverty challenges in cities

Opportunities brought by energy poverty to cities

Energy Poverty Challenges at the City-level



Districts with restricted access to modern sources of energy (heating and cooling)

- Poor housing conditions
- Centralized energy services
- Non-energy efficient building stock



Citizens unable to pay energy bills (particularly in winter)

- Vulnerable citizens: elderly and children
- Increasing energy costs



Restricted local energy sourcing

- Imported electricity (regional/national)
- Multilevel governance challenges
- Restricted renewable energy funding



Limited citizen engagement in energy communities initiatives

- Lack of incentives to new projects
- Knowledge gaps

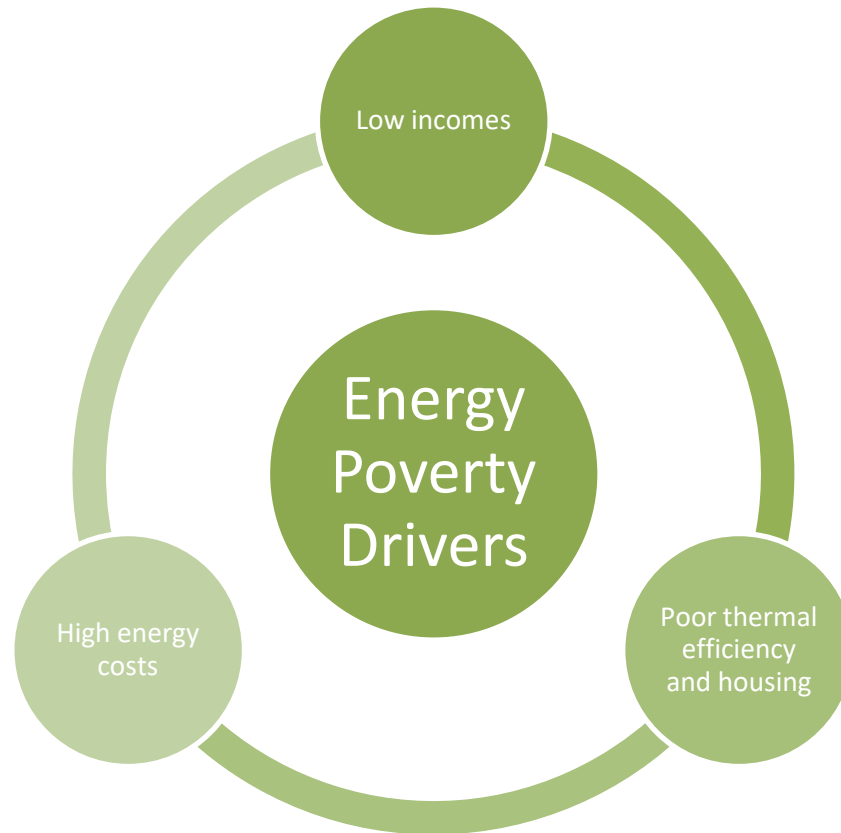
Overall impact on citizens' quality of life: health impacts, people pushed further into poverty, increased stress levels, etc.

(1) EU Energy Poverty Observatory and Global Covenant of Mayors. Factsheet 2018.

(2) EU Report. 2015. Energy poverty and vulnerable consumers in the energy sector across the EU: analysis of policies and measures Policy Report

Challenges related to energy poverty in cities

Main drivers of energy poverty

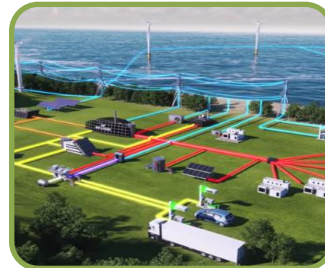


These interrelations can be identified mainly in cities and urban settings

(1) *Energy Poverty Handbook. 2016.*

Energy Poverty Opportunities for Cities

Aligning energy poverty policies with local sustainability context



Contribution to local and national **energy and GHG emissions reduction** targets

- Citizen engagement
- Energy cooperatives
 - Community projects

- Foster district energy developments
- Green & clean technologies
 - Decentralized projects
 - Public-private partnerships

- Innovative energy finance
- Community finance
 - Crowdfunding
 - Mobile payments

- Adoption of new technologies
- Smart Metering / Smart Grids
 - Building Energy Efficiency
 - ICTs for energy poverty awareness creation

