POWERPOOR

Empowering Energy Poor Citizens through Energy Cooperative Initiatives

D3.4: Training and capacity modules

Final version V2.0

Working on the ground with energy-poor households and policymakers on lowering energy poverty levels.

V1.0 December 2021
V2.0 July 2022
www.powerpoor.eu

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All of POWERPOOR's reports, analysis and evidence can be accessed from www.powerpoor.eu. The sole responsibility for the content of this publication lies with the authors.

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Work Package 3:
Capacity building and multilevel knowledge creation

Deliverable D3.4:
POWERPOOR Training and Capacity Modules Final Version

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Table of Abbreviations

Abbreviation	Explanation
EC	European Commission
EU	European Union
WPx	Work Package number x
Dx.y	Deliverable number y belonging to WPx
AB	Advisory Board
DPO	Data Protection Officer
GDPR	General Data Protection Regulation

1. Introduction

POWERPOOR aims at developing support programmes/schemes for energy-poor citizens and encouraging the use of alternative financing schemes (e.g., establishing energy communities/cooperatives, crowdfunding). POWERPOOR will facilitate experience and knowledge sharing, as well as the implementation of small-scale energy efficiency interventions and the installation of renewable energy sources, increasing the active participation of citizens.

1.1 Purpose and Scope

The purpose of this deliverable is to provide the final version of the training package materials and modules of POWERPOOR as a key deliverable in WP3. A previous version (D3.2) of the package was developed in April 2021. This material constitutes the reference and input content for the capacity building and knowledge creation tasks and activities of POWEPOOR as well as to make the materials available to interested stakeholders

1.2 Methodology

This training material has been built considering the initial description of the four modules of POWERPOOR in the project proposal and has been improved in content and format within a co-creation process among partners after several rounds of feedback.

Training modules were adapted to the changing sustainable energy policy landscape of Europe and the POWERPOOR project partners expertise and knowledge. In addition, modules scope considered the local context in the countries where the POWERPOOR approach and tools will be deployed. In addition, the material has been enriched with several rounds of feedback resulting from internal training activities designed for POWERPOOR trainers, specifically the Train the Trainers Workshop and the 1st Internal Capacity Building Workshop.

COVID 19 impact in the capacity building activities of the project were considered during this development, as most of them have been and will be carried out online.

1.3 Deliverable Structure

The structure of this deliverable has been defined following the following sections:

- Section 2: Capacity Building Modules Development Process
- Section 3: Module´s Structure and Content Overview
- Section 4: POWEPOOR Training Package elements.
- Section 5: Annexes 1-3: POWERPOOR Training Package elements in PDF Version

2. Capacity Building Modules Development Process

The POWERPOOR training and capacity building modules were designed for several levels of audiences and interested stakeholders, including:

- Project partners, specifically country pilot partners that need to be trained on a 360° understanding of energy poverty and how to empower citizens for action. Partners should be experts in the use of the tools to disseminate and exploit them on a local and national level.

- Energy Supporters and Mentors
  - Energy Supporters, which will directly support the households, will undertake the face-to-face meetings and household visits.
  - Energy Mentors' focus is more on the community, the innovative financing schemes, and the support of the Energy Poverty Offices.
- Other stakeholders interested in energy poverty, POWERPOOR project, tools, and results.

The four modules defined for the POWERPOOR Project cover four general subjects, described in Table 1; and include energy poverty concepts, energy poverty alleviation actions, funding alternatives and planning processes on a local and national level.

Table 1: Training and Capacity Building Modules Overview

Module	Content Overview
Module 1 (ENPOV)	Energy poverty concepts, policies, and multilevel governance. Global and EU agenda on energy poverty Approach, concept, and content of POWERPOOR Description of the tools developed especially the POWER-TARGET tool.
Module 2 (ACTIONS)	Energy poverty alleviation policies and practices: Low cost/no-regret measures that energy-poor citizens can implement to reduce energy consumption; Promoting behavior change and best practices in implementing energy efficiency measures and energy interventions. This module will also present the POWER-ACT tool.
Module 3 (FUND)	Energy cooperatives, crowdfunding and other joint initiatives): Best practices, methodologies and innovative approaches for establishing joint energy initiatives, emphasizing on the strengths, opportunities and benefits of these joint ventures, as well as lessons learnt; Exemplary sustainable energy projects, in terms of technological innovation, implementation, financing, impact and replication potential; Impact assessment of energy poverty projects in urban/national sustainability. This module also presents the POWER-FUND tool.
Module 4 (PLAN)	Climate and social innovation tools to alleviate energy poverty at a local level:: Integration of energy poverty mitigation in sustainable energy and climate action planning and urban sustainability policies. This module will also present the Energy Poverty Guidebook for Energy Planning.

In addition to the Modules, during the feedback rounds of the training programmes, it was identified the need to develop additional material that could support the knowledge transfer process on a national level. Some of this material included: ***a tips and tricks documen***t to share with energy supporters and mentors and ***some facilitation (soft skills) materials*** for partners to better develop training activities on site. In addition, the material has been enriched with a ***list of the case studies*** included in the modules and a ***list of the exisiting EU energy-poverty projects***.

2.1 Modules Materials and National Adaptation Process

All modules were co-created by the POWERPOOR project experts and were made under a combination of practical and theorical content that could be adjusted for training activities. A process to develop the modules was defined, shared and agreed with partners.

The POWERPOOR modules were developed in English and in a flexible format that will allow adaptations to engagement cycles, language, and training format (onsite and online training activities). Modules were prepared in PowerPoint and included case studies and examples from different geographies and locations. Each module includes exercises to foster engagement of participants in the training activities. In addition, pilot country partners prepared 1-2 cases on their country reality as well as two exercises to be done by participants in local training or capacity building programmes.

Modules are versatile and include graphics, tables and images. They avoid as much as possible the use of text and include videos links and references. Each module has around 30 to 50 slides. In summary, all four modules consist of a set of slides with key content material in PowerPoint format, complemented by case studies and exercises, and other complementary material.

The materials have been adapted to local contexts, considering the following guidance:

Table 2: Modules Adaptation Guidance for National Partners

Material	Adaptations by National Partners
Module 1 PPT Module 1 PPT POWEPOOR Toolkit	- Translation Module 1 PPTs to local language (suggested) - Include graphs/statistics from country (optional)
Module 2 PPT Module 2 Tips & Tricks Brochures	- Adapt Module 2 PPT – with local case studies and regulatory/policy analysis - Translation of Module 2 PPT by local partners (suggested) - Identify a national case study (suggested) - Translation of Tips/Tricks and the Brochures (suggested)
Module 3 PPT Module 3 PPT POWERFUND Tool	- Translation Module 3 PPT to local language (suggested) - Include one or two local case studies (include in **list of case studies**) - Translate PPT Power Fund Tool and Guide (if needed)
Module 4 PPT Module 4	- Translation PPT to local language – initial slides (suggested) - Translate case studies/tools (if needed)
Soft Skills PPT **List of case studies and H2020 sister projects**	- Translation is optional
Videos	- Translation/subtitles is optional

The materials developed on a local level are distributed to energy supported and mentors via different means, including email, partners webpages, etc.

2.2 Material Distribution and Referencing

All interested stakeholders using the POWERPOOR material should reference it, under the following citation: *POWERPOOR Consortium Partners. Training and Capacity Building Package, December, 2021.* In addition, for the use of specific specific modules content, we encourage to reference the organisations that have developed the modules.

- Module 1: ICLEI, Housing Europe, NTUA
- Module 2: DOOR, INZEB, NTUA
- Module 3: ECN, COOPERNICO, GOIENER
- Module 4: NTUA, ICLEI, INZEB
- Soft Skills: ICLEI

3. Modules Structure and Content Summary

The POWERPOOR modules content was designed together with project partners. Table 3 summarizes the content for each of the modules.

Table 3: Modules' Structure and Key Content

Module	Module Leaders & Contributors	Rationale and Content
1. MODULE 1 Energy Poverty Principles (ENPOV)	Module Leader: NTUA Contributors: ICLEI, ECN HOUSING EUROPE	**Module Goal:** to leverage the importance of energy poverty for sustainable energy transitions on a global and European level and to introduce the POWER-Target tool and the importance of identifying citizens facing energy poverty episodes to target specific actions on a local and community level. **Main target group:** energy supporters and mentors, but especially for mentors such as policy makers, local authorities, energy planners, employees from utilities, etc. This module content might be not so practical for energy supporters, anyway it could give them insights to understand the importance of their job in the field, aligned to a greater context. **Key Content:** 1.1 Introduction to Energy Poverty: concept, global and EU agenda, statistics, key indicators to measure energy poverty, energy poverty challenges, multilevel governance and key stakeholders in the EU energy poverty landscape (i.e. EPOV, CoM, H2020 Projects Community, etc). An update on the Energy Poverty Advisory Hub (EPAH) has been included in the second reporting period. 1.2 POWERPOOR project description, short introduction of the project, goals, scope and expected results. 1.3 POWERPOOR Tools: general description of the POWERPOOR Toolkit and why these tools are important to alleviate energy poverty. 1.4 POWER-TARGET Tool description and potential use, including a focus on the relevance of identifying citizens and people facing energy poverty under correct profiling exercises based on real information and data. (*)
2. MODULE 2 Energy Poverty Alleviation Policies and Actions (ACTIONS)	Module Leader: DOOR Contributors: INZEB, NTUA	**Module Goal:** to identify the types of energy poverty alleviation policies and practices developed by different stakeholders, with an emphasis on their results and benefits for citizens facing energy poverty episodes. An emphasis on practical actions tangible and replicable results across Europe, including technological innovations, will be included. In addition, the module is aimed to introduce the POWER ACT tool. **Main target group:** energy supporters and mentors that will foster the development of energy actions on a local level. Practitioners working directly with citizens facing energy poverty episodes on a local and community level, for example: social workers or employees from CSOs, NGOs, social enterprises, community centres, etc. **Key Content:** 2.1 Types and categories of energy poverty alleviation policies and practices (consumer protection, financial support, demand side management, etc) 2.2 Policies and practices implemented by public authorities like municipalities, national governments, or others (i.e. financial support, subsidies, social services advice, etc) 2.3 Actions implemented by Civil Society Organizations and

		Communities. (energy efficiency, renewables, other sustainable energy interventions) 2.4 Other Actions by other stakeholders (utilities, NGOs, etc) 2.5 POWERPOOR Toolkit: POWER ACT Tool. Description and uses of the tool (*)
3. MODULE 3 Financing energy poverty alleviation actions **(FUND)**	Module leader: ECN, Contributors: COOPERNICO GOIENER	**Module Goal:** to understand and identify conventional and innovative financial instruments and methods to develop energy poverty alleviation actions, including energy cooperatives, crowdfunding and other joint energy initiatives. In addition, the module should empower energy supporters and mentors in promoting energy cooperatives and crowdfunding schemes to citizens facing energy poverty episodes and also to local actors that could support the development of these schemes (i.e. municipalities, NGOs, utilities, etc). **Main target group:** energy supporters and mentors, with an emphasis on especially mentors that will work on a local and community level. **Key Content:** 3.1 Financing mechanisms, instruments and initiatives to alleviate energy poverty (conventional and innovative mechanisms) 3.2 Energy cooperatives, crowdfunding schemes and other joint initiatives (and how these can be made accessible to energy-poor citizens) 3.3 Best practices and exemplary projects to finance energy poverty actions. (link to case studies) 3.4 POWER FUND Tool. Description and uses of the tool. Updated in the second version of the training package 3.5 Quick guide to access the POWER FUND Tool. New in the second version of the training package.
4. MODULE 4 Planning Energy Poverty Actions on a local level (PLAN)	Module Leader: ICLEI Contributors: NTUA and INZEB	**Module Goal:** to understand the importance of energy poverty actions as key inputs to local sustainable energy and climate action processes on a local level and to identify key climate and social innovation tools and methods to mainstream energy poverty SECAPs. **Main target group:** energy supporters and mentors, but especially mentors such as policymaker and local authorities, as well as practitioners that will work in the field working with communities on a project and initiative level. **Key Content:** 4.1 Energy poverty actions in cities sustainable energy and climate action plans (SECAPs) 4.2 Climate and social innovation tools/actions to mainstream energy poverty in local sustainable energy and climate action planning processes. (climate and social innovation concepts, participatory processes, co-creation schemes, tool-boxes, etc) 4.3 Indicators to assess the impact of energy poverty on a local level. Updated in the second reporting period considering the inputs of the European Covenant of Mayors and the EPAH. 4.4 Energy Poverty Guidebook for Sustainable Energy Planning. New in the second reporting period as the first draft of the Guidebook has been developed.

(*) during the modules development, it was decided to integrate the POWERTARGET and POWERACT tool description, overview and exercises in one set of PPT to facilitate training.

4. POWEPOOR Training Package Elements

The POWERPOOR Training Package includes the individual elements listed below and it constitutes the final version for public use and dissemination.

All the elements are included in different Annexes of this deliverable, described as follows.

POWERPOOR Modules (Annex 1)

- Module 1:
  - Slides for module 1 updated version
  - Slides for POWERPOOR Toolkit, including the POWERACT and POWERTARGET Tools description, overview and exercises
- Module 2:
  - Slides for module 2 updated version
  - POWERPOOR Tips & Tricks Brochures (PDF)
- Module 3:
  - Slides for module 3 updated version
  - Slides for POWERFUND Tool description and overview
  - POWERFUND Tool New Guide
- Module 4:
  - Slides for module 4 updated version

Lists of Case Studies, H2020 Sister Projects and Exercises. (Annex 2)

- List of case studies
- List of H2020 energy poverty related sister projects

Complementary material (Annex 3)

- Slides for soft skills material

In addition, the Training Package includes the recording of the training sessions, which can be found in the POWERPOOR YouTube channel and includes:

- Video of the first TtT Session. Modules 1 and 2: https://youtu.be/a1q5jAol7Fw
- Video of the second TtT Session Modules 3 and 4: https://youtu.be/CGXHHa-kWwc
- Video of the First Training Workshop and the Breakout Rooms: https://youtu.be/yAj0Nsa4x4g
- Video of the second Training Workshop and External Webinar: https://youtu.be/0ZQbU7qgAIg

5. Annexes

- Annex 1: POWERPOOR Modules Slides and Supporting Material in PDF
- Annex 2: Lists of Case Studies and List of H2020 Sister Projects in PDF
- Annex 3: Complementary Material: PPT Soft Skills Material in PDF

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ANNEX 1: POWERPOOR Modules slides and supporting material in PDF

- Module 1:
  - Slides for module 1 updated version
  - Slides for POWERPOOR Toolkit, including the POWERACT and POWERTARGET Tools description, overview and exercises
- Module 2:
  - Slides for module 2 updated version
  - POWERPOOR Tips & Tricks Brochures (PDF)
- Module 3:
  - Slides for module 3 updated version
  - Slides for POWERFUND Tool description and overview
  - POWERFUND Tool New Guide
- Module 4:
  - Slides for module 4 updated version

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Empowering Energy Poor Citizens through Energy Cooperative Initiatives

WP3 Capacity Building and Multilevel Knowledge Creation – Module 1

NTUA , ICLEI, EUROCROWD, HOUSING EUROPE

This project has received funding from the European Union's HORIZON 2020 research and innovation programme under grant agreement No 890437

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Module 1 – Structure and content

- Module goals
- Module content
  - PART I: Introduction to energy poverty
  - PART II: The POWERPOOR project
  - PART III: The POWERPOOR toolkit
  - PART IV: The POWER-TARGET tool
- Module summary
  - Key takeaways
  - Further reading

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Module 1 – Goals

- To familiarise the audience with the concept of **energy poverty**, existing policies to address the issue, and the current governance frameworks for energy initiatives at the EU and global levels
- To present the **POWERPOOR approach**
- To describe the tools developed within the project and their role in alleviating energy poverty

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PART I: Introduction to Energy Poverty

- **Concepts: Understanding Energy Poverty**
- **Energy Poverty in the Global Agenda**
- **Energy Poverty in Numbers**
- **EU Energy Poverty Landscape**

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"Adequate warmth, cooling, lighting and the energy to power appliances are essential services needed to guarantee a decent standard of living and citizens' health."

EU Energy Poverty Observatory, 2018
(www.energypoverty.eu)

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Understanding Energy Poverty

Energy Poverty Concept

✓ Energy poverty is defined as a set of conditions where:

"individuals or households are not able to adequately heat, cool, or provide other required energy services in their homes at affordable cost" (1)

✓ Energy poverty is:

"the inability to realise essential capabilities as a direct or indirect result of insufficient access to affordable, reliable and safe energy services, and taking into account available reasonable alternative means of realising these capabilities" (2)

(1) Pye et al., 2015; Bouzarovski, 2018
(2) Day, G.Walker, N.Simcock, Conceptualising energy use and energy poverty using a capabilities framework, EP93 (2016)

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Understanding Energy Poverty
Energy Poverty Concept

Energy poverty is often understood "as a situation where a household cannot meet its domestic energy needs"(1)

Living in inadequately heated or cooled households negatively impacts human health and well-being. In addition, individuals who are unable to meet their basic energy needs are prevented from fully participating in society.