(1) EU Report. 2015. *Energy poverty and vulnerable consumers in the energy sector across the EU: analysis of policies and measures Policy Report*

(2) UNEP, ICLEI, INHABITAT. 2015. *Unlocking district energy.*



Energy Poverty at the local level

“Local interventions, **if well planned**, can offer long-term solutions for households dealing with energy poverty.”⁽¹⁾

(1) *Pye et al., 2015; Bouzarovski, 2018*

(2) *.Day , G.Walker, N.Simcock, Conceptualising energy use and energy poverty using a capabilities framework, Energy Policy 93 (2016)*

PART II: Tackling Energy Poverty in Cities' SECAPs

The EU Covenant of Mayors, SECAPs and the new energy poverty pillar

Mainstreaming energy poverty in cities' SECAP

Energy poverty in SECAPs- Status Quo in Greece

Tackling energy poverty in SECAPs

Challenges

Municipalities are the first who must cope with energy poverty impacts.

However, this is not an easy task, as energy poverty:

- may affect people in various ways,
- is difficult to be measured, and
- needs customised actions relevant to local context.

Sustainable energy and climate action plans (SECAP) must integrate the energy poverty component into the rest of their mitigation and adaptation actions.

Tackling energy poverty in SECAPs

The EU Covenant of Mayors



As part of the *European Covenant of Mayors* movement, cities and towns are *taking climate and energy action* to secure a better future for their citizens.



Source. EU Covenant of Mayors. MRE Task Group. January 2021

Tackling energy poverty in SECAPs

The EU Covenant of Mayors – an ever-growing community



10,450

Signatories



205

Supporters



226

Coordinators



61

Countries



330,792,186

Inhabitants



6,168

Submitted
action plans



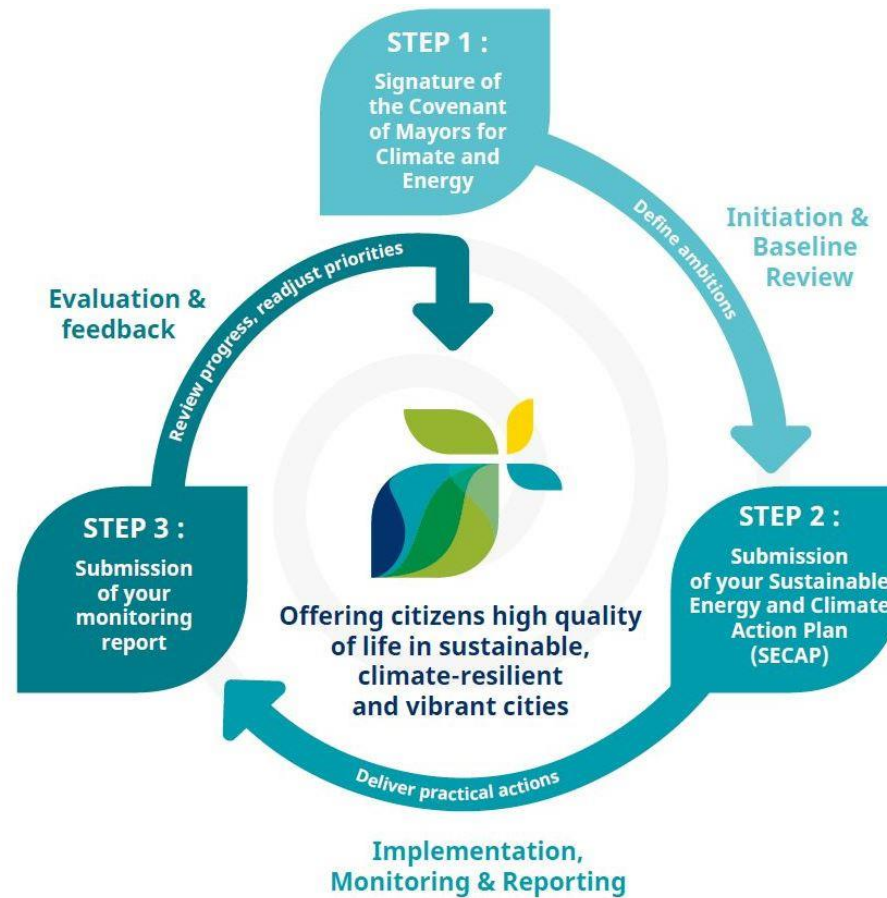
2,464

Submitted
Monitoring
reports



Tackling energy poverty in SECAPs

The Covenant of Mayors' step-by-step guide



Covenant of Mayors and the Energy Poverty Pillar



The third pillar of the Covenant of Mayors (universal access to secure, sustainable and affordable energy) puts energy poverty in focus.