(1) EU Energy Poverty Observatory, 2020 / Picture credits: freepik.com

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Understanding Energy Poverty
Energy Poverty in Europe – A complex challenge

Source: Energy Poverty in the European Union, YouTube: https://youtu.be/kT-lpCdd_WI

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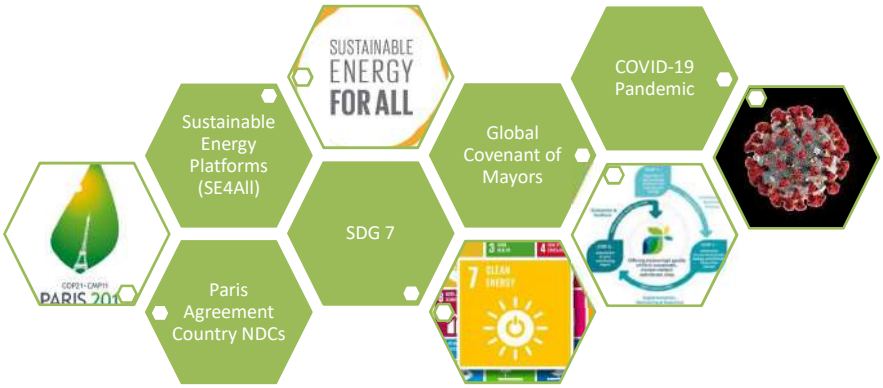
Understanding Energy Poverty
Energy Poverty in the Global Sustainability Agenda



Energy poverty is a serious concern which receives increasing attention in the global sustainability agenda. It is addressed in several international frameworks and platforms.

www.powerpoor.eu

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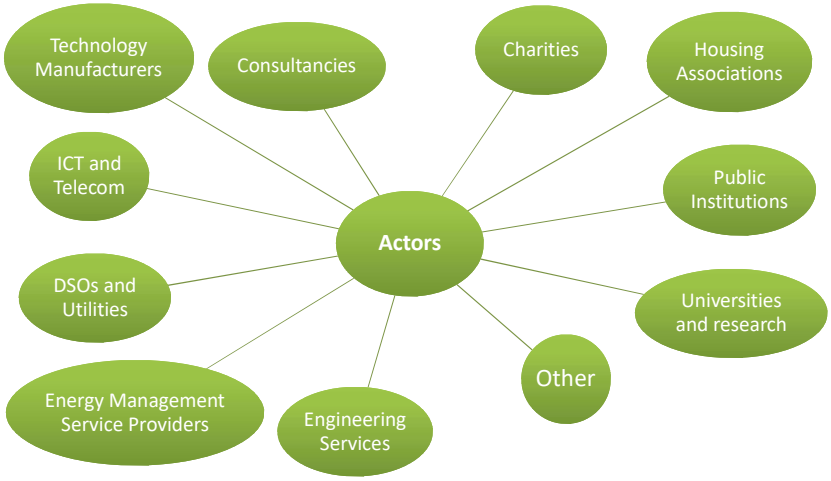
Understanding Energy Poverty
Key Actors in the Energy Poverty Landscape



Source: JRC Science for Policy Report. "Energy poverty through the lens of EU research and innovation projects". (2019)

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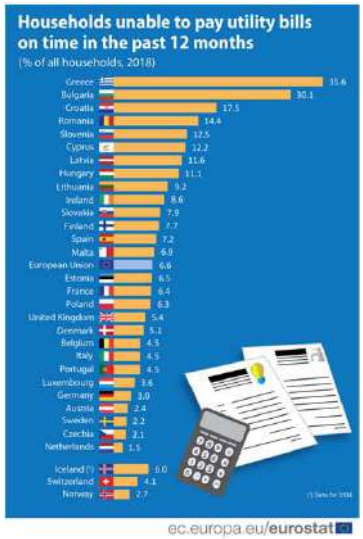
Energy poverty facts in Europe

People unable to pay utility bills on time and keep their homes warm



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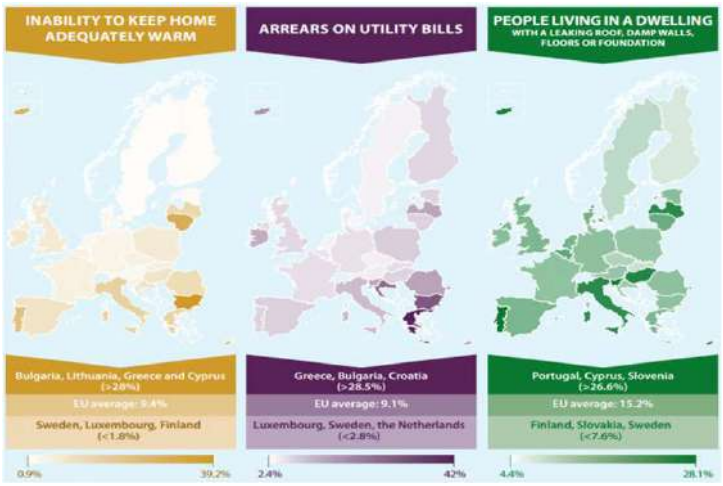
Energy poverty facts in Europe



Source: Eurostat, 2020

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Energy poverty policy framework in Europe

Setting the pathway for accelerated action

		EU ENERGY POVERTY Observatory	Covenant of Mayors for Climate & Energy EUROPE		
EU Clean Energy for all Europeans' package	European Green Deal	EU Energy Poverty Observatory New! Energy Poverty Advisory Hub	CoM Third Pillar (Energy Poverty)	Renovation Wave	Mitigating Household Energy Poverty – H2020 Call

Energy poverty is addressed in different European policy instruments and initiatives.

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Energy poverty policy framework in Europe

Setting the pathway for accelerated action

Clean Energy For All Europeans

- Energy Performance in Buildings Directive (press release 17/04/2018; Questions & Answers)
- Renewable Energy Directive (press release 14/06/2018)
- Energy Efficiency Directive (press release 19/06/2018)
- Governance Regulation (press release 20/06/2018)
- Electricity Directive (press release 18/12/2018)
- Electricity Regulation (press release 18/12/2018)
- Risk-Preparedness Regulation (press release 22/11/2018)
- Regulation for the Agency for the Cooperation of Energy Regulators (ACER) (press release 12/12/2018)

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Energy poverty policy framework in Europe
THE EU Energy Poverty Observatory

- ✓ Started in December 2016 with funding from the European Commission
- ✓ Its goals are to enable networking, disseminate information and provide technical assistance to the widest possible range of interested parties, based on a holistic approach
- ✓ Website: **www.energypoverty.eu**

Web portal hosting the world's largest database of energy poverty-related indicators, publications, policy measures and training resources.

II Phase of EPOV → Energy Poverty Advisory HUB 2021

Energy poverty policy framework in Europe
The Energy Poverty Observatory

CASE STUDY	EU Energy Poverty Observatory (EPOV)	REACH
		Pan-European
DESCRIPTION	The EU Energy Poverty Observatory aims to improve the measuring, monitoring and sharing of knowledge and best practices on energy poverty by providing a web portal including a wide range of useful resources from across Europe and beyond.	
SOLUTION	A 40-month project (2016-2019) funded by the European Commission, EPOV was developed by a consortium of 13 organisations led by the University of Manchester. EPOV has developed tools that are available on its online portal, including: indicator dashboard, evidence repository, catalogue of practical policies and measures, training material, members' directory, and discussion forums.	
IMPACT	• The world's largest database of energy poverty • Contributed to a more holistic view of energy poverty • Addressed missing links between research, policy and practice	

Source: EU Energy Poverty Observatory https://www.energypoverty.eu/

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Energy poverty policy framework in Europe

Understanding the EPOV / EPAH Statistics.

CASE STUDY	ENERGY POVERTY ADVISORY HUB (EPAH) INDICATORS TO ASSESS ENERGY POVERTY	SCOPE/ LOCATION
		EUROPEAN
DESCRIPTION	EPOV / EPAH constitutes one of the key sources of indicators on energy poverty in Europe. It provides a set of primary and secondary indicators, in addition to key insights on energy poverty at a member state level	
KEY INDICATORS	**Primary indicators include:** Arrears on utility bills, Inability to keep home adequately warm, etc **Secondary indicators include:** Household electricity prices Poverty risk: People at risk of poverty or social exclusion (% of population)	
IMPACT	The indicators allow stakeholders to understand the current status of energy poverty in their country and use this information for a diversity of purposes, such as: • Research and modelling • Data analysis and benchmarking • New tools and project development	

Source:
https://www.energypoverty.eu/indicators-data

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Energy poverty policy framework in Europe

The Energy Poverty Advisory Hub

CASE STUDY	Energy Poverty Advisory Hub (EPAH)	REACH
		Pan-European
DESCRIPTION	The Energy Poverty Advisory Hub, the leading EU initiative run by the European Commission at the request of the European Parliament, is a collaborative network of stakeholders aiming to eradicate Energy Poverty and accelerate the just energy transition of European local governments	
Vision and Mision	**Vision** Eradicate energy poverty and accelerate the just energy transition of European local governments **Mission** To be the center of energy poverty experience and expertise in Europe	
APPROACH	By providing direct support, online training, research to local authorities and civil society organisations & by building a collaborative network of all stakeholders interested in taking action to combat energy poverty in Europe.	

Source: EU Energy Poverty Observatory https://www.energypoverty.eu/

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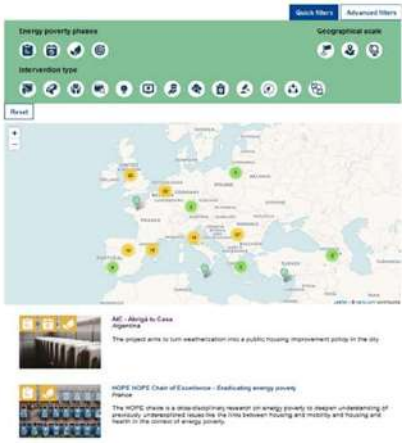
Energy poverty policy framework in Europe

The Energy Poverty Advisory Hub – Tools and Activities

- ✓ **The EPAH Atlas:** resources about projects and initiatives in Europe. (POWERPOOR is included)



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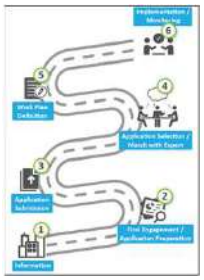
Energy poverty policy framework in Europe

The Energy Poverty Advisory Hub – Tools and Activities

- ✓ **The EPAH Online Training Courses – Certified Trainings**

- ✓ **The EPAH Direct Support**
  - ✓ **Helpdesk, Technical Assistance and Direct Support**



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Energy poverty policy framework in Europe

The Energy Poverty Advisory Hub – Tools and Activities

- **EPAH Report: Tackling energy poverty through local actions – Inspiring cases from across Europe**
- Report that displays a series of 24 inspirational cases of how energy poverty can be alleviated at the local level

Source: https://energy-poverty.ec.europa.eu/discover/practices-and-policies-toolkit/publications/epah-report-tackling-energy-poverty-through-local-actions-inspiring-cases-across-europe_en

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Energy poverty policy framework in Europe

The H2020 "Mitigating Households Energy Poverty" sister projects

POWERPOOR
Empowering Energy Poor Citizens through Joint Energy Initiatives

EnergyMeasures
Tailored Measures Supporting Energy Vulnerable Households

ComAct
Community Tailored Actions for Energy Poverty Mitigation

STEP
Solutions to Tackle Energy Poverty

ImpowerMed
Empowering Women to Take Action Against Energy Poverty in the Mediterranean

ENPOR
Actions to Mitigate Energy Poverty in the Private Rented Sector

SocialWatt
Connecting Obligated Parties to Adopt Innovative Schemes towards Energy Poverty Alleviation

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Energy poverty policy framework in Europe

Assist Project

CASE STUDY	ASSIST Support Network for Household Energy Saving	LOCATIONS BE, FI, IT, PL, ES, UK
DESCRIPTION	ASSIST focuses on strengthening consumer rights with special attention to vulnerable consumers and energy poor individuals. Its two-way approach aims to: a) actively engage consumers in the energy market & positive change of behaviour in relation to energy consumption and b) to influence policy design	
SOLUTION	Funded by the European Commission under the H2020 program, ASSIST ran from May 2017 until June 2020. The project consortium included 12 organisations from 6 countries + the European association EAPN. Project actions included generating in-depth knowledge on energy poverty and policy recommendations, training home energy advisors (HEA) & creating a HEA network, testing pilot projects & possible solutions	
IMPACT	• 500 trained Home Energy Advisors (HEA) in 6 countries. • More than 10.000 consumers reached per country through dissemination activities • About 750 consumers reached per country through on-the-ground activities (energy cafè, home visits, helpdesk, bill audit, etc.) • 2%-5% energy saved (electricity and gas) by households assisted by the HEAs • 0.5-2 increased VEF – Vulnerability Empowerment Factor: indicator created by ASSIST to measure increase of empowerment of vulnerable consumers	

Source: ASSIST https://www.assist2gether.eu/eu-home

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References and further reading

- ✓ POWERPOOR Online Library: http://powerpoor.eu/library
- ✓ Energy Poverty Observatory: https://www.energypoverty.eu
- ✓ Eurostat: https://ec.europa.eu/eurostat

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PART II: The POWERPOOR project

Approach, content and concept of the POWERPOOR project

Description of the tools developed within the project

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The Project at a glance

Start: 01/09/2020 Duration: 36 Months	Empowering Energy Poor Citizens through Joint Energy Initiatives	Coordinator: National Technical University of Athens (NTUA) Project partners: 14

European Union's Horizon 2020 Research and Innovation Programme

Budget: €1,999,812.50	Grant Agreement number: 890437 — POWERPOOR — H2020-LC-SC3-2018-2019-2020/ H2020-LC-SC3-EE-2019

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The POWERPOOR consortium

14 participating partners – 11 countries - 8 pilot countries

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POWERPOOR leads the way in

Supporting citizens suffering from energy poverty to implement energy efficiency interventions and participate in joint energy initiatives, through the development of the POWERPOOR support programmes and tools, with the aim to alleviate energy poverty.

Facilitating behavioural change in energy usage and enabling the uptake of energy efficiency measures through experience and knowledge sharing, as well as through joint energy initiatives and citizen engagement campaigns targeting groups of consumers in energy poor communities.

Promoting energy community projects / alternative financing schemes and assisting citizens to pursue funding opportunities (e.g., energy communities, energy cooperatives & crowdfunding).

Energy poverty alleviation support schemes
will be designed, developed and implemented in 8 pilot countries across Europe, led by a network of certified Energy Supporters and Energy Mentors.

Through energy poverty alleviation support schemes
citizens are positioned at the heart of the solution through a gradual transition from an energy poor citizen towards an informed consumer and later an active prosumer.

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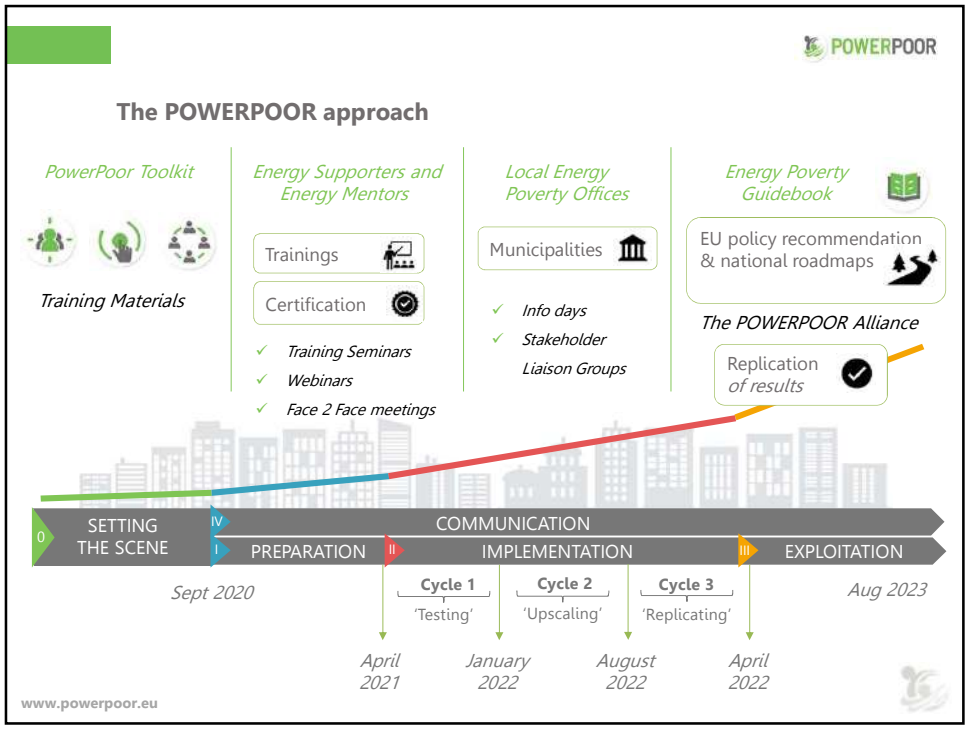
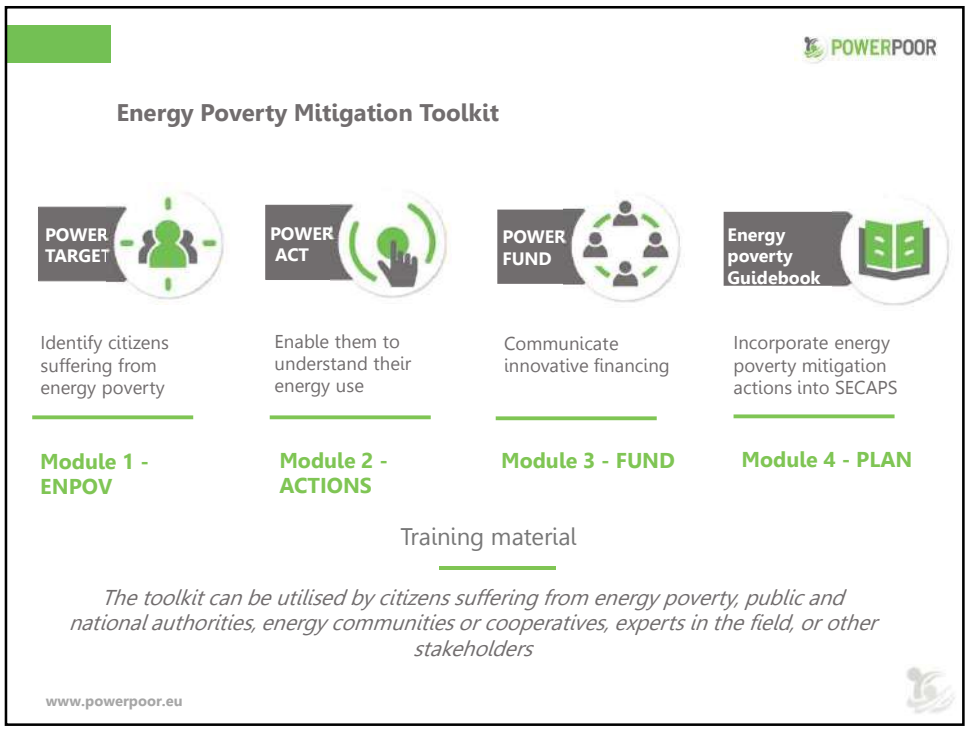

POWERPOOR
The POWERPOOR approach
PowerPoor Toolkit
Training Materials
Energy Supporters and Energy Mentors
Trainings
Certification
Training Seminars
Webinars
Face 2 Face meetings
Local Energy Poverty Offices
Municipalities
Info days
Stakeholder Liaison Groups
Energy Poverty Guidebook
EU policy recommendation & national roadmaps
The POWERPOOR Alliance
Replication of results
0
SETTING THE SCENE
IV
I
PREPARATION
COMMUNICATION
II
IMPLEMENTATION
III
EXPLOITATION
Sept 2020
Cycle 1
'Testing'
Cycle 2
'Upscaling'
Cycle 3
'Replicating'
Aug 2023
April 2021
January 2022
August 2022
April 2022
www.powerpoor.eu


POWERPOOR
Energy Poverty Mitigation Toolkit
POWER TARGET
Identify citizens suffering from energy poverty
Module 1 - ENPOV
POWER ACT
Enable them to understand their energy use
Module 2 - ACTIONS
POWER FUND
Communicate innovative financing
Module 3 - FUND
Energy poverty Guidebook
Incorporate energy poverty mitigation actions into SECAPS
Module 4 - PLAN
Training material
The toolkit can be utilised by citizens suffering from energy poverty, public and national authorities, energy communities or cooperatives, experts in the field, or other stakeholders
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Energy poverty support programmes

In each pilot country, households and citizens suffering from energy poverty will be identified, leveraging the knowledge of the local partners (**POWER-TARGET** module).

Energy support programmes will be developed by a certified network of **Energy Supporters**, who will provide citizens suffering from energy poverty with:

(a) Tips and information to encourage behaviour change and/or small-scale interventions (**POWER-ACT** tool), in addition to

(b) Information on how to take part in innovative financing schemes such as energy communities, cooperatives and crowdfunding campaigns to fund interventions that can alleviate the problem (**POWER-FUND** tool).

Local Energy Poverty Alleviation Offices will be established in the participating municipalities, run by a certified network of **Energy Mentors**

Energy Supporters *will directly engage energy-poor citizens and assist them in planning, securing funding and implementing energy efficiency interventions.*
Energy Mentors *will provide support and expertise in all the key areas associated to the operation and/or creation of an energy community / cooperative of energy poor citizens.*

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Engagement activities

- ✓ **Group training seminars** and **a series of webinars** will be organised in the 8 pilot countries (Bulgaria, Croatia, Estonia, Greece, Hungary, Latvia, Portugal and Spain) so that interested individuals can become **Energy Supporters and/or Energy Mentors**.
- ✓ Through **face-to-face (F2F) tailor-made training seminars**, the local project partners will also train representatives from cities and regions, members of energy communities/cooperatives and other social service organisations, facilitating the establishment of Local Energy Poverty Offices that can operate as focal points on energy poverty.