*A **framework** to incorporate energy poverty into SECAPs is being developed*

Currently, in collaboration with the EU Energy Poverty Observatory (EPOV) and the new Energy Poverty Advisory Hub, CoM supports local and regional authorities across Europe in alleviating energy poverty by:

- **sharing knowledge** and **resources** to build local capacities.
- **building a set of indicators** to assess energy poverty on a local level

Source. <https://www.eumayors.eu/support/energy-poverty.html>



Tackling energy poverty in SECAPs

Energy Poverty in the SECAP

1. *Assessing energy poverty* - Is my municipality affected by energy poverty?
2. *Identifying vulnerable groups* - Who are the most vulnerable groups?
3. **Designing actions** - How can I design effective energy poverty actions?

Including energy poverty in Sustainable Energy and Climate Action Plans (SECAPs)



1. Design a strategy to tackle the issue and mainstream energy poverty into mitigation and adaptation measures
2. Indicate the vulnerable groups targeted in the actions
3. **Define indicators** to monitor and report quantitative on data on energy poverty

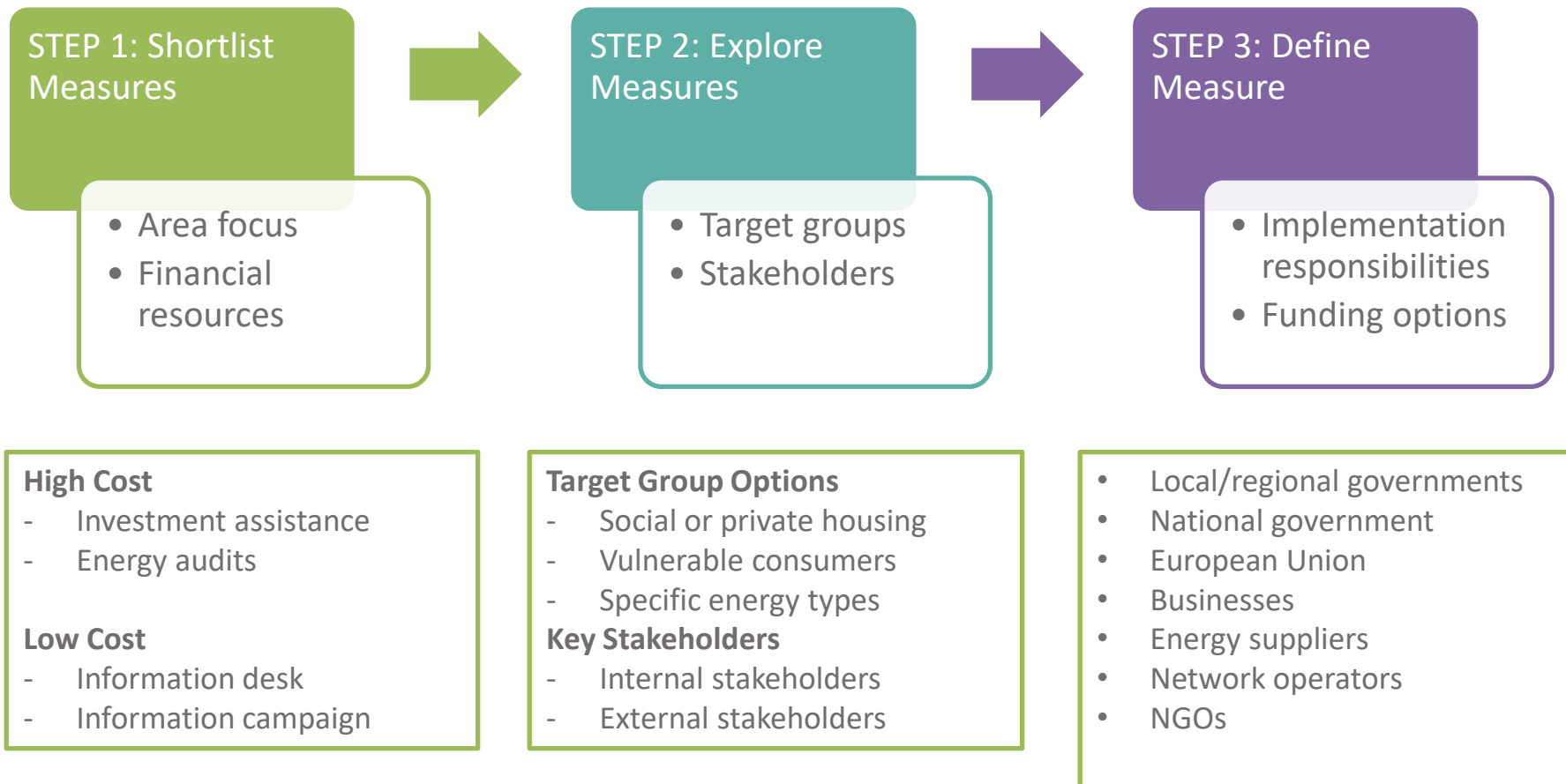
Reporting energy poverty in the frame of the Sustainable Energy and Climate Action Plan (SECAP)



Source. EU Covenant of Mayors. MRE Task Group. 2021

Tackling energy poverty in SECAPs

Designing Energy Poverty Policies in Cities



Source: EPOV. 2019. *Designing effective energy poverty policies in municipalities.*



Tackling energy poverty in SECAPs

Defining Energy Poverty Indicators in Cities

Defining Indicators

- Adapted to your scope of action and local context.
- Following CoM and EPAH work on indicators (2021-2022) assessing “adequate energy services” and “inability to afford” together

Adequate energy services

- Availability of social housing
- Availability of public transport
- Energy / gas / heating grid coverage
- Energy poverty share in municipal budget allocation.
- Others..

Inability to afford

- High share of energy costs
- Low available income
- Existing regional/national mechanisms to support energy poor households
- Income and employment level
- Others...

Source. Draft indicators to be discussed . EU Covenant of Mayors. 2021



Tackling energy poverty in SECAPs Status-quo in Greece

The **H2020 C-TRACK50** project led to the inclusion of **energy poverty actions** in the **SECAPs** of **9** Greek municipalities with a combined population of **289.851** inhabitants.



Tackling energy poverty in SECAPs

Actions

The Energy Poverty actions proposed in C-TRACK 50 SECAPs are:

✓ **Training and educational activities**

Awareness-raising campaigns, workshops for students, establishment of energy poverty municipal offices, and more

✓ **Energy efficiency measures**

Classification of domestic energy efficiency measures, use of EPC schemes, collective renovations (blocks, neighbourhoods)

✓ **Use of renewables**

Net-metering projects, RES energy communities, energy contracts

Tackling energy poverty in SECAPs

Still, there is a lot more to do

An integrated approach based on qualitative and quantitative information could be developed by:

1. Assessing the municipality's vulnerability to energy poverty;
2. Identifying the specific households suffering from energy poverty;
3. Choosing and customising tools that are tailored to the local context to tackle the issue

*The **POWERPOOR** toolkit and overall methodology can be used effectively to achieve these goals*

Tackling energy poverty in SECAPs

Still, there is a lot more to do

*The **POWERPOOR Energy Poverty Guidebook for Energy Planning (D5.2)** to support local authorities on alleviating energy poverty.*

- Guidelines to identify vulnerable communities / citizens
- Guidelines to develop **integrated and innovative energy poverty** alleviation actions
- Strategies to include this actions in the SECAPs and other urban sustainability planning frameworks.

PART III: Climate and Social Innovation Tools.

How can social and climate systems innovation
alleviate energy poverty?

Concrete tools for system thinking

Climate System Innovation

The concept

“Climate system innovation can be defined as a *combination of technological and non-technological innovations* that, if enacted together, maintain or improve the delivery of desired societal functions, with an absolute reduction in their environmental impacts”

“Problems are no longer simple or isolated. Instead, they can affect a myriad of stakeholders with different perceptions and interests, they are *cross-sectoral, long-term, and interconnected with the ecosystem and societal structures*”

Source: Climate KIC. 2017 *Climate Innovation Insights* https://www.climate-kic.org/wp-content/uploads/2017/03/Insight03_Proof4.pdf

Climate Systems Innovation

Examples and concept application areas



Sustainable cities approaches: viewing cities as integrated socio-technical systems to improve local systems (i.e energy)



The circular economy: relying on diverse business models, collaborations and coordinated action



Sustainable mobility systems: focusing on delivering mobility functions by combining and optimising access to various mobility services, notably in urban areas

Can we apply this concept to improve energy poverty alleviation measures?