Interested individuals may include public authorities (employees of local and regional authorities), members of existing communities/cooperatives, social workers, local consultants, professionals and entrepreneurs in the field of sustainable energy, health practitioners, university graduates and young scientists.

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Expected results

- ✓ A total of **1.100 Energy Supporters and Energy Mentors** trained and certified.
- ✓ Establishment of **15 Energy Poverty Alleviation offices**.
- ✓ **8 National Roadmaps** in 8 European countries (Bulgaria, Croatia, Greece, Latvia, Estonia, Portugal, Spain) recommending policies to tackle energy poverty.
- ✓ **1 European Roadmap** aiming to alleviate energy poverty across Europe.
- ✓ Establishment of the **POWERPOOR Alliance** network to support the sustainability of the project results after its completion.

POWERPOOR

PART III: The POWERPOOR toolkit

Description of the POWER-TARGET, POWER-FUND and POWER-ACT tools

Energy Poverty Mitigation Toolkit

POWER - TARGET

The **POWER-TARGET** toolkit will:

- ✓ Identify citizens suffering from energy poverty using a data-driven approach that facilitates the identification of citizens, communities, neighborhoods or districts and
- ✓ Undertake quantitative and qualitative analyses to support the development of the **POWER-TARGET** tool.

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Energy Poverty Mitigation Toolkit

POWER - ACT

The **POWER-ACT** toolkit will:

- ✓ Empower citizens suffering from energy poverty to understand their energy use, the benefits associated with energy efficiency interventions and encouraging the installation of renewable power generation capacities,
- ✓ Evaluate users' thermal comfort,
- ✓ Create energy profiles,
- ✓ Evaluate costs and benefits of energy efficiency actions (e.g., payback period), and
- ✓ Encourage behaviour change (e.g., smart tips).

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Energy Poverty Mitigation Toolkit

POWER - FUND

The **POWER-FUND** toolkit will:

- ✓ Communicate innovative financing opportunities to address energy poverty and engage citizens,
- ✓ Collate information on innovative financing opportunities and guide users on how to pursue these,
- ✓ Provide an online marketplace for energy cooperatives in energy poor communities, and
- ✓ Engage users and citizens through the launch of crowdfunding campaigns.

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Thank you!

This project has received funding from the European Union's HORIZON 2020 research and innovation programme under grant agreement No 890437

POWERPOOR

Empowering Energy Poor Citizens through Energy Cooperative Initiatives

WP3 Capacity Building and multilevel knowledge creation
Module 1 – POWERPOOR Toolkit
The POWER-TARGET and POWER-ACT tools and exercises

NTUA

This project has received funding from the European Union's HORIZON 2020 research and innovation programme under grant agreement No 890437

POWERPOOR

The POWER-TARGET and POWER-ACT tools

- The POWERPPOR Toolkit
- The POWER-TARGET Tool
- The POWER-ACT Tool
- Hands on exercises on how to use POWERTARGET and POWERACT

The POWERPOOR toolkit

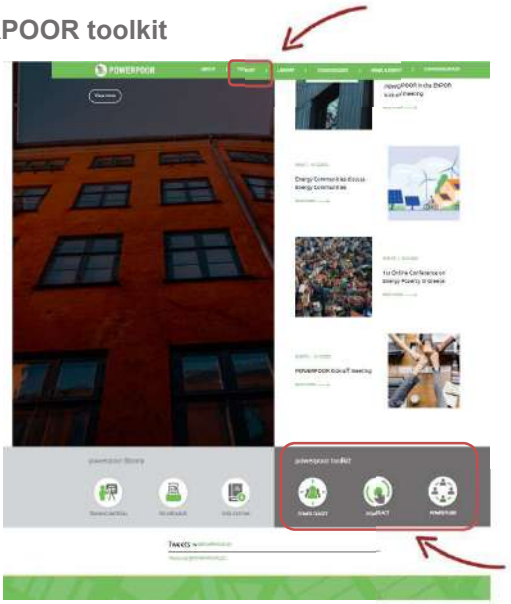
POWERPOOR toolkit

- ✓ Integration of the POWERPOOR tools namely: the POWER-TARGET, POWER-ACT and POWER-FUND tool in one page.
- ✓ Short description of what the tools do and links to the POWERPOOR website
- ✓ A dashboard with user information

Finding the POWERPOOR toolkit

Access the tool via the website

www.powerpoor.eu



Finding the POWERPOOR toolkit

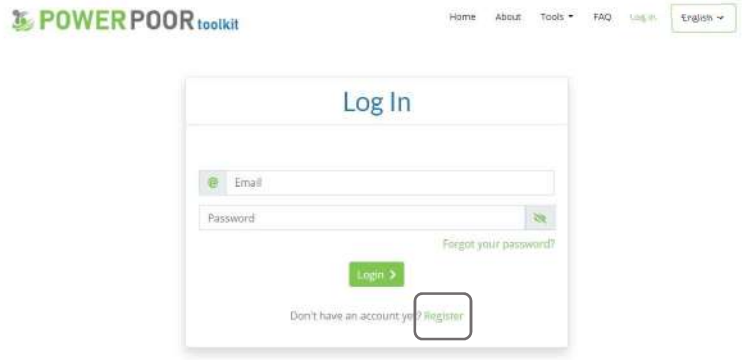
OR Access the tool via the stand-alone toolkit

http://powerpoor.epu.ntua.gr/powerpoor-toolkit/

www.powerpoor.eu

Registering / Login

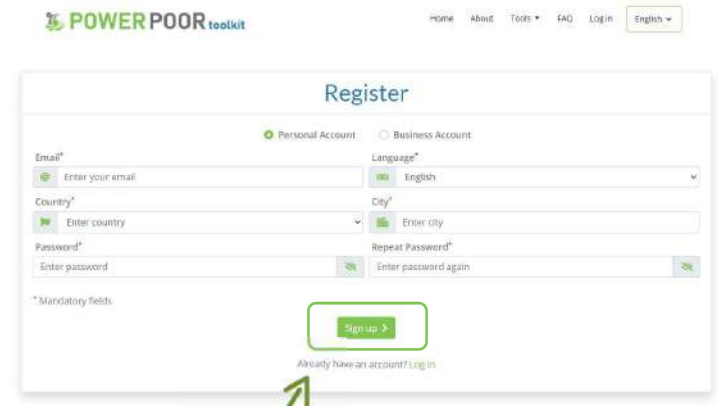
Choose your preferred **Language**



!!! …please **Register**
if you are a new user in the POWERPOOR toolkit

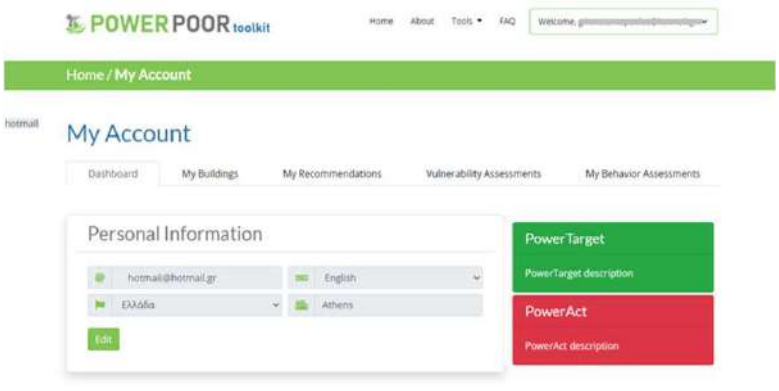
www.powerpoor.eu

Registering / Login



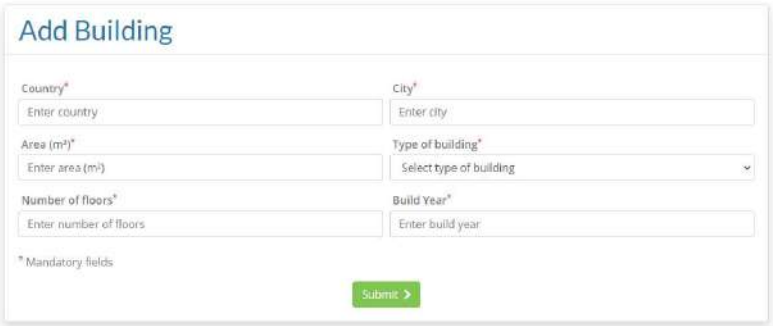
All sections filled in?
Click Sign up button

My account page

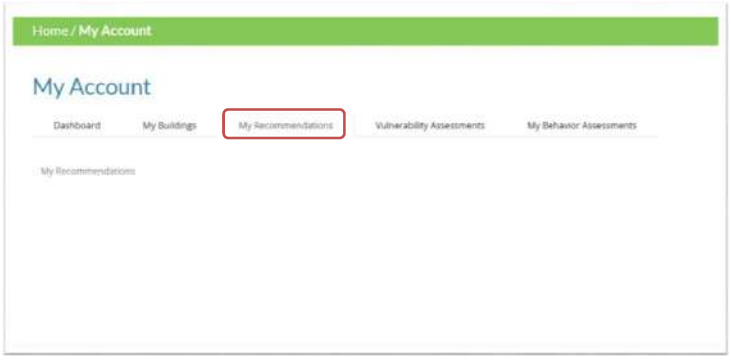


My account page

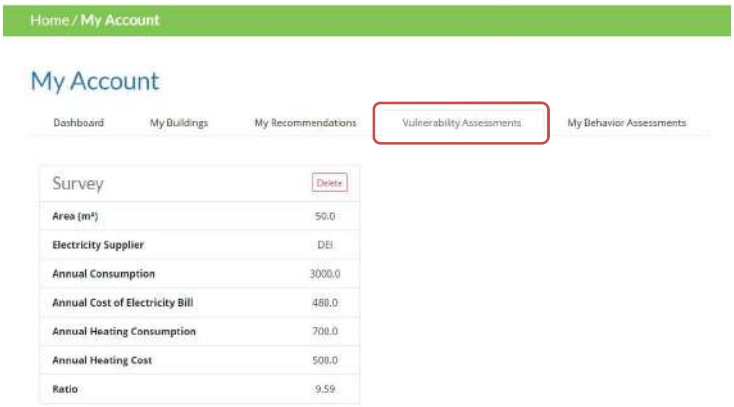
Different buildings can be added by the same user



My account page



My account page



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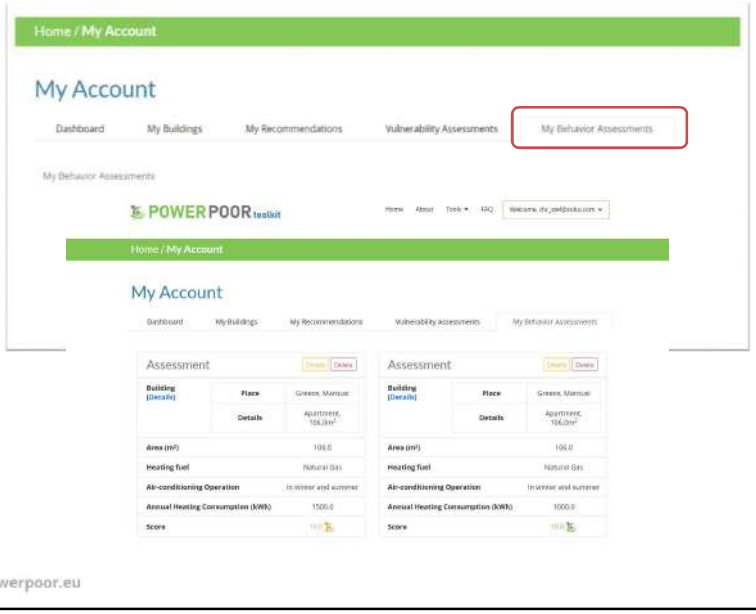
My account page



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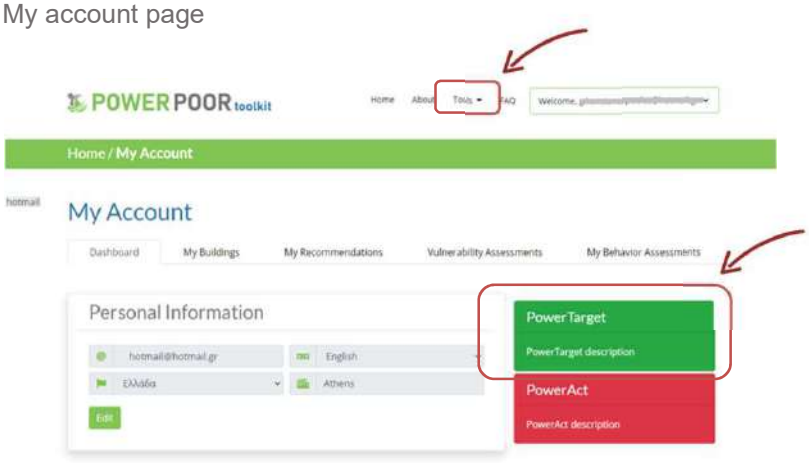
The POWER TARGET tool

POWER TARGET

- ✓ Identify and target energy poor citizens using a data-driven approach that facilitates the identification of energy poor citizens, communities, neighborhoods or districts

Using POWER TARGET tool
My account page



Finding the POWERPOOR toolkit

OR Access the tool via the toolkit homepage

http://powerpoor.epu.ntua.gr/powerpoor-toolkit/

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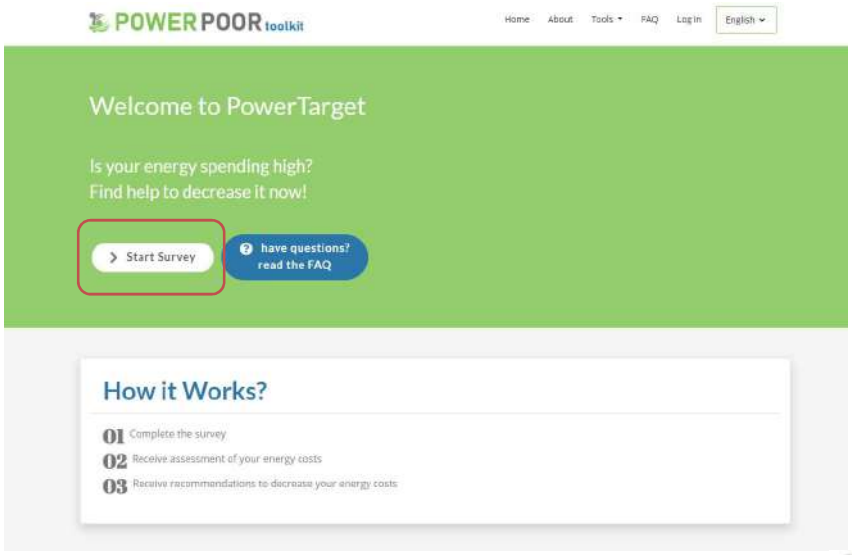
Using POWER TARGET tool



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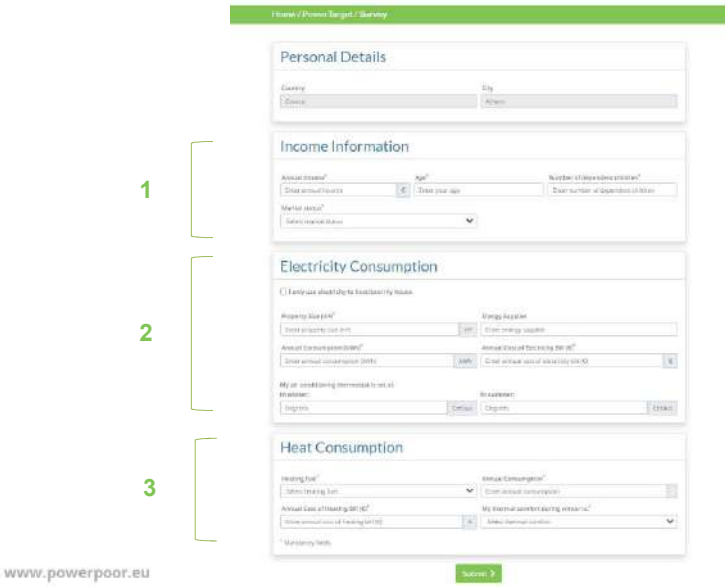
Power TARGET survey

3 sections to be filled



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Power TARGET survey

Section 1 - income information

…if married, spouse's annual income to be added here

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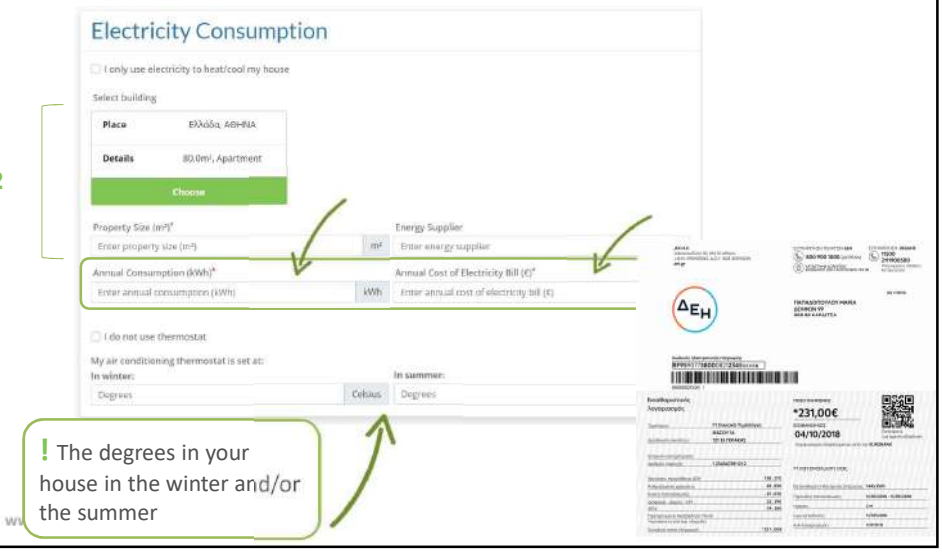
Power TARGET survey
Section 2 – electricity consumption