Social Innovation Concept

Applied to energy transitions

*“Social innovation in energy transition is a process of **change in social relationships**, interactions, configurations, and/or the sharing of knowledge leading to, or based on, new environmentally sustainable ways of producing, managing, and consuming energy that **meet social challenges/problems**”.*

Introducing the Living Labs Approach

The Living Labs can be established in three stages:

1. Exploration → in conjunction with **POWER-TARGET**

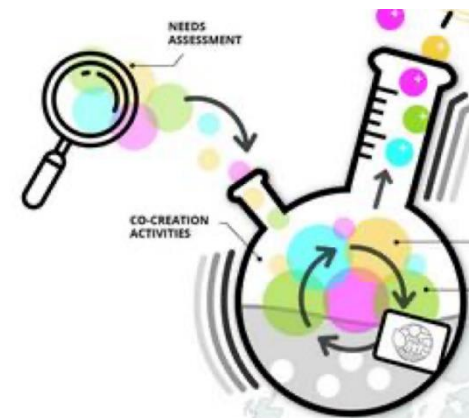
- Overview of the specific problem, the challenges and barriers to be addressed throughout the engagement process
- Establish whether the Living Lab needs to be expanded, understand the needs of all stakeholders involved
- Establish a shared future (in this case: eradicate energy poverty)

2. Experimentation → in conjunction with **POWER ACT** and **POWER-FUND**

- Carry out co-created actions. This could also mean trying out specific larger or minor changes in the institutional framework, facilitating new stakeholder relationships or experimenting with new business models

3. Evaluation → in conjunction with **Energy Poverty Guidebook**

- Did the actions solve the problem? Did the actions lead to a new problem?

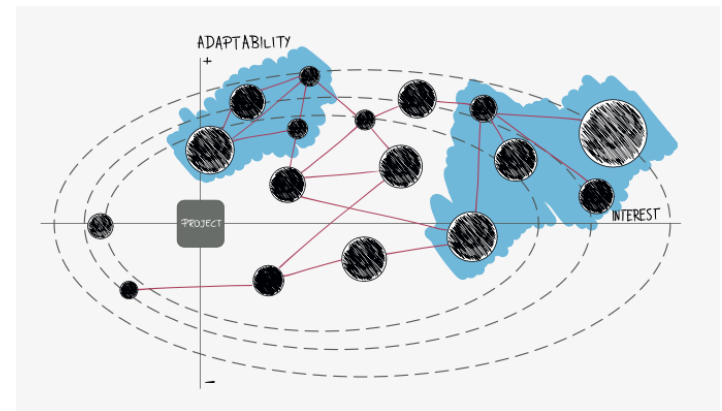


The right tool for the job:

Exploration Stage Stakeholder Universe

As part of the exploration stage within the Living Lab, it is recommended to engage in a thorough stakeholder mapping exercise to evaluate how relationships between different stakeholders can set the scene for changes to the system which is responsible for exacerbating, or mitigating energy poverty.

- Understand stakeholder relations and identify possible disconnection, flows of knowledge/resources and power (the social kind)
- “Tackling energy poverty” as the main star, stakeholders with the highest interest (to provide affordable energy), are closer to it.
- Flexible stakeholders placed above the x-axis, non-flexible stakeholders beneath
- Stakeholders placed closer to each other have a closer working relationship
- Connect stakeholders to depict fluxes of resources, money or others
- Spot potential clusters of interest and identify critical stakeholders which link the clusters and act as “gatekeepers” or knowledge brokers.
- Analyse your network!