Fields with * are mandatory

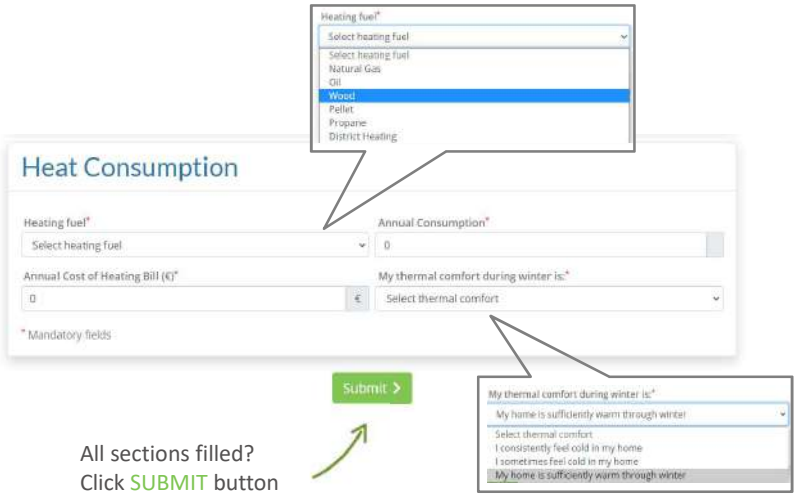
2



! The degrees in your house in the winter and/or the summer

Power TARGET survey
Section 3 – heat consumption

3



All sections filled?
Click SUBMIT button

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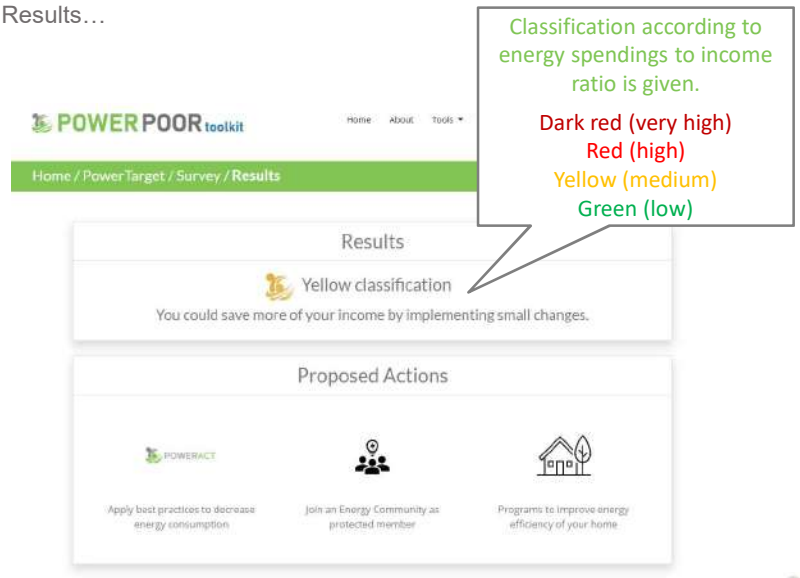
Power TARGET survey

Results…



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The POWER ACT tool

POWERPOOR

POWER ACT

- ✓ Empower energy poor citizens to understand their energy usage, the benefits associated with implementing energy efficiency interventions and with installing renewable energy

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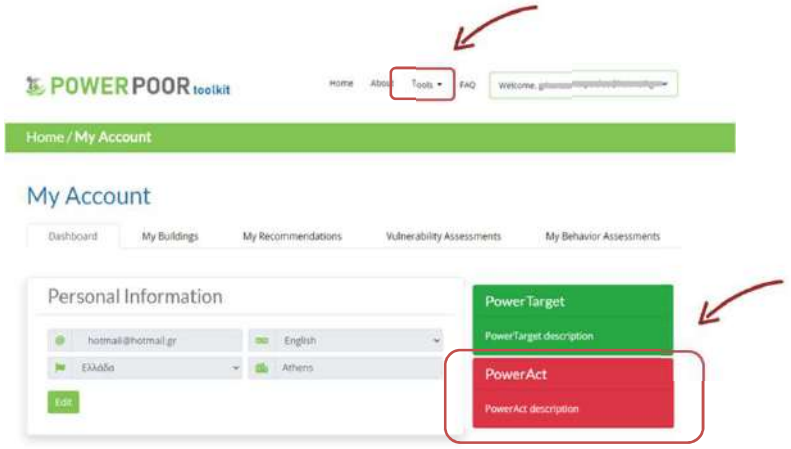
My account page

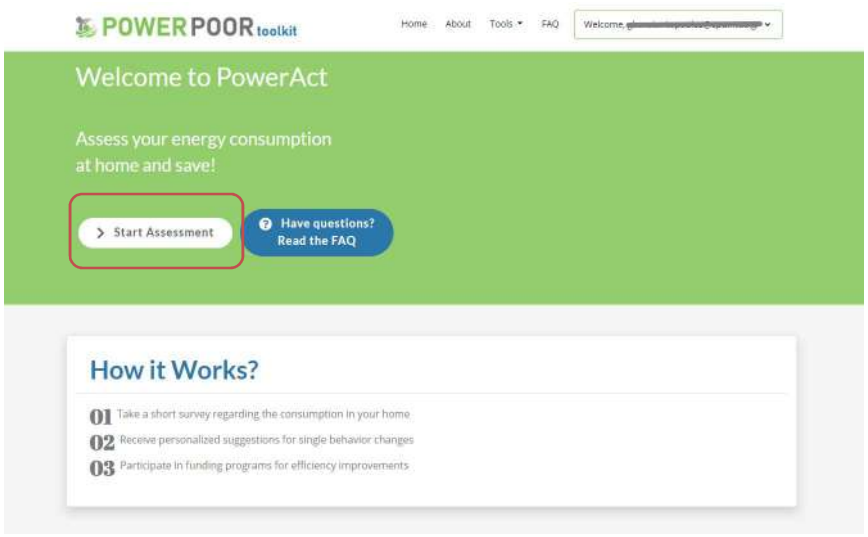


Finding the POWERPOOR toolkit

OR Access the tool via the toolkit homepage

http://powerpoor.epu.ntua.gr/powerpoor-toolkit/

Using POWER ACT tool



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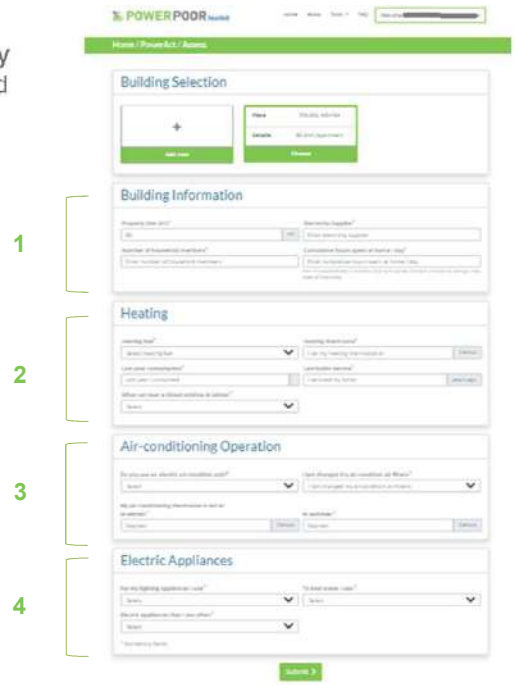
Power ACT survey
4 sections to be filled



1
2
3
4

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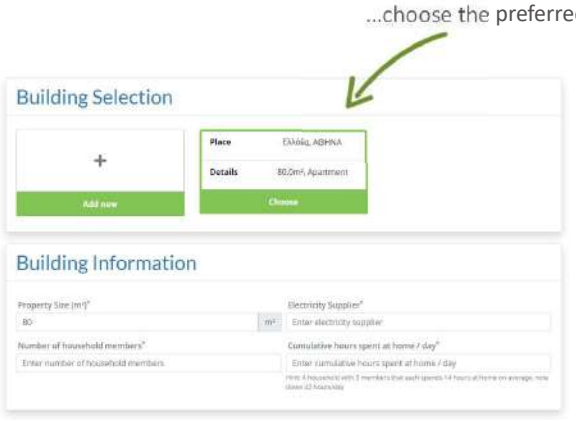
Power ACT survey
Section 1 - Building information

...choose the preferred building



1

Fields with * are mandatory

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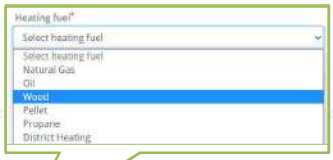
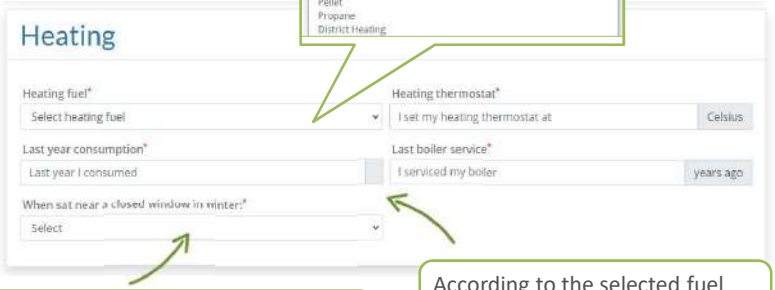
Power ACT survey
Section 2 – heating

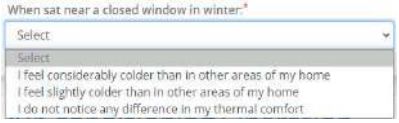




2

According to the selected fuel e.g. litres for oil

! Qualitative estimation about thermal comfort



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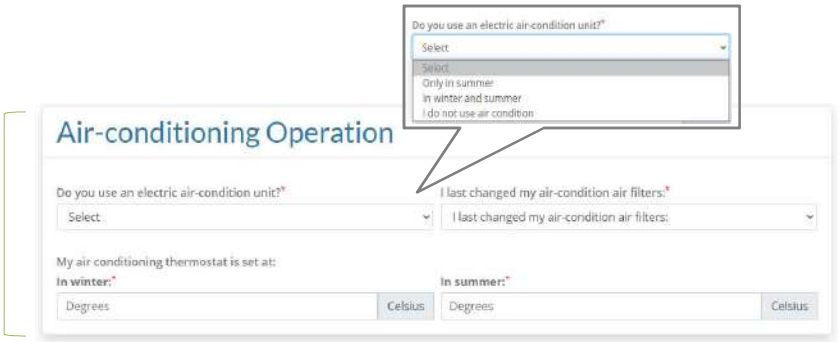
Power ACT survey
Section 3 – air conditioning operation

3



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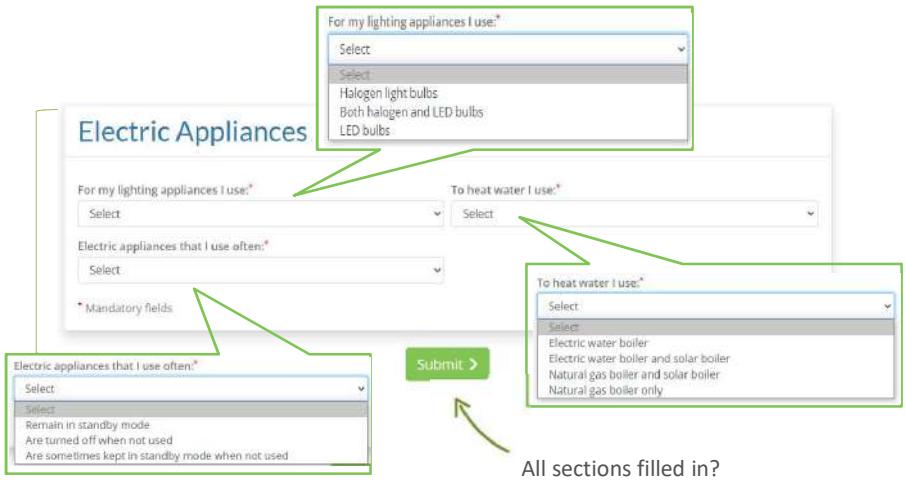
Power ACT survey
Section 4 – electric appliances

4



All sections filled in?
Click the SUBMIT button

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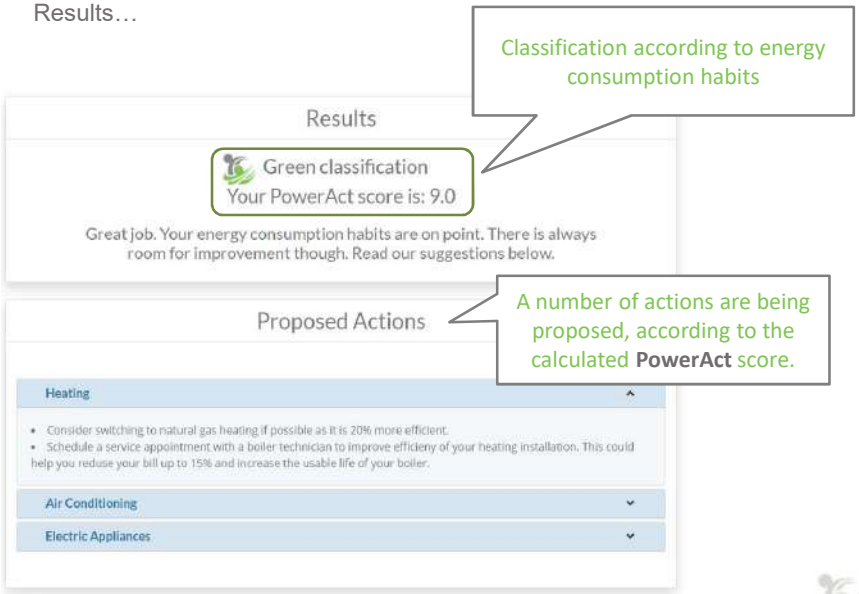
Power ACT survey
Results…



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Exercise I
Reading a bill

#1 - Greek provider

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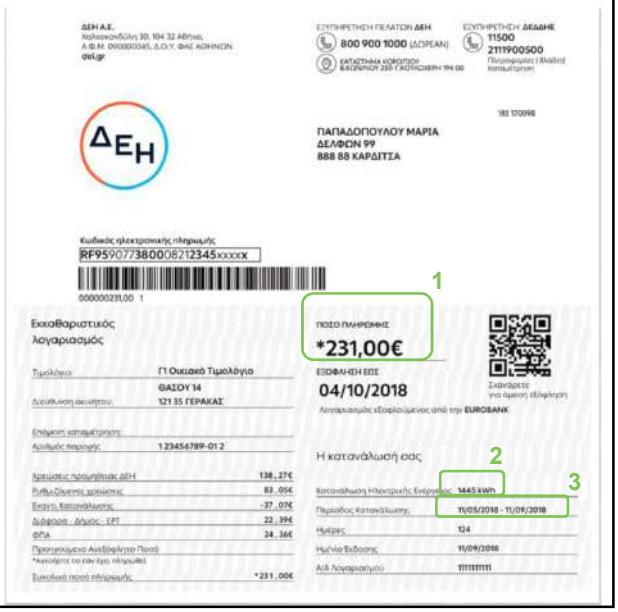
Reading a bill
#1 – Greek provider

1. Electricity bill
2. Total kWh consumed for the period of reference
3. Period of reference

Tip!

To calculate total annual electricity bill and kWh, please add the respective values for the period of the latest year.

For the selected supplier (DEI), the period of reference is **4 months**
So, using the latest 3 bills we can calculate the total annual electricity cost and kWh.



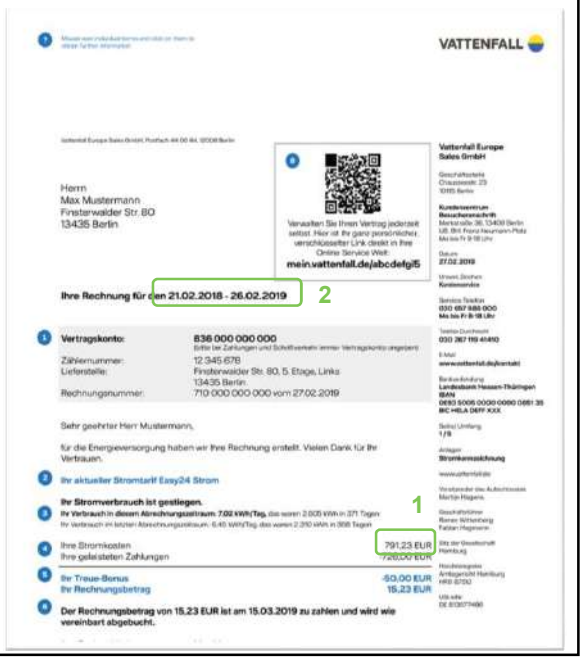
Exercise II
Reading a bill

#2 - German provider

Reading a bill
#2 – German provider

1. Electricity bill
2. Total kWh consumed for the period of reference

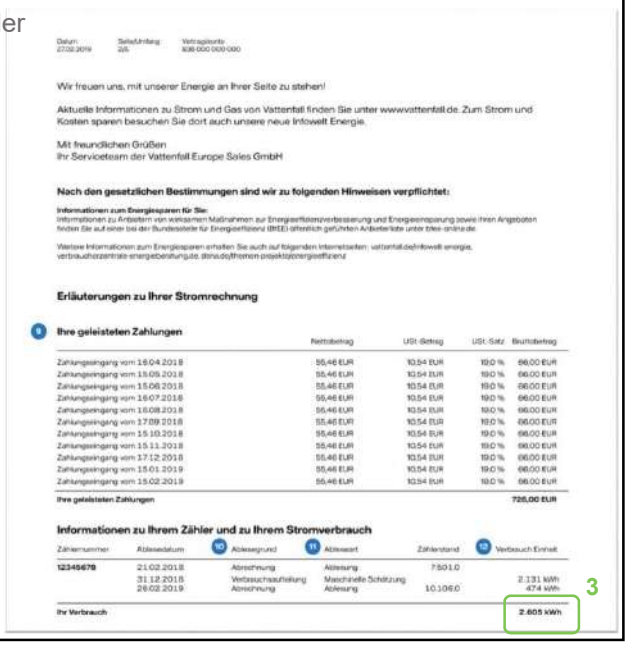
!
Here, the total annual electricity bill is given.



Reading a bill
#2 – German provider

1. Electricity bill
2. Total kWh consumed for the period of reference
3. Period of reference

For the selected supplier (VATTENFALL), the period of reference is 12 months.
So, the total annual electricity cost and kWh are given.




POWERPOOR
Thank you!
Eleni Kanellou, George Konstantopoulos
NTUA, Greece
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gkonstantopoulos@epu.ntua.gr
This project has received funding from the European Union's HORIZON 2020
research and innovation programme under grant agreement No 890437

POWERPOOR

Empowering Energy Poor Citizens through Energy Cooperative Initiatives

MODULE 2 - Working on the ground with energy-poor households and policymakers on lowering energy poverty levels

DOOR, INZEB, NTUA

This project has received funding from the European Union's HORIZON 2020 research and innovation programme under grant agreement No 890437

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Module 2 – Structure and content

- Module content
  - PART I – EU energy poverty alleviation policies
  - PART II - Energy poverty alleviation actions
  - PART III - Household Energy Performance
- Module summary
  - Key takeaways
  - Further reading

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Module 2 – Goals

- To identify the types of energy poverty alleviation policies and measures adopted by different stakeholders, with emphasis on their results and benefits for citizens facing energy poverty episodes
- To provide trainers, supporters and mentors information, tips and tools to improve Household Energy Performance

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PART I: European energy poverty alleviation policies

1. Types and categories of energy poverty alleviation policies
2. Key energy poverty alleviation policies at the EU level
3. Summary of all national policies + case studies/actions/best practices from partners

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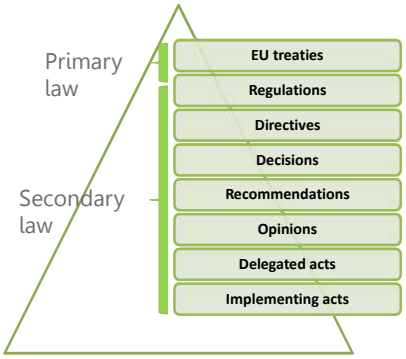
PART I: EU energy poverty alleviation policies

1. Types and categories of energy poverty alleviation policies

The rule of law is one of the fundamental values of the European Union. This means that every action taken by the EU is based on treaties that have been democratically approved by its members.