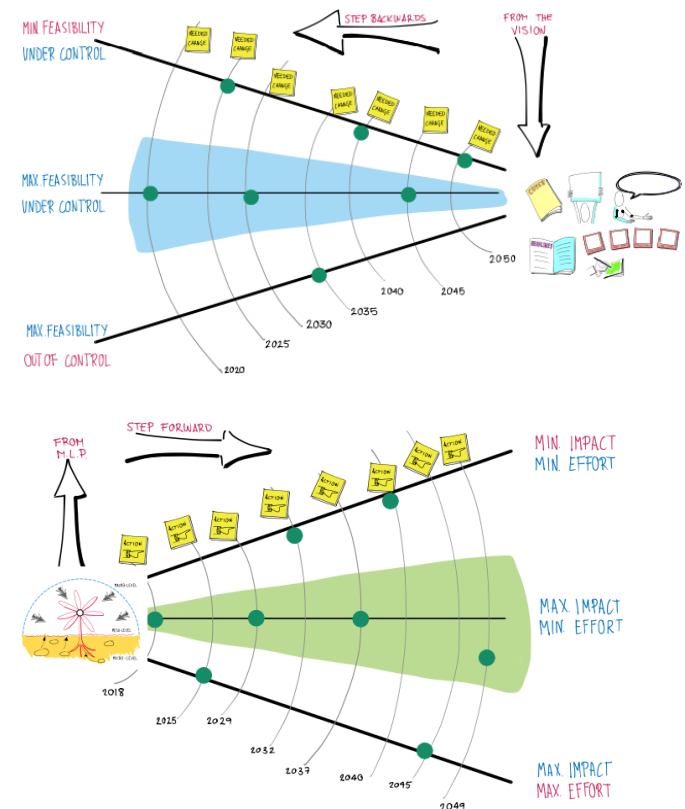


Note that these steps contain further sub-steps and are explained in more detail in the Climate KIC Visual Toolbox (on page 55-61).

The right tool for the job: Exploration Stage

Future radar:

1. Move from the vision to the present time and envision what changes were necessary to achieve it
2. Evaluate the feasibility of those changes as well as if you can control that change
3. Now move from the present and identify concrete actions which can lead to the changes
4. Evaluate the impact of those actions and come up with the main line of actions as inputs into a plan on how to **alleviate** energy poverty long-term.



Keeping on track: Living Lab Evaluation

At regular intervals throughout the Living Lab process, it is recommended to carry out an evaluation on whether the Living Lab is going into **the right direction**. Should a clear end-date have been chosen for the Living Lab, it is suggested **to evaluate its impact** (depends on local energy poverty indicators) at the end of the process and to establish whether the initiated/implemented changes to the system have a long term effect. The following could be considered:

- Are you on track to reach the **long-term vision** (set out at the exploratory stage) and are you completing the actions (set out in the experimentation phase) as expected?
- Are the **right stakeholders** engaged? Do additional stakeholders need to be added (go back to the stakeholder universe)
- How are different **stakeholders benefiting** individually, and as a group?
- Are all **stakeholders enabled** to engage actively and have ownership of the project?
- Will the processes kicked-off during the Living Lab continue to function independently? How much **coordination** is still necessary?
- **Monitor** using key indicators

Adequate energy services

- Availability of social housing
- Availability of public transport
- Energy / gas / heating grid coverage
- Energy poverty share in municipal budget allocation.
- Others..

Inability to afford

- High share of energy costs
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Case Study

Living Labs to alleviate energy poverty

CASE STUDY	Mountain Living Lab in Metsovo, Greece Source: Step-In Project	SCOPE/ LOCATION
DESCRIPTION	Metsovo Municipality	
STAKEHOLDERS	<p>The LL began with an energy café that involved different stakeholders, i.e. vulnerable citizens, policy-makers, representatives of the local authorities (among them the Mayor and members of the Municipal Council), representatives of local trade associations, etc., in order to analyse the problem, needs, and opportunities (co-creation). Towards avoiding stigmatising participants and maximise the engagement of vulnerable citizens, the energy café invitation was strictly focused on and limited to energy savings and cost reduction issues.</p>	
IMPACT	<p>While the Living Lab is still ongoing, promising first results can already be seen. Around 35% of the households said that they noticed an improvement in the quality of their life during the V1 operation of the LL. About 35% of them said that they showed a reduction in their energy spending, 30% said that they faced less issues with moisture/mould, 20% claimed that they could pay the energy bills on time and 15% mentioned that the indoor temperature in their homes was more comfort. The owners of two houses were given a nudge to implement insulation measures and another owner replaced an old energy-consuming refrigerator with an energy-efficient one. In addition, several other participants said that they are willing to invest in energy efficiency in the near future and some of them implemented low-cost measures (e.g. replacement of old analogue thermostats) or declared behavioural changes.</p>	

Source: STEP-IN Project. 2019



Case Study

Social Innovation Tools for the energy transition.