EU laws help the Union achieve objectives established in EU treaties and put EU policies into practice. There are two main types of EU laws:

- ✓ **Primary and secondary laws**
- ✓ **Legislative and non-legislative acts**



Source: https://ec.europa.eu/info/law/law-making-process/types-eu-law_en

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PART I: EU energy poverty alleviation policies

1. Types and categories of energy poverty alleviation policies

Energy Poverty Handbook (2016)

POLICIES are reflected in different types of measures

- Financial interventions to support payment of bills (short term relief)
- Additional consumer protection for users in the energy retail markets
- Energy efficiency programmes (building efficiency and energy-efficient appliances)
- Information provision and raising awareness

Source: http://bpie.eu/wp-content/uploads/2016/11/energypovertyhandbook-online.pdf

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PART I: EU energy poverty alleviation policies

Key stakeholders implementing policy measures on a national level in alignment with national and EU policy frameworks

Source: http://bpie.eu/wp-content/uploads/2016/11/energypovertyhandbook-online.pdf

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PART I: EU energy poverty alleviation policies

2. List of energy poverty alleviation policies at the EU level

Directive (EU) 2019/692 Internal Market for Natural Gas Directive

States that "**energy poverty** is a problem and Member States should take action"

Directive (EU) 2018/2002 on energy efficiency

"When designing the measures to fulfil energy saving objectives, Member States should take into account the need to **alleviate energy poverty** in accordance with criteria established by them, and they shall include information about the outcome of measures to alleviate energy poverty"

Directive (EU) 2018/844 on energy performance of buildings

"Member States must outline relevant national measures to help **alleviate energy poverty**, as part of their long-term renovation strategies to support the renovation of the national stock of residential and non-residential buildings"

Regulation (EU) 2018/1999. Governance of the Energy Union and Climate Action

"MS must include an objective of energy poverty alleviation in their National Energy and Climate Action Plans (NECPs)"

Source: https://eur-lex.europa.eu/homepage.html

POWERPOOR

PART I: EU energy poverty alleviation policies

2. List of energy poverty alleviation policies at the EU level

Directive (EU) 2019/944 Internal market for electricity

Policy plans and measures to **alleviate energy poverty** and ensure that vulnerable consumers have access to energy in critical periods

Directive (EU) 2018/2001 on the promotion of the use of energy from renewable sources

Empowering jointly acting renewables self-consumers also provides opportunities for renewable energy communities to advance energy efficiency at household level and helps fight energy poverty through reduced consumption and lower supply tariffs. Member States should take appropriate advantage of that opportunity by, inter alia, assessing the possibility to enable participation by households that might otherwise not be able to participate, including vulnerable consumers and tenants.

Renovation Wave (Area of intervention 6)

"Using renovation as a lever to address **energy poverty** and access to healthy housing for all households (…). The Commission will launch an Affordable Housing Initiative for 100 lighthouse project and will examine whether and how the EU budget resources alongside EU Emissions Trading System (EU ETS) revenues could be used to fund national energy efficiency and savings schemes."

Source: https://eur-lex.europa.eu/homepage.html

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POWERPOOR

PART I: European energy poverty alleviation policies

3. Summary of all national policies and case studies/actions/best practices from partners

Summary of all national policies from partners

A total of 32 different national policy instruments are analysed: **Bulgaria** (4), **Croatia** (9), **Estonia** (3), **Greece** (2), **Hungary** (2), **Latvia** (4), **Portugal** (3) and **Spain** (5). Energy poverty or some other synonyms such as energy vulnerable customers or people at risk of energy poverty or households at risk of energy poverty or energy efficiency of homes of energy poor consumers or vulnerable group of citizens and citizens at risk of energy poverty are mentioned in 22 of the policies analysed. The other 10 policies in their description may not include directly the term of energy poverty but, in some way, they target ***energy poverty*** (e.g. through the energy renovation of buildings).

Summary of all case studies/actions/best practices from partners

A total of xy energy poverty case studies/actions/best practices are mapped**:** **Bulgaria** (xy), **Croatia** (6), **Estonia** (xy), **Greece** (xy), **Hungary** (xy), **Latvia** (xy), **Portugal** (xy) and **Spain** (xy).

Summary of all active energy poverty project from partners

A total of xy all active energy poverty project are mapped**:** **Bulgaria** (xy), **Croatia** (5), **Estonia** (xy), **Greece** (xy), **Hungary** (xy), **Latvia** (xy), **Portugal** (xy) and **Spain** (xy).

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PART II: Energy poverty alleviation actions

Croatia
1. policies
2. best case studies/ best practices
3. active energy poverty projects

Latvia
1. policies
2. best case studies/ best practices
3. active energy poverty projects

Greece
1. policies
2. best case studies/ best practices
3. active energy poverty projects

Bulgaria
1. policies
2. best case studies/ best practices
3. active energy poverty projects

Hungary
1. policies
2. best case studies/ best practices
3. active energy poverty projects

Portugal
1. policies
2. best case studies/ best practices
3. active energy poverty projects

Estonia
1. policies
2. best case studies/ best practices
3. active energy poverty projects

Spain
1. policies
2. best case studies/ best practices
3. active energy poverty projects

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PART II: Energy poverty alleviation actions
1. Croatia - Policies

Key national policies	Name of policy affecting energy poverty	Coordinating authority	Short description	Category
Energy Act (Official Gazette, No. 120/12, 14/14, 102/15, 68/18)	Regulation on the monthly allowances for vulnerable energy customers, the manner of participation in reimbursement of the energy costs of the beneficiary and the actions of the competent social welfare centres (Official Gazette, number: 102/2015)	Minister of Labor, Pension System, Family and Social Policy	• Co-financing of electricity costs to a maximum of 200 HRK per month (26,39 euro per month) • solidarity fee paid by electricity customers from the household category in the amount of 0.03 HRK for each kWh of electricity consumed	Additional consumer protection Financial interventions
Energy Act (Official Gazette, No. 120/12, 14/14, 102/15, 68/18)	Regulation on the criteria for acquiring the status of vulnerable energy customers from networked systems (Official Gazette, number: 120/12, 14/14, 95/15, 102/15, 68/18)	Ministry of Economy and Sustainable Development	• Definition of the status of "vulnerable customer"	Additional consumer protection
Energy Act (Official Gazette, No. 120/12, 14/14, 102/15, 68/18)	Regulation on the criteria for acquiring the status of a protected customer in conditions of crisis in gas supply (Official Gazette, number: 65/2015)	Ministry of Economy and Sustainable Development	• Definition of "protected customer" • Regulation to protect certain categories of end users of gas in crisis in gas supply → required quantities of gas for all protected customers and allocates them to suppliers	Additional consumer protection

Source: https://www.zakon.hr/

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PART II: Energy poverty alleviation actions
1. Croatia - Policies

Key national policies	Name of policy affecting energy poverty	Coordinating authority	Short description	Category
Energy Act (Official Gazette, No. 120/12, 14/14, 102/15, 68/18	2015 Agreement of Cooperation in Combating Energy Poverty Measures	Ministry of Economy and Sustainable Development	• The agreement on cooperation in measures to combat energy poverty by which HEP took over the costs of solidarity compensation, was established by agreement between the Government of the Republic of Croatia and suppliers and may expire at any time	Additional consumer protection
Electricity Market Act (Official Gazette, Nos. 22/13, 102/15, 68/18, 52/19)	Decision on the amount of the fee for the use of space used by production plants for the production of electricity (Official Gazette, No. 84/2013, 101/2013, 72/2015)	Ministry of Economy and Sustainable Development	• Owners of production plants for electricity production are obliged to pay compensation to the premises where power plants are built to local self-government units →municipalities and cities, which should be used for social welfare programs	Financial interventions
Energy Efficiency Act (Official Gazette, No. 127/14, 116/18, 25/20)	Regulation on the obligation system of energy efficiency (Official Gazette, No. 41/2019)	Ministry of Economy and Sustainable Development	• The fee for vulnerable energy customers (in accordance with the regulation on social welfare) is increased by 20% for an energy-saving customer or 10% for residential energy-saving customer	Financial interventions

Source: https://www.zakon.hr/

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PART II: Energy poverty alleviation actions
1. Croatia - policies

Key national policies	Name of policy affecting energy poverty	Coordinating authority	Short description	Category
Social Welfare Act care (OG 157/13, 152/14, 99/15, 52/16, 16/17, 130/17, 98/19)	The Guaranteed Minimal Support programme (Social Welfare Act (Official Gazette, number: 157/13, 152/14, 99/15, 52/16, 16/17, 130/17, 98/19, 64/20, 138/20)	Minister of Labour, Pension System, Family and Social Policy	• The right to financial assistance for a single person or a household to meet their basic living needs	Additional consumer protection Financial interventions
Social Welfare Act care (OG 157/13, 152/14, 99/15, 52/16, 16/17, 130/17, 98/19)	Decision on the basis for calculating the amount of the minimum fee (Official Gazette, No. 157/2013)	Minister of Labor, Pension System, Family and Social Policy	• guaranteed minimum financial assistance → 800.00 HRK (107 EUR) • single parent → 100% (800.00 HRK) for an adult member of the household → 60% (480.00 HRK = 64 EUR) for a child → 40% (320.00 HRK = 43 EUR) and for a child of a single parent → 55% (440.00 HRK = 59 EUR) • single person or household - using wood for heating (3 m³ of wood or approved monetary amount to cover that cost)	Additional consumer protection Financial interventions
Act on Write-Off of Debts to Natural Persons (Official Gazette, No. 62/2018)	/	Croatian Electricity Company (HEP)	• writes off debts to persons up to the maximum amount of debt of HRK 5,000	Additional consumer protection Financial interventions

Source: https://www.zakon.hr/

PART II: Energy poverty alleviation actions
1. Croatia - policies

Key national policies – future strategy and actions plans	Name of policy affecting energy poverty	Coordinating authority	Short description	Category
Long-term strategy for the renovation of the national building stock until 2050	Programme of energy renovation of family houses 2014 – 2020 - programme is planned to continue according to the Energy Renovation Programme for Single-family Houses 2021-2027	Environmental Protection and Energy Efficiency Fund	• Public Call in 2020: Public call for citizens at risk of energy poverty • there will be a new Program for the energy renovation of family houses from vulnerable groups of citizens from 2021-2027	Energy efficiency programmes
Long-term strategy for the renovation of the national building stock until 2050	Programme of energy renovation of multi-apartment buildings for the period 2014 – 2020 – programme is planned to continue according to the Energy renovation programme for multi-apartment buildings 2021-2027	Environmental Protection and Energy Efficiency Fund	• the Program lacks concrete measures to meet the needs of energy-poor citizens in the energy renovation of apartment buildings	Energy efficiency programmes
Climate Change and Ozone Protection Act (Official Gazette, No. 127/19)	Act establishes a new plan for the use of funds obtained from the sale of emission allowances.	Ministry of Economy and Sustainable Development	• measures to combat energy poverty will be co-financed with funds obtained from the sale of emission allowances through auctions	Ministry of Economy and Sustainable Development

Source: https://www.zakon.hr/

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PART II Energy poverty alleviation actions
1. Croatia - policies

Key national policies – future strategy and actions plans	Name of policy affecting energy poverty	Coordinating authority	Short description	Category
Energy development strategy of the Republic of Croatia until 2030 with a view to 2050 (Official Gazette, No. 25/2020)	Energy Poverty Reduction Program until 2026	Ministry of Economy and Sustainable Development	• no active policy • it is planned to implement energy efficiency measures in 50,000 households	Financial interventions Energy efficiency programmes
Integrated National Energy and Climate Plan for the Republic of Croatia for the period from 2021 to 2030 (NECP)	Program to combat energy poverty, which includes the use of renewable energy sources in residential buildings in assisted areas and areas of special state concern for the period 2019-2021	Ministry of Economy and Sustainable Development	• currently there is no public information available on the stage of development of this Program	Financial interventions Energy efficiency programmes

www.powerpoor.eu Source: https://www.zakon.hr/

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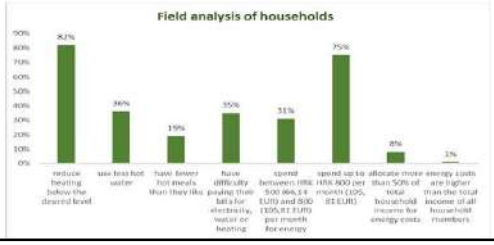
PART II: Energy poverty alleviation actions
2. Croatia - case studies/ actions/best practices

CASE STUDY	ENERGY POVERTY ACTION FER (Fair Solutions for Better Community)	LOCATION Zagreb, Croatia
DESCRIPTION	• Project implementation period: 03/2018.-03/2020 • Budget: - 1.167.759,73 HRK (154.090,43 EUR) • Partners: DOOR, Faculty of Electrical Engineering and Computing, University of Zagreb and City of Zagreb • Stakeholders: students, professors, NGOs, energy poor citizens • Source of funding: European Social Fund (ESF) and State Budget (UZUVRH) • Description: investigating energy consumption habits in energy-poor households, implementing energy efficiency measures, educating energy advisors	
SOLUTION	• A methodology has been developed for the systematic engagement of associations as a subject in college • A policy proposal has been made for the City of Zagreb to combat energy poverty • Developed a model for calculating energy consumption	
IMPACT	• Students performed energy audits of 102 energy-poor households in the City of Zagreb and installed energy-saving equipment • identification of a vulnerable customers	

Source: https://door.hr/portfolio/fer-rjesenja-za-bolju-zajednicu/



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PART II: Energy poverty alleviation actions
2. Croatia - case studies/actions/best practices

CASE STUDY	ENERGY POVERTY ACTION Na sunčanoj strani - "On the sunny side"	LOCATION Croatia
DESCRIPTION	• Consumer cooperative organized by the Green Energy Cooperative (ZEZ) • Local equipment manufacturers, suppliers, and installers • Small solar power plant that will suit citizens' needs and capabilities. • Solar enegy used primarily to supply household electricity needs (net metering) • Improving the status of renewables in Croatia	
SOLUTION	• 1000 solar power plants installed onto roofs by the beginning of 2022 • Average power of 3-6 kW • Average price of 1330 EUR/kW (design, equipment, transport, instalment) • Lower price and less complicated procedure due to „One-stop shop" solution	
IMPACT	• Reduced energy consumption • Lower household electricity costs • CO2 emissions reduction from energy savings	

Source: https://www.nasuncanojstrani.hr/

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PART II: Energy poverty alleviation actions
2. Croatia - case studies/actions/best practices

CASE STUDY	ENERGY POVERTY ACTION **REACH - Reduce Energy use And Change Habits**	LOCATION **Bulgaria, Croatia, North Macedonia, Slovenia**
DESCRIPTION	• Contributing to energy poverty abatement at practical and structural levels • Empowering energy-poor households to take actions to save energy and change their habits, • Establishing energy poverty as an issue that demands structural solutions at local, national and EU levels • Implementing project activities at national level (investigating energy consumption habits in energy-poor households, implementing energy efficiency measures, educating energy advisors) • Participating in EU-level activities (international conferences, public policy advocacy)	
SOLUTION	• Established overview of fuel poverty for 4 countries • Local workshops for local actors, trainings for teachers and trainings for energy advisors • Implemented 1600 visits of households with tailor-made advice, package of energy saving devices, guidebook and post-visit support	
IMPACT	• 20 local actors engaged in local actions, 20 trained teachers and 250 trained energy advisors • 3200 hours of energy audits, 3200 hours of energy advising, 4800 installed EE devices, • Savings of 1280 t CO2, • 768 toe of energy and 512.000 EUR • Recommendations reach out to at least 160 decision makers and about 400.000 people, engaging the decision-makers in triggering policies and measures for fuel poverty	

Source: REACH – Reduce Energy use And Change Habits (door.hr)

REACH
Reduce Energy use And Change Habits

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PART II: Energy poverty alleviation actions
2. Croatia - case studies/actions/best practices

CASE STUDY	ENERGY POVERTY ACTION **Znanjem do toplog doma „Through knowledge to warm home"**	LOCATION **Sisačko-Moslavačka County, Croatia**
DESCRIPTION	• Goal: to initiate an innovative social service - energy consultancy for poor households - and enable energy-poor households to save energy and change their habits. • Project implementation period: 02/2012-04/2016 • Budget: ~102.572 EUR • Partners: DOOR (project coordinator), City of Petrinja, Youth society „Novi Svijet" (Luščani) • Source of funding: European Social Fund, Croatian national budget	
SOLUTION	• The implementation of the described activities aimed to focus on energy poverty as a problem that requires tailor-made policies and measures at local, national and EU levels due to the high prevalence of energy-poor households in Sisak-Moslavina County	
IMPACT	• Educational activities conducted on energy poverty and energy efficiency • Report on energy poverty in Sisačko Moslavačka County, public policy analysis • Organized meetings between local government and local NGOs focused on energy poverty • Simple energy audits conducted in 80 households, data collection • Recommendations issued to consider energy poverty in local energy and social policies • Public discussion and round table conducted	

Source: https://door.hr/portfolio/znanjem-do-toplog-doma/

DOOR

Utility cost share compared to household income

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PART II: Energy poverty alleviation actions
2. Croatia - case studies/actions/best practices

CASE STUDY	ENERGY POVERTY ACTION **IDEA - Innovative Direction in Energy Advising**	LOCATION **Slovenia, Bulgaria, Croatia, Cyprus**
DESCRIPTION	• Project implementation period: 11/2017-11/2019 • Budget: 134.598 EUR • Stakeholdrs: NGOs and energy poor citizens • Source of funding: Erasmus+ • Description: IDEA was a project that aimed to decrease energy poverty by implementing an educational platform for energy awareness.	
SOLUTION	• educational programme with a curriculum for adult education about energy poverty • a set of innovative educational materials (tools, methods, practices, initiatives,...) defined in the curriculum • a guide to accompany the curriculum and to help interested stakeholders to implement it - complemented by video tutorials for each tool and an overview webinar in each country • a website (http://www.project-idea.eu/) to allow access • to all the educational materials and guidance	
IMPACT	• a tool for future simple energy audits	

iDEA

Source: http://www.project-idea.eu/

For an overview, please take a look at this video: https://youtu.be/u9hPk2zmBIE

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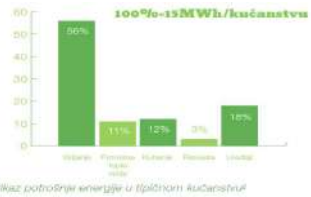
PART II: Energy poverty alleviation actions
2. Croatia - case studies/actions/best practices

CASE STUDY	ENERGY POVERTY ACTION **Together to more comfortable housing 1-4**	LOCATION **Zagreb, Croatia**
DESCRIPTION	• Project implementation period: 2016-2020 • Budget: 11.200 EUR (over 4 years) • Partners: Local NGOs working with vulnerable citizens • Source of funding: City of Zagreb, Social protection and disability fund • Description: Project is focused on visits to energy poor households in city of Zagreb. Project has been renewed for 4 consecutive years, with specific vulnerable groups addressed every year. For example, women-only households or homes from disabled people.	
SOLUTION	• Household visits consist of acquiring data, giving advice on energy efficiency and giving out small energy efficiency aid packs (LED bulbs, sealants for windows...).	
IMPACT	• ~10 households visited each year • Reduced energy consumption (not quantified) • Increased quality of life (not quantified) • Policy recommendations to the city administration to address energy poverty affecting vulnerable citizens	