CASE STUDY	Aberdeen Heat Network Source: SMARTEES Project	SCOPE/ LOCATION Aberdeen City, UK
DESCRIPTION	<p>The Aberdeen project focuses on the development of the Aberdeen Heat Network and associated household energy efficiency schemes in the city, exploring the development of district heating at a city-scale, within a context in the UK where heat networks are not a common domestic energy source, with the primary driving ambition of reducing fuel poverty and provision of affordable warmth in the city. An agent-based model has been developed called ACHSIUM (Aberdeen City Heat Network Social Interaction and Uptake Model) and connected to a Policy Sandbox Tool will enable policymakers to test social innovation and various policy interventions relevant to their local context and then adapt and implement actions to advance the energy transition.</p>	
STAKEHOLDERS	<p>Key regional players from public, private and civil society. Leading role of the Aberdeen City council, and “intermediary” officers who mediate between different council departments. The project is part of the city’s SEAP. There are three core organisations in the implementation of this case study: Aberdeen City Council, Scarf and Aberdeen Heat & Power. The delivery of the objectives of the Locality Plan are to be overseen by a Local Partnership, whose membership is intended to consist of at least 50% community representatives with the remainder representing local public services.</p>	
IMPACT	<p>The heat network programme in Aberdeen was initially focused on developing lower carbon, more affordable heating for the City’s high-rise social housing blocks and public buildings. The council reports CO₂emissions savings of 56% in buildings already connected, with residents’ fuel bills reduced by up to 50%. The current phase of development plans to extend the heat network to an area of older, harder-to-treat housing and mixed tenure blocks and to build on existing energy efficiency programmes to form a common platform for engaging householders.</p>	

Source: SMARTEES.eu



Case Study

Living Labs to alleviate energy poverty

CASE STUDY	Urban Living Lab in Greater Manchester Source: Step-In Project reduce text (word doc)	SCOPE/ LOCATION
DESCRIPTION	Greater Manchester	
STAKEHOLDERS	The Living Lab is operated jointly by the Greater Manchester Combined Authority (GMCA) and the University of Manchester. It adds to existing energy poverty actions being undertaken by GMCA. The University of Manchester assesses and evaluates the techniques being used.	
IMPACT	While the Living Lab is still ongoing, promising first results can already be seen. A central component within the Lab were two energy advisor visits within the LEAP programme – an initial and follow up visit – accompanied by customized research questionnaires for the STEP-IN project. Both the advisor visits and the questionnaires proved invaluable information for the Lab, as they identified numerous highly specific energy, health and housing issues faced by local residents, while helping reduce energy consumption through the provision of energy advice, ‘small’ energy efficiency measures and onward referrals to relevant agencies. Some of the main benefits were incurred from improving house heating patterns and switching to a cheaper energy deal.	

Source: STEP-IN Project. 2019



Module 4 Key Takeaways

- ✓ Energy poverty actions are and will be key in achieving the goals of cities SECAPs. It is important that local governments **define and support actions** that reduce energy poverty alleviation in their territory.
- ✓ The integration of climate and social innovation tools to design and evaluate energy poverty actions is key to advance in the inclusion of energy poverty in cities sustainable energy planning processes. Due to the nature of energy poverty actions, **innovative approaches** are required to accelerate the adoption of actions
- ✓ The **POWERPOOR approach** including the POWERPOOR Toolkit is aimed at giving support to this process.



Further Reading

- EU Covenant of Mayors. <https://www.eumayors.eu/support/energy-poverty.html>
- EPOV. 2019. Designing effective energy poverty policies in municipalities. [https://www.energypoverty.eu/sites/default/files/downloads/publications/18-07/guidance - energy poverty policies in cities.pdf](https://www.energypoverty.eu/sites/default/files/downloads/publications/18-07/guidance_-_energy_poverty_policies_in_cities.pdf)
- STEP IN project Interim Report – Urban Labs. [https://www.step-in-project.eu/wp-content/uploads/D2.2_Urban-LL-Interim-Report final.pdf](https://www.step-in-project.eu/wp-content/uploads/D2.2_Urban-LL-Interim-Report_final.pdf)
- Climate KIC. Climate Innovation tools.