Energy efficiency aid packs



Slika 1. Prikaz potrošnje energije u tipičnom kućanstvu

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PART II: Energy poverty alleviation actions

2. Croatia - case studies/actions/best practices

CASE STUDY	ENERGY POVERTY ACTION **ENPOR – Action to Mitigate Energy Poverty in the Private Rented Sector poverty**	LOCATION **Velika Gorica, Croatia**
DESCRIPTION	• Project implementation period: 09/2020-09/2023 • Budget: 1.999.966,25 EUR • Source of funding: HORIZON 2020 • Partners: Netherlands, Germany, Belgium, United Kingdom, Greece, Croatia, Italy, Estonia and Austria • Description: The general objective of the ENPOR project is to draw attention to energy poverty in the private rental sector (PRS), taking into account the needs of landlords and tenants and to include them in the wider political context	
SOLUTION	• an assessment of the extent of the energy poverty problem in the PRS at the EU level • supporting the development of policies tailored to the specific needs of households in the PRS • Pilot city Velika Gorica → Target so-called free – based tenancy, which always includes two separate families/households in the same dwelling. This subgroup has not been targeted yet and rented apartments were mainly out of policy focus due to lack of information.	
IMPACT (expected)	• highlighted innovative and "win-win" ways to increase energy efficiency for vulnerable households in the PRS with special emphasis on creating synergies between landlords and tenants and sustainable solutions • establishment of a REACT group to enable the exchange of local and national knowledge on energy poverty in the PRS at EU level	

Source: www.enpor.eu

ENPOR

www.powerpoor.eu

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PART II: Energy poverty alleviation actions

3. Croatia - active energy poverty projects

CASE STUDY	ENERGY POVERTY ACTION **EmpowerMed– Empowering women to take action against energy poverty**	LOCATION **Zadar, Croatia**
DESCRIPTION	• Project implementation period: 09/2019-09/2023 • Budget: 1.982.150 EUR • Source of funding: HORIZON 2020 • Partners: Slovenia, Croatia, Italy, Spain; France, Germany, Albania • Description: The main objective of the project is to contribute to energy poverty abatement in the Mediterranean	
SOLUTION	• implementing a set of practical energy efficiency and RES measures, tailored to empower households in energy poverty and specifically focused on women and health • assessing their efficiency and impacts to formulate policy recommendations • promoting policy solutions among key actors for stimulating action against energy poverty at local and EU level.	
IMPACT (expected)	• 10,200 participants empowered to fight energy poverty in 6 pilot areas • Primary energy savings - 6.5 GWh/yr, CO2 emission reduction 1.600 tCO2/yr • 160.000 € investment in sustainable energy, 780.000 € wider economic savings • 50 women and men freed of debt or disconnection from power grid • At least 60% women participating in project activities • Public policy and best practices advocacy to fight energy poverty	

EmpowerMed

Source: www.empowermed.eu/

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PART II: Energy poverty alleviation actions
2. Croatia - case studies/actions/best practices

CASE STUDY	ENERGY POVERTY ACTION **SocialWatt**	LOCATION **Croatia**
DESCRIPTION	• Project implementation period: 09/2019-09/2022 • Budget: 1.998.297,50 EUR • Partners: EU (Greece, Netherlands, Belgium, Austria, Romania, France, Spain, Ireland, Latvia, Croatia, Italy) • Source of funding: HORIZON 2020 • Description: SocialWatt will develop and provide utilities and energy suppliers with appropriate tools for effectively engaging with their customers and working together towards alleviating energy poverty	
SOLUTION	• SocialWatt will also enable obligated parties under Article 7 of the Energy Efficiency Directive across Europe to develop, adopt, test and spread innovative energy poverty schemes	
IMPACT (expected)	• Identify energy poor households • Develop innovative schemes to alleviate energy poverty • Build the capacity of utilities, energy suppliers and social services • Implement the schemes to alleviate energy poverty • Replicate the project's outcomes and provide policy recommendations	

SocialWatt Tools

SOCIALWATT ANALYSER SOCIALWATT PLAN SOCIALWATT CHECK

Energy poverty in the SocialWatt targeted countries

Source: https://www.socialwatteu/

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PART II: Energy poverty alleviation actions
2. Croatia - case studies/actions/best practices

CASE STUDY	ENERGY POVERTY ACTION **ENGAGER - European Energy Poverty: Agenda Co-Creation and Knowledge Innovation**	LOCATION **Croatia**
DESCRIPTION	• Project implementation period: 2017-2021 • Source of funding: The COST Association • Research network funded via the European Co-operation in Science and Technology (COST) scheme	
SOLUTION	• It is aimed at developing and strengthening an international community of researchers and practitioners focused on combating energy poverty	
IMPACT (expected)	• Involves currently more than 200 members from over 40 countries	

ENGAGER

Source: http://www.engager-energy.net/

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PART III: Household energy performance

1. Introduction: household energy consumption, terminology
2. Simple energy audit
3. Simple energy efficiency measures and practical tips
4. Understanding energy and electricity utility bills and costs

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PART III: Household energy performance

1. Introduction: household energy consumption, terminology

BASIC TERMS

Energy (kWh) = Power (kW) x time (h)

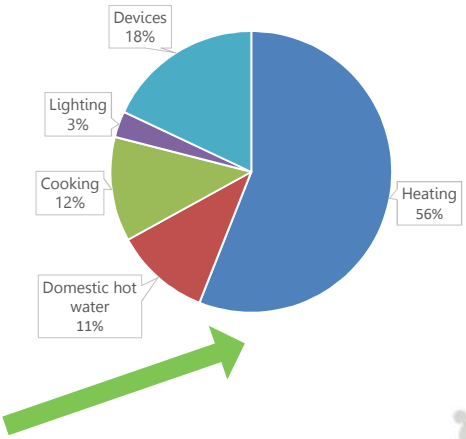
1kWh:

- 10W LED bulb x 100h (~4 days)
- 2kW electric water heater x 0.5h
  - Energy to heat 21l of water from 10C to 50C
- 2kW electric convection heater x 0.5h

The typical non-energy efficient home in Croatia consumes ~250kWh/m²

Why is it important to focus on heating when talking about energy efficiency?

Average household energy consumption in Croatia



da2

Slide 28

da2 Data in this part should be adapted for each country when translating.
daniel.rodik, 26/04/2021

PART III: Household energy performance

1. Introduction: household energy consumption, terminology

Most common heating sources of energy:

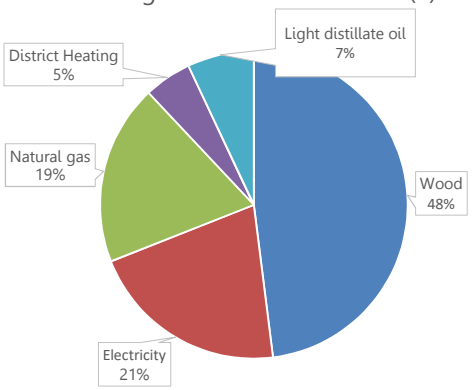
Wood

- Direct heating (stove, fireplace)
- Furnace connected to hot water tank + radiators

Electric

- Electric resistive heating
  - Convection heaters
  - Radiating heaters
  - Thermal storage heaters
- Air to air heat pumps – air conditioning devices

Heating distribution in Croatia (1)



(1) Program for using potential for efficiency in heating and cooling for 2016-2030
https://ec.europa.eu/energy/sites/ener/files/documents/croatia_report_eed_art_141update_hr.pdf

PART III: Household energy performance

1. Introduction: household energy consumption, terminology

Most common heating sources of energy:

Natural gas

- Typically furnace connected to hot water tank + radiators

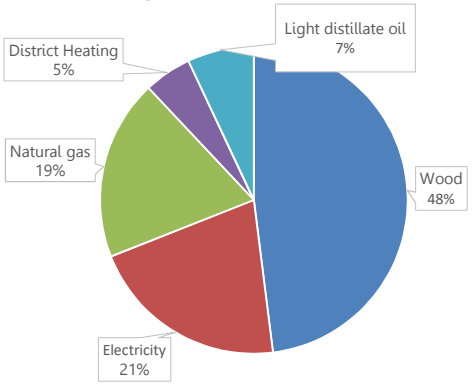
District heating

- Urban areas, apartment buildings
- Fuel source is typically fossil fuel

Light distillate oil &
Liquid Petroleum Gas (LPG)

- Typically furnace connected to hot water tank + radiators

Heating distribution in Croatia (1)



(1) Program for using potential for efficiency in heating and cooling for 2016-2030
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PART III: Household energy performance

1. Introduction: Heating technology overview

	UNIT	COST	FEATURES	SAFETY
Wood	m3 for raw wood Kg/ton for pellets	~0.03EUR/kWh *important to use properly dried wood	• Direct heating (stove in living space) or • Central heating (furnace + water distribution to radiators) • 1 „spatial meter of wood" =1575 kWh	• Carbon monoxide (CO) suffocation risk if chimney is not regularly maintained • Fire hazard if stove is faulty
Electric – resistive	kWh	Day: ~0.15EUR/kWh Night: ~0.8EUR/kWh	• Simple to use • Thermal electric storage heaters taking advantage of lower tariff	• Fire hazard if devices are faulty or if heaters are covered
Electric – heat pump (Air-Air)	kWh	Day: ~0.13EUR/kWh Night: ~0.7EUR/kWh	• Coefficient of Performance 2.5-4: for 1kWh electricity, 2.5-4kWh thermal energy is pumped into indoor space. • Lower efficiency at lower outdoor temperatures	• Some devices cannot operate at low outdoor temperatures (-5C or lower)

** Reference values only, actual prices vary due to multiple factors*

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PART III: Household energy performance

1. Introduction: Heating technology overview

	Unit	Cost	OTHER	SAFETY
Natural gas	m3/kWh	~0.04EUR/kWh	• Regulations allow only condensation boilers to be sold, which have higher requirements for chimneys. Customers often need chimney reconstruction and delay replacing old boilers • 1 m³ = 9,4 kWh	• Some gas boilers need minimal water pressure to operate properly, water reactors can cause issues • Carbon monoxide (CO) suffocation risk if chimney is not regularly maintained
District heating	kWh, kW, m2	~0.025EUR/kWh	• Confusing billing methods reduced customer trust in district heating schemes	
Heating oil & LPG	Liters, kg	~0..07EUR/kWh	• Local storage tank required • 1 L heating oil = 11,86 kWh • 1 kg LPG= 13,73 kWh	• Fire hazard due to storage of flammable fuel

** Reference values only, actual prices vary due to multiple factors*

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PART III: Household energy performance
H1. Introduction: Building thermal envelope

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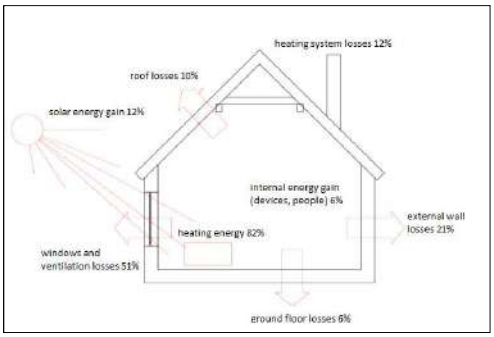
Thermal insulation
- Walls, roofs, windows, floors
- Important to avoid thermal bridges

Thermal mass
- More thermal mass indoors increases thermal inertia and makes the space more thermally passive
- E. g. solar thermal energy can be stored by the floor below the window

Heating system efficiency
- Regular maintenance is important for efficient heating system operation
- Correct temperature setpoint regulation can reduce energy consumption
- Is the heat distributed in equally or concentrated in one spot?



Reference values for thermal energy gains and losses / Source: REACH

Air-tightness
- Gaps on windows & doors cause drafts & thermal energy leaks
- Bathroom and kitchen extraction fans need non-return flaps to reduce draft

PART III: Household energy performance
1. Introduction: Building thermal envelope

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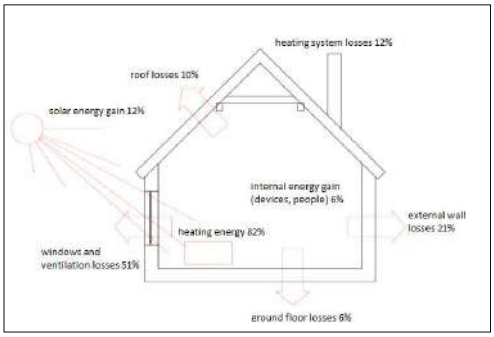
Geographic orientation
- Orientation towards south results in more solar energy gain
- Eaves above windows allow low angle winter sun to enter the windows, while keeping out high-angle summer sun

Shape / form factor
- Compact space distribution with minimal surfaces exposed to outside conditions result in less energy losses

Neighboring dwellings
- Walls shared with heated areas lose less energy



Reference values for thermal energy gains and losses / Source: REACH

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PART III: Household energy performance

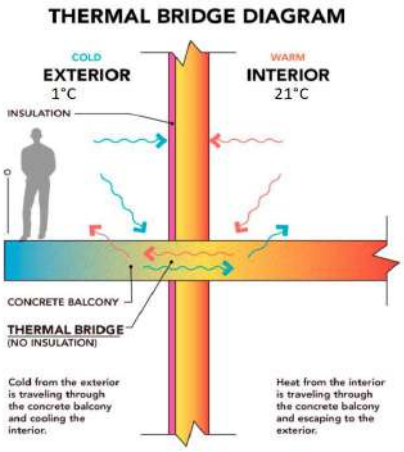
1. Introduction: Building thermal envelope

Thermal bridge

- Thermal conductive connection between interior and exterior of the building
- Non-insulated walls, concrete balconies

Water vapour, air tightness & mold

- 1 person can generate ~1.5kg water vapour per day
- Cooking, showering, drying clothes, dishwashing also generate water vapour
- If living space is air-tight and not ventilated, water remains trapped inside
- Mold often occurs on cold spots where water vapour condensates (thermal bridges)



https://civilengineering4u.wordpress.com/2017/05/29/thermal-bridging/

https://www.isse.org.uk/articles/dampness

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PART III: Household energy performance

2. Simple energy audit

Goal of the simple energy audit is to gather key information **to determine the existing energy situation** in the household.

After the audit, energy supporters should be able **to propose measures to reduce energy costs and increase quality of life.**

Checklist

Heating/cooling system | **Energy performance of the building** | **Energy appliances** | **Energy behaviour** | **Safety considerations** | **Energy bill analysis**

PART III: 2. Simple energy audit

Key steps

DATA COLLECTION

Find:
Energy consumption for heating, electricity, water (kWh, l.)
Energy use: heating types (gas, wood!, district heating, oil, electricity), electric devices (how many, stand-by consumption...)
Energy performance of the building envelope: insulation, outer walls, roof, chimney, thermal bridges.

ENERGY ANALYSIS

Define:
Consumption patterns (e.g. season, daily, monthly
Significant energy use (will lead to best EE measure pay-off)
Benchmarks (using the latest energy performance indicators kWh/m2)

PRESENTATION OF RESULTS

Report to beneficiary
Certification

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PART III: Household energy performance
2. Simple energy audit

POINTS TO KEEP IN MIND

HEATING

- Heating type – gas/district heating/electricity/wood/pellets
- Positioning of heat emission devices in the living/working space – are heating devices close to cold walls that act as heat sinks? What is the heat distribution in the room?
- Heating system service periods

BUILDING ENERGY PERFORMANCE

- Wall composition from inside to outside with focus on thermal insulation and thermal mass properties; detection of potential thermal bridges
- Windows and doors – air tightness inspection, glass type (single/double/triple)
- Ventilation openings – air flow inspection in the kitchen and bathroom extraction fan openings

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PART III: Household energy performance
2. Simple energy audit

POINTS TO KEEP IN MIND

ENERGY BEHAVIOR

- What are the biggest "energy pain points"?
- Parts of the house/flat that feel cold
- Any activities that are avoided because of cold – e.g. sitting at the table for too long
- Body parts that feel cold – feet, hands, back
- Determine if there are any applicable government energy poverty alleviation schemes
- How long will the tenants live in the property?
- Any renovation needed/planned soon?

SAFETY

- State of the chimney - Carbon monoxide hazard
- Old electric heaters, obstructing airflow around heaters
- Electric installation (e.g. if high-power electric heaters are used)

PART III: Household energy performance
2. Simple energy audit

USEFUL TOOLS

- Distance meter
- kWh meter
- Photo camera
- Infrared thermometer

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PART III: Household energy performance

2. Simple energy audit

COMMUNICATION TIPS when performing household visits

BENEFICIARIES COULD BE:

- Elderly people,
- People with various health problems (physical and mental): hearing or visually impaired, anxious, depressive.

DO's and DONT's of household visit

- First contact is important: smile, introduce yourself, make eye contact, shake hands (but be aware of COVID-19 measures!)
- Explain the purpose of the visit and what will happen during the visit.
- DO NOT enter the house prior to invitation!
- DO NOT enter the rooms without the presence of the beneficiary!
- Repeat that the energy visit is FREE of CHARGE, you are not selling anything!
- Up to 2 persons are optimal for the visit
- Adapt the communication based on beneficiary health status (hearing, vision, invalid person...)
- Leave contact details and inform them about the next steps
- Respect the dignity of the beneficiary, their home, privacy, values.
- DO NOT share private data with third persons (GDPR).
- Listen to the beneficiary patiently, but allow yourself to leave (if you have enough data, or if it is not comfortable for you).
- Inform mentor if any problem occurs.

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PART III: Household energy performance

3. Energy efficiency measures and practical tips

How to save energy?

REDUCE TOTAL ENERGY CONSUMPTION but do not reduce comfort (improve it)

FIND SIGNIFICANT ENERGY USERS

- **Replace with EE**

New A rating (2020) consumes up to 100 kWh less per year

or

- **Reduce their operation time**

Using timer for electric water heater

FIND THERMAL BRIDGES or HOLES like windows, entrance door, outer walls, ceiling toward non-heated attic

- **"Patch" them**

Insulation strips, reflexive foils, thermal insulation

USE NATURAL LIGHTING AND SUN RADIATION OPTIMALY by adjusting room orientation

PROTECT HOUSE FROM OVERHEATING IN SUMMER by using blinds, eaves, trees on south side of the house

Simple measures will show quick results with small investment, but low impact.
Optimal measure is one with quick results, lower investment and higher impact

= **SHORT PAYBACK PERIOD**

ENERGY RENOVATION as a long-term approach

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PART III: Household energy performance
3. Energy efficiency measures and practical tips

EXAMPLE: Passive solar retrofit 250 kWh/m2 to 15 kWh/m2 annually

MAXIMIZE
- solar gain in heating season
- thermal insulation (cost effective!)
- use of wasted heat (heat exchangers)
- use of renewable sources

MINIMIZE
- solar gain in cooling season (no need for air conditions)
- air leaks (but allow fresh air to come in!)
- thermal bridges

OPTIMIZE
- thermal mass (slows down temperature change!)

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PART III: Household energy performance
3. Energy efficiency measures and practical tips

Example: ENERGY RENOVATION of a family house
250 kWh to 90 kWh per m2

LARGE investments
1. **THERMAL INSULATION** of outer envelope
2. **EE** windows and doors
3. **HEATING SYSTEM** renewed
4. **SOLAR THERMAL** system

SMALL and MEDIUM investments:
EE lighting, EE appliances, draft proofing, water saving devices

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PART III: Household energy performance
3. Energy efficiency measures and practical tips

Example: ENERGY RENOVATION of a family house with 100 m2

Outer envelope THERMAL INSULATION

MEASURE	INVESTMENT	PAYBACK PERIOD (YEARS)	EXPECTED LIFETIME (YEARS)
10 cm mineral wool on outer wall	30 Eur/m2	10-15 (depends on energy used)	50
20 cm mineral wool in roof	10 Eur/m2	3-5 (depends on energy used)	50

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PART III: Household energy performance
3. Energy efficiency measures and practical tips

Example: ENERGY RENOVATION of a family house with 100 m2

Outer envelope THERMAL INSULATION

- MOISTURE problems if material with **low vapour diffusion factor** is used
- **Good ventilation** is crucial
- THERMAL BRIDGES - High quality installation reduces risk of TB on windows, doors, roofs

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PART III: Household energy performance

3. Energy efficiency measures and practical tips

Example: ENERGY RENOVATION of a family house with 100 m2

Outer envelope THERMAL INSULATION

Natural materials increase sustainability by reducing embedded energy (recycled cellulose, sheep wool, straw bale)

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PART III: Household energy performance

3. Energy efficiency measures and practical tips

Example: ENERGY RENOVATION of a family house with 100 m2

ENERGY EFFICIENT windows and doors
U value – heat transfer coefficient: lower U – better insulation - higher price

MEASURE	INVESTMENT	PAYBACK PERIOD (YEARS)	EXPECTED LIFETIME (YEARS)
ENERGY EFFICIENT windows • PVC, alu, wood • U value less than 1,2 W/m2K)	200 - 300 EUR/m2	15-20 (depends on type installed and energy used)	50

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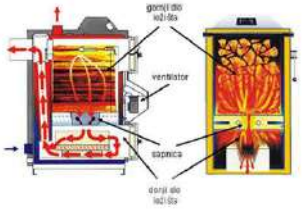
PART III: Household energy performance
3. Energy efficiency measures and practical tips

Example: ENERGY RENOVATION of a family house with 100 m2

HEATING SYSTEM – change of energy source from heating oil to biomass

MEASURE	INVESTMENT	ANNUAL ENERGY SAVINGS	PAYBACK PERIOD (YEARS)	EXPECTED LIFETIME (YEARS)
BIOMASS pirolitic instead of heating oil boiler	5800 EUR	2600 L oil	3-4	15
BIOMASS pelet instead of heating oil boiler	3000 EUR	2100 L	2-3	15



Sources: DOOR, https://door.hr/ https://www.centrometal.hr/

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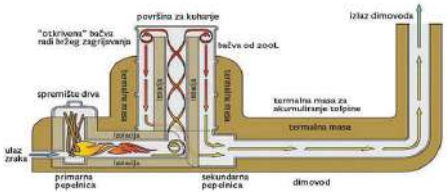
PART III: Household energy performance
3. Energy efficiency measures and practical tips

HEATING SYSTEM – standard wood burning furnace vs. high efficient „Rocket stove"



Sources: DOOR, https://door.hr/ https://www.zmag.hr/

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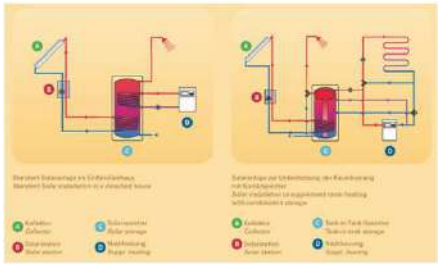
PART III: Household energy performance

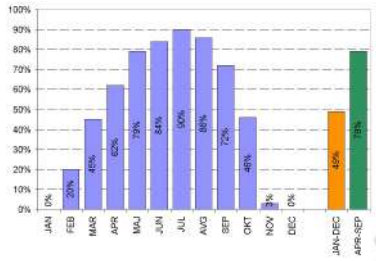
3. Energy efficiency measures and practical tips

Example: ENERGY RENOVATION of a family house with 100 m2

MEASURE	INVESTMENT	ANNUAL ENERGY SAVINGS	PAYBACK PERIOD (YEARS)	EXPECTED LIFETIME (YEARS)
SOLAR THERMAL SYSTEM instead of ELECTRIC BOILER for sanitary water and/or heating backup	3000 EUR	2000 kWh	10 (no incentives or change in electricity price)	25

Source: DOOR, https://door.hr/





Sources: https://www.dgs.de

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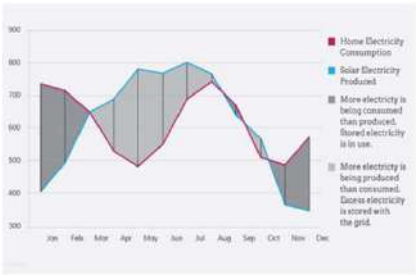
PART III: Household energy performance

3. Energy efficiency measures and practical tips

Example: ENERGY RENOVATION of a family house with 100 m2

MEASURE	INVESTMENT (design, equipment, transport, installation, insurance)	ANNUAL FINANCIAL SAVINGS	SIMPLE PAYBACK PERIOD (YEARS)	EXPECTED LIFETIME (YEARS)
Photovoltaic power plant for own supply (4 kW)	~ 3500 EUR	385 EUR	9 years	25

Source: DOOR, https://door.hr/



Sources: https://www.elektro-beckhaeuser.de/photovoltaik/
https://www.energysage.com/solar/101/net-metering-for-home-solar-panels/

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PART III: Household energy performance
3. Energy efficiency measures and practical tips

Example: ENERGY RENOVATION of a family house with 100 m2

SMALL and MEDIUM investment :

- **Standby appliances**
- Draftproofing, reflective foils
- EE lighting
- EE appliances
- Water-saving devices

Typical stand-by consumption	
TV	6-7 W
DVD	5 W
Alarm clock	1 - 3 W
Microwave oven	2 - 6 W
Battery charger	2 - 4 W
Phone station	2 - 4 W
Laptop (sleep)	3-11 W
Router	8 W
TOTAL	~39 W x 24 h = 936Wh

1kWh per day, 48 EUR per year

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PART III: Household energy performance
3. Energy efficiency measures and practical tips

Example: ENERGY RENOVATION of a family house with 100 m2

SMALL and MEDIUM investments:

- Standby appliances
- **Draftproofing, reflective foils**
- EE lighting
- EE appliances
- Water saving devices

3-4 windows,
20 EUR investment,
Payback period of 1 year

3 radiators
20 Eur investment,
Payback period of 1 year

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PART III: Household energy performance
3. Energy efficiency measures and practical tips

Example: ENERGY RENOVATION of a family house with 100 m2

SMALL and MEDIUM investments:

- Standby appliances
- Draftproofing, reflective foils
- **EE lighting**
- EE appliances
- Water saving devices

2 LED bulbs,
14 EUR investment,
Payback period of 1 year

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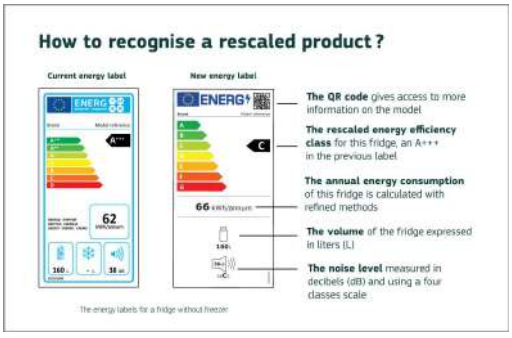
PART III: Household energy performance
3. Energy efficiency measures and practical tips

Example: ENERGY RENOVATION of a family house with 100 m2

SMALL and MEDIUM investment:

- Standby appliances
- Draftproofing, reflective foils
- EE lighting
- **EE appliances**
- Water saving devices



New 2021 energy labels

Source: https://ec.europa.eu/info/energy-climate-change-environment/standards-tools-and-labels/products-labelling-rules-and-requirements/energy-label-and-ecodesign/product-database/qr-code-new-energy-label_en

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PART III: Household energy performance
3. Energy efficiency measures and practical tips

Example: ENERGY RENOVATION of a family house with 100 m2

SMALL and MEDIUM investments:

- Standby appliances
- Draftproofing, reflective foils
- EE lighting
- EE appliances
- **Water saving devices**

10 m3 potential savings compared to normal tap

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PART III: Household energy performance
3. Energy efficiency measures and practical tips

HEATING – practical tips

WOOD HEATING
- When buying a furnace, select one that fits the size of the room.
- Close air intake whenever the furnace is not in use to avoid heat loss through the chimney
- Make sure that there is no exhaust gas leakage into the living space (!)
- Make sure that the wood is dry enough to be used as fuel
- Regularly inspect and clean the chimney
- Don't overfill the furnace with wood
- Consider stovepipe heat reclaim radiators to increase heat transfer to the room

GAS/ CENTRAL HEATING
- Reduce thermostat set points for unused rooms
- Insulate hot water piping, especially if passing through "cold" areas
- Service the system regularly

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PART III: Household energy performance
3. Energy efficiency measures and practical tips

ELECTRICITY – practical tips

- Use night/"cheap" electricity tariff for heating – especially for electric thermal storage heaters and electric water heaters
- Use socket timers to heat only rooms that are in use at certain part of the day
- Keep heating elements clean and free of airflow obstruction
- Use insulation + reflective pads between heating element and the wall

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PART III: Household energy performance
3. Energy efficiency measures and practical tips

SANITARY HOT WATER – practical tips

- Use night/"cheap" electricity for water heaters
- Limit water heater temperature – around 60C is enough for most household needs
- Avoid excessively low water heater temperatures to prevent the growth of Legionella bacteria
- If the existing water heater is poorly insulated, consider additional insulation
- The size of the water heater should match the needs of the household – water heaters larger than necessary are less efficient
- Take a shower instead of a bath
- Remove lime scale (especially in case of hard water) from electric heating elements to increase efficiency
- Check pipe fittings – faulty water mixers and shower heads cause hot water leakages

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PART III: Household energy performance
3. Energy efficiency measures and practical tips

INSULATION and BUILDING ENVELOPE – practical tips

- Use insulation + reflective pads between heating elements and the wall
- Use rubber seals on doors/windows to eliminate unwanted airflow
- Utilize window blinds for passive energy efficiency
- Close blinds during the night to reduce heat loss through the windows
- Open blinds to allow the sun to warm up the rooms
- Look for mold and damp walls to determine cold spots on the walls – consider additional insulation around these spots
- Thick carpets can reduce heat loss through the floors

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PART III: Household energy performance
3. Energy efficiency measures and practical tips

HOME APPLIANCES – practical tips

- When buying a new appliance, pay attention to the appliance energy class
- Defrost refrigerators regularly
- Keep refrigerators away from heat sources and leave enough empty space behind them to allow efficient heat rejection
- Check if the refrigerator doors are airtight
- Don't set refrigerator setpoint too low – suggested values are 4C for refrigerators and -18C for freezers
- Use laundry washing machines and dryers during low electricity tariff periods
- Consider using lower water temperature while doing laundry
- Consider natural drying instead of electric dryer
- Induction stoves are more efficient than electric resistance ones
- Keep pot lids on when cooking to reduce required energy
- Shut down electronic devices when not in use; avoid leaving them on or in standby mode

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PART III: Household energy performance

3. Energy efficiency measures and practical tips

LIGHTING – practical tips

- Turn off the lights in unoccupied rooms
- Use natural lighting when possible
- Correct light fixture can reduce power required for lighting a room

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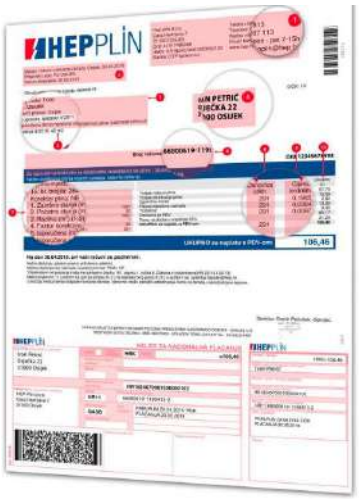
PART III: Household energy performance

4. Understanding energy and electricity utility bills - Gas

1. Informacije o izdavatelju: podaci o izdavatelju računa
2. Informacije o računu: podaci o mjestu i datumu izdavanja računa, pripadnosti organizacijskoj jedinici unutar HEP-Plin-a d.o.o., datumu dospijeća
3. Tehnički podaci: podaci o Tarifnom modelu, MRS-I , obračunskom mjernom mjestu, dobavnom pravcu i isporučenoj donjoj ogrijevnoj vrijednosti sukladno Mrežnim pravilima plinskog distribucijskog sustava (NN 50/18)
4. Podaci o kupcu: naziv i adresa navedena za dostavu računa
5. Potrošnja: podaci o prošlogodišnjoj potrošnji u istom obračunskom razdoblju u m3
6. Broj računa: obračunsko mjerno mjesto, podaci o pozivu na broj, obračunsko razdoblje na koje se odnosi
7. Podaci o potrošnji: podaci o tvorničkom broju plinomjera, podaci o postojanju korektora plina (DA/NE), razlika početnog i završnog stanja, pretvorba u kWh (umnožak potrošene količine plina (m3) i donje ogrijevne vrijednosti).
8. Osnovica kWh: osnovna jedinica mjere obračunskih elemenata. Od 1. siječnja 2012. godine na tržištu prirodnog plina RH primjenjuje se mjerna jedinica kWh (kWh/h).
9. Cijena kn/kWh: sukladno Odluci o iznosu tarifnih stavki za javnu uslugu opskrbe plinom za razdoblje od 1. travnja do 31. prosinca 2019. za energetski subjekt HEP-Plin d.o.o. (NN 15/19)
10. Ukupno kn: umnožak osnovice (kWh) i cijene (kn/kWh), svedeno na dvije decimalne jedinice

- 1 m³ of natural gas: ~9.4kWh
- 1kWh of natural gas: ~0.04EUR/kWh

- Natural gas is measured in cubic meters (m³)
- However, natural gas can have different energy densities in different locations
- Gas volume is multiplied with lower heating value of gas, specific for diferent distribution areas
- Resulting energy in kWh is billed according to price per kWh



Source:
https://www.hep.hr/elektra/UserDocsImages/dokumenti/cesta-pitanja/Pojasnjenje_racuna_2_2018.pdf

PART III: Household energy performance

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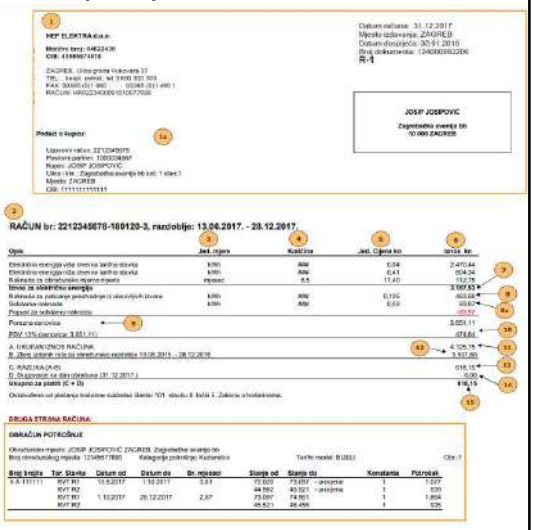
4. Understanding energy and electricity utility bills - Electrical

- Electricity price in Croatia:
  - Day: ~0.15EUR/kWh
  - Night: ~0.8EUR/kWh

- Actual electricity readings are taken several times per year, while bills are issued monthly based on assumptions. Consumers are often confused by the balancing accounting.
- Items explained in the bill:

1: customer information
2: billing period
3: measurement units
4: energy consumed, high/low tariff
5: unit prices (energy, grid usage, renewables surcharge, "solidarity surcharge")
6: subtotals per each item
7: total for energy
8: total for renewables surcharge
8a: total for "solidarity surcharge"
9, 10: Value Added Tax (VAT)
11: total bill for the billing period
12: issued bills for the period based on estimates – obsolete for new meters
13: difference between estimated and real energy consumption
14: balance – can be positive or negative, depending on how much is owed or overpaid
15: total due payment



Source: https://www.hep.hr/elektra/UserDocsImages/dokumenti/cesta-pitanja/Pojasnjenje_racuna_2_2018.pdf

PART III: Household energy performance

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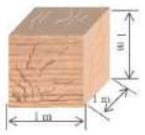
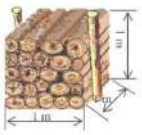
4. Understanding energy and electricity util

- Cubic meter vs spatial meter of wood
- When buying wood, spatial meter measure is used
- 1 spatial meter of wood is ~0.7m³, depending on cutting shape
- 1 "spatial meter of wood" =1575 kWh
- 1 kWh derived from burning wood: ~0.03EUR/kWh

- Wood must be properly dried before being used as fuel (less than 20% humidity)
- burning wet wood causes energy loss and can lead to deposits of creosote building up in the chimney
- Wood should be stored exposed to south, exposed to wind, protected from rain and snow, separated from the ground, with enough space around it to allow enough airflow



1m³ wood



1 spatial meter wood

Drying time	Oblice (cylindric pieces of wood) outdoors	Oblice (cylindric pieces of wood) stored after 3 months	Cjepanice (1/4 oblice) stored after 3 months
Starting humidity	76%	76%	76%
6 months	46%	44%	28%
12 months	35%	32%	23%
15 months	32%	27%	20%
18 months	27%	22%	15%
24 months	24%	18%	14%

Sources:
http://kamin.16mb.com/savjeti/kupovina-drveta-za-ogrijev/
https://algoritam.home.blog/2020/01/19/zasto-kubik-drva-nije-isto-sto-i-metar/

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MODULE SUMMARY

- Key takeaways
- Exercise (if applicable)
- References and further reading

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Module Key Learnings

Supporters and mentors learned all about:

- EU legislation related to energy poverty
- National legislation related to energy poverty
- Case studies/actions/best practices in their country
- Tools and tips to understand household energy performance

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Module Exercise

- **Discussion/debate**
  Discuss the following issues with your fellow participants: Which energy policy from another country do you like most? How could you compare it to national policies from your country? Which case study from a different country should be replicated in your country?

- **Role play and simulation of a home visit and simple energy audit**
  Form a group of two people – one will act as the energy supporter and the other as a citizen. The energy supporter will conduct a simple energy audit based on the information given to him by the citizen and recommended best simple energy measures to the citizen.

- **Reading electricity and heating bills**
  Each country will choose an example of its own electricity and heating bill. Based on what they have learned in Part 3 of Module 2, participants will individually analyse each bill component.

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References and further reading

- POWERPOOR Online Library: http://powerpoor.eu/library


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Thank you for your attention!
Name of Presenter(s)
Name of Organisation, Country
e-mail -
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POWERPOOR
Empowering Energy Poor Citizens through Energy Cooperative Initiatives

Tips & tricks to reduce energy poverty

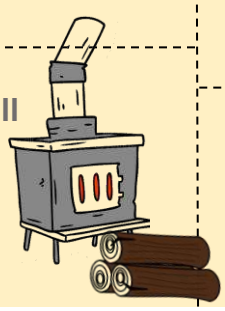
Wood Heating

When buying a furnace, select one that fits the size of the room.

Regularly inspect & clean the chimney.

Make sure that there is no exhaust gas leakage into the living space.

Don't overfill the furnace with wood.



Consider stovepipe heat reclaim radiators to increase heat transfer to the room.

Close air intake whenever the furnace is not in use to avoid heat loss through the chimney.

Gas/ Central Heating

Reduce thermostat set points for unused rooms.

Insulate hot water piping, especially if passing through "cold" areas.

Service the system regularly.

Sanitary Hot Water

Use night/'cheap' electricity for water heaters.

Avoid excessively low water heater temperatures to prevent the growth of Legionella bacteria.

Remove lime scale (especially in case of hard water) from electric heating elements to increase efficiency.

Check pipe fittings - faulty water mixers & shower heads cause hot water leakages.

Take a shower instead of a bath.

The size of the water heater should match the needs of the household - water heaters larger than necessary are less efficient.

If the existing water heater is poorly insulated, consider additional insulation.

Limit water heater temperature - around 60C is enough for most household needs.

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Empowering Energy Poor Citizens through Energy Cooperative Initiatives

Insulation & Building Envelope

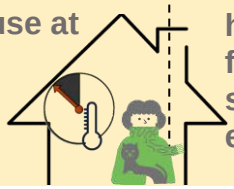
- Use insulation + reflective pads between heating elements & the wall.
- Utilize window blinds for passive energy efficiency.
- Use rubber seals on doors/ windows to eliminate unwanted airflow.
- Thick carpets can reduce heat loss through the floors.

- Look for mold & damp walls to determine cold spots on the walls – consider additional insulation around these spots.
- Close blinds during the night to reduce heat loss through the windows.

- Open blinds to allow the sun to warm up the rooms.

Electricity

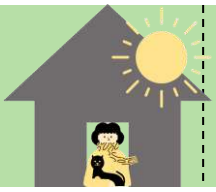
- Use socket timers to heat only rooms that are in use at certain part of the day.



- Use night/'cheap' electricity tariff for heating, especially for electric thermal storage heaters & electric water heaters.
- Keep heating elements clean & free of airflow obstruction.
- Use insulation & reflective pads between heating element & the wall.

Lighting

- Turn off the lights in unoccupied rooms.
- Use natural lighting when possible.



- Correct light fixture can reduce power required for lighting a room.

Home Appliances

- Defrost refrigerators regularly.
- Consider using lower water temperature while doing laundry.
- Keep refrigerators away from heat sources & leave enough empty space behind them to allow efficient heat rejection.
- Don't set refrigerator setpoint too low – suggested values are 4C for refrigerators & -18C for freezers.
- Check if the refrigerator doors are airtight.
- Consider natural drying instead of electric dryer.

- When buying a new appliance, pay attention to the appliance energy class.
- Use laundry washing machines & dryers during low electricity tariff periods.

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Empowering Energy Poor Citizens through Energy Cooperative Initiatives

MODULE 3 - Support energy poverty alleviation actions

EUROCROWD, COOPERNICO and GOIENER

This project has received funding from the European Union's HORIZON 2020 research and innovation programme under grant agreement No 890437

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Module – Structure and content

- Module goals
- Module content
  - PART I – Collective Innovative Actions for Energy Poverty – An Introduction
  - PART II – Crowdfunding & Innovative Finance
  - PART III – Collective Energy Initiatives
  - PART IV – Power Fund Tool
- Module summary
  - Key takeaways
  - Further reading

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Module 3 – Goals

- Introduce the concept of Collective Innovative Actions for Energy Poverty
- Explain what crowdfunding is and how to use it
- Introduce the concept of Collective Energy Initiatives and equip participants with the necessary skills to create their own initiatives

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PART I: Collective Innovative Actions for Energy Poverty – An Introduction

What are Collective Innovative Actions for Energy Poverty?

What can they do to alleviate energy poverty?

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PART I: Collective Innovative Actions for Energy Poverty
What are they?

What is a Collective Innovative Action?

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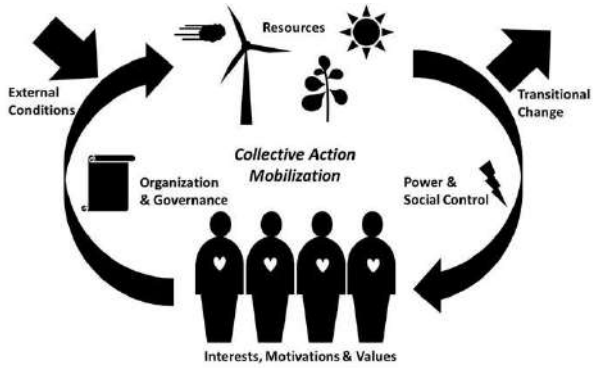
PART I: Collective Innovative Actions for Energy Poverty
What are they?

Collective Innovative Actions such as energy communities or crowdfunding initiatives are based on a simple yet powerful idea:



There is strength in numbers!

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PART I: Collective Innovative Actions for Energy Poverty
What are they?

How can you achieve an ambitious goal without having sufficient resources to do it on your own?

Normally, you might ask your friends and family to help you by either donating some money or giving you a small loan.

When you expand that idea to an entire neighborhood or region and build an organization around it, it becomes a community.

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PART I: Collective Innovative Actions for Energy Poverty
What are they?

Collective Energy Initiatives

Collective Energy Initiatives, as the name indicates, are initiatives to bring citizens together and develop joint strategies to:

- gain **access** to affordable energy,
- **tackle a certain issue** such as energy poverty,
- **empower** citizens in the energy market,
- find a **new electricity source**, for instance, by switching from traditional retailers to renewable energy ones and/or to self-generation.

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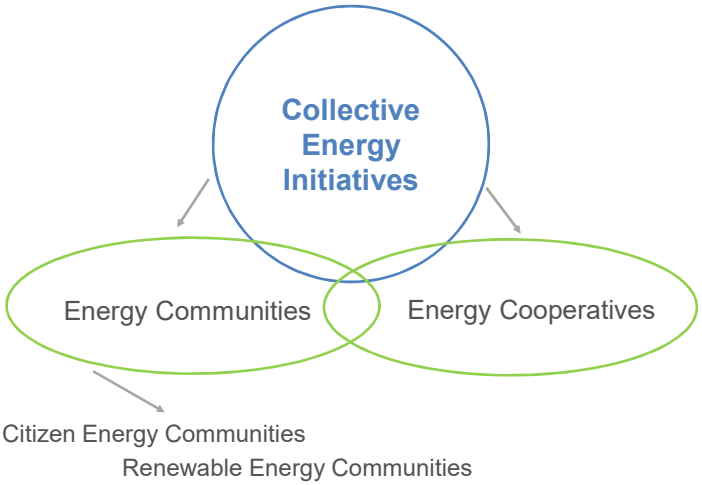
PART I: Collective Innovative Actions for Energy Poverty

What are they?



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PART I: Collective Innovative Actions for Energy Poverty

What are they?

Community finance

Community finance, or crowdfunding, is the natural extension of cooperative finance initiatives to even **larger communities**, typically via the Internet. It draws support from people across entire countries in order to make **specific projects** feasible and create change at the local level, raise awareness of social challenges or inspire communities to engage with local initiatives.

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PART I: Collective Innovative Actions for Energy Poverty
What can they do to tackle energy poverty?

What can Collective Innovative Actions do to tackle energy poverty?

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PART I: Collective Innovative Actions for Energy Poverty
What can they do to tackle energy poverty?

The **collective approach** fostered by energy communities and/or crowdfunding initiatives is **particularly appropriate** to address the enormous challenges faced by energy poor citizens who wish to:

- take action to **reduce their energy consumption** or
- **improve the energy efficiency** of their households.

Photo: Black Rock Solar/Flickr

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PART I: Collective Innovative Actions for Energy Poverty

What can they do to tackle energy poverty?

1

Community actions allow building/household owners to pay the **large upfront costs** of investments in Renewable Energy Sources (RES) or Energy Efficiency (EE), which traditional financial institutions may not be interested in funding or able to finance.

- When it comes to renewable energy generation, energy communities can support installation services by raising the initial capital required to make a large investment in generation capacity.
- In the case of EE investments, external funding and motivational support can allow property owners to overcome the energy efficiency gap.

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PART I: Collective Innovative Actions for Energy Poverty

What can They do for energy poverty?

2

Community-based RES installations allow **individuals who would not be able to purchase their own generation system**, or do not have a sunlit private roof or area, **to take part in the renewable energy transition**.

Likewise, energy-based communities allow individuals to easily invest in EE improvements, derive income from them, and participate in the energy transition. They also allow individuals already taking part in the energy transition to increase their participation levels under sustainable conditions.

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PART I: Collective Innovative Actions for Energy Poverty

What can They do for energy poverty?

3

Community-based RES installations generally **lower installation costs and increase revenues** by utilizing economies-of-scale and optimal siting of generation capacities.

Similarly, large-scale EE investments can take advantage of bulk purchases and economies-of-scale to **improve the returns on such investments**.

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PART I: Collective Innovative Actions for Energy Poverty

What can They do for energy poverty?

4

Collective innovative actions can also **support off-grid energy poor households**, such as those in rural areas that are not connected to the energy grid, and improve their access to energy by helping them pull together the resources and capital required for capital-intensive off-grid energy projects.

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PART I: Collective Innovative Actions for Energy Poverty
What can They do for energy poverty?

5

At the same time, the community approach allows individuals to **combine their buying power to purchase energy** (not only generate it), obtaining better prices in the wholesale market.

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PART II: Crowdfunding & Innovative Finance

- What is community finance?
- How does it work?
- Setting up a campaign
- How can community finance help tackle energy poverty?

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?

WHAT

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Crowdfunding & Innovative Finance
What is it

Community Finance is the practice of funding a project or venture by raising small amounts of money from a large number of people, typically via the Internet.

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Crowdfunding & Innovative Finance
Key elements

Open call to **raise funds** for a specific project

From **anyone with Internet access** (potentially)

Through an **Internet-based** mechanism
(specialised website)

Foreseeing **tangible or intangible benefits** in exchange for each economic contribution

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Crowdfunding & Innovative Finance
Main actors

Promoter

Platform

Crowd

Icons by Silvia Natalia from the Noun Project

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Crowdfunding & Innovative Finance
Terminology and different Models

Non-financial *Match-funding* *Financial*

Donation

Philanthropic donation or gift, no return expected

Up to 10.000 €

Reward

Contribution in exchange for a perk or a product pre-order

Up to: 30.000 €

Equity

Investment for an ownership share in the business

Avg: 350.000 €

Lending

Capital repayment most often with interest

500k - 2 million €

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Crowdfunding & Innovative Finance
Terminology and models

	Form of contribution	Form of return	Motivation of funder
Donation Crowdfunding	Donation	Intangible benefits	Intrinsic and social motivation.
Reward Crowdfunding	Donation/ Pre-purchase	Rewards but also intangible benefits.	Combination of intrinsic and social motivation and desire for reward.
Crowdfunded Lending	Loan	Repayment of loan with interest. Some socially motivated lending is interest free.	Combination of intrinsic, social and financial motivation.
Equity Crowdfunding	Investment	Return on investment in time if the business does well. Rewards also offered sometimes. Intangible benefits another factor for many investors.	Combination of intrinsic, social and financial motivation.

Source: Eurocrowd, 2021

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Crowdfunding & Innovative Finance
General benefits

- Shorter time for the collection of funds
- Less bureaucracy and administrative burden
- Complementary to different funding sources

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Crowdfunding & Innovative Finance
Specific benefits

- Analysis, validation and positioning in the community
- Strengthening and widening of own network
- Feedback cycle in real time
- Increased visibility (marketing costs close to zero)

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HOW

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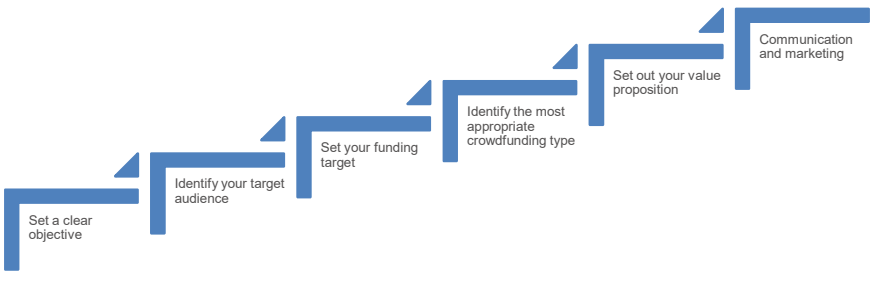
Crowdfunding & Innovative Finance

The crowdfunding process



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Crowdfunding & Innovative Finance
Project idea outline

- What is the objective of your project?
- What is its target audience?
- Why should the community support it?

Exercise: answer each question with a concise and clear sentence.

Icon by artworkbean from the Noun Project

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Crowdfunding & Innovative Finance
Potential funders

CROWD

- Own Network (friends, family, peers)
- People reached through media coverage
- Businesses as part of CSR activities
- People reached through affiliated communities/networks
- Existing crowdfunding networks (i.e Eurocrowd)
- Conversion rate of 1-3%
- Investors

Icon by Silvia Natalia from the Noun Project

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Crowdfunding & Innovative Finance

Understand your target audience

Friends and family

Peers

Organisations

- **Who** do you think will be supportive of your work and why? (friends, family, peers, people interested in the research area)
- **How big** are the audience groups?
- **How much money** can the different groups give? Which one should be the focus?
- How can you **reach** them?
- What is the **best style** of communication?
- **Why** would they be **interested** in your project?
- **Who** in your network can help you **reach** your audience?

Exercise: Identify at least two potential funders, as well as organizations and amplifiers relevant to your campaign

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Crowdfunding & Innovative Finance

Identify your funding needs

How much money do you need to achieve your objective?

+

Campaign production costs

rewards, videos, marketing, etc.

+

Service costs

Crowdfunding platform fees, transaction fees

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Crowdfunding & Innovative Finance
Campaign concept outline

Your objective

What do you need funds for?

Project type

Social cause? Tech? Consumer product?

Project stage

Pre-seed? Seed? Early Stage? Growth?

Type of capital

Equity? Debt? Donation? Commercial?

Funds needed

How much money do you need to achieve your objective?

Target audience

Who is the target audience of your campaign?

TYPE OF CROWDFUNDING

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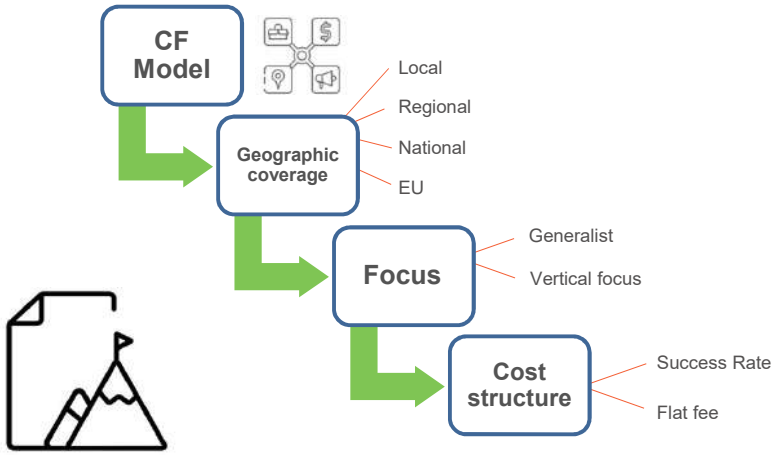
Crowdfunding & Innovative Finance
How to choose your crowdfunding platform



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Crowdfunding & Innovative Finance
Due diligence of platforms

- CF Model
- Geography
- Specialist vs generalist
- Cost structure
- Similar projects

Exercise: Identify the right platform for you + 1 similar project

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Setting up a campaign

Icon by DinosoftLab from the Noun Project

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Crowdfunding & Innovative Finance
Organize your ideas

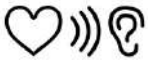
Telling a compelling story…

What?
Why?
How?
Who?
When?
Where?

Why do you need their support?

What do you offer in exchange?

Call to action



Use appropriate language and tone for your audience

Icon by corpus delicti from the Noun Project

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Crowdfunding & Innovative Finance
Present your ideas

… and create a compelling video

- Max. 3 min
- Entertaining or emotional
- Show your face
- Use copyright-free music
- If budget allows, seek help from a professional videomaker

Exercise: Draft your story in max. half a page

Crowdfunding & Innovative Finance
Organize your strategy

Select the right communication channels

Keep your target audience in mind

Family and friends | Peers | Amplifiers

Consider available communication channels

Email | LinkedIn | Facebook

Events | Forums/groups | Twitter

Which channel could you use to reach each audience group?

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Crowdfunding & Innovative Finance
Tips to take into account

- **Do** use appropriate tone and language for each audience
- **Do** prepare your messages in advance
- **Do** prepare a communication plan
- **Do** keep your social media updated
- **Do** focus on channels where you already have a solid network
- **Do** organize a launch event
- **Don't** be afraid of **asking (for advice, contributions, input, etc)**

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Crowdfunding & Innovative Finance

Focus on the typology of crowdfunding that you use

Set the right incentives

Donation	Reward	Equity	Lending
• Appel to intrinsic motivation & philanthropy • Provide updates on the latest developments of projects • Express grattitude to your donours	• Extrinsic + intrinsic motivation • Offer a variety of rewards considering different income and interest levels • Perks' perceived value • Market rate	• Financial return • Intrinsic motivations • Valuation • % offered • Promise & deliver growth	• Financial return • Interest rate

Exercise: Identify the best incentives for your case

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Crowdfunding & Innovative Finance

Start your campaign

Research & prepare	Campaign	Follow up and engage
Benchmark Strategise Research Make lists Connect Define messages Reach out	Execute Evaluate Correct	Provide updates Deliver your project Manage expectations Be responsive Keep audience engaged

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How Collective Innovative Actions can tackle energy poverty
Case Study 3

CASE STUDY	SOLARISATION OF GREECE: REWARD CROWDFUNDING CAMPAIGN FOR SOLAR PANELS	LOCATION
		GREECE
DESCRIPTION	With energy poverty being one of the most dramatic symptoms of the debt crisis in Greece (6 out of 10 households were struggling to pay their energy bills), investing in the abundant sun, the country's biggest asset, helped put money back in people's pockets by reducing their energy bills, brought them back into the job market by teaching them new skills and giving them opportunities, while contributing to the renewable energy transition.	
SOLUTION	Greenpeace Greece launched a reward-based crowdfunding campaign to finance the installation of solar panels onto the houses of families who lived on the brink of energy poverty in the island of Rhodes.	
IMPACT	35.063€ raised from 1161 backers Lower energy bills for involved households with significant savings Reduced dependency on oil energy production and oil subsidies	

Source: https://www.indiegogo.com/projects/solarization-of-greece#/updates/all

How Collective Innovative Actions can tackle energy poverty
Case Study 4

CASE STUDY	Crowdlending campaign for the energy reabilitation of a homeowner community	LOCATION
		SPAIN
DESCRIPTION	Project to replace community boilers and other energy efficiency measures in the centralized hot water production system of a community of homeowners in Barcelona. The project achieved significant savings in the energy consumption of the centralized Domestic hot water (DHW) production system, as well as a fair distribution of the real consumption of each home.	
SOLUTION	Crowdlending campaign for the realization of a series of energy efficiency proposals: • Replacement of old atmospheric gas boilers with new, more efficient watertight boilers • Replacement of the old circulation pumps • New monitoring and control system • Installation of individual ACS meters in each house	
IMPACT	49,600€ raised from 56 backers Lower energy consumption for involved households with significant savings on the energy bill CO2 emissions reduced by 16 tons/year	

Source: https://www.ecrowdinvest.com/detalles/comunidad-propietarios-barcelona#description

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EXERCISE

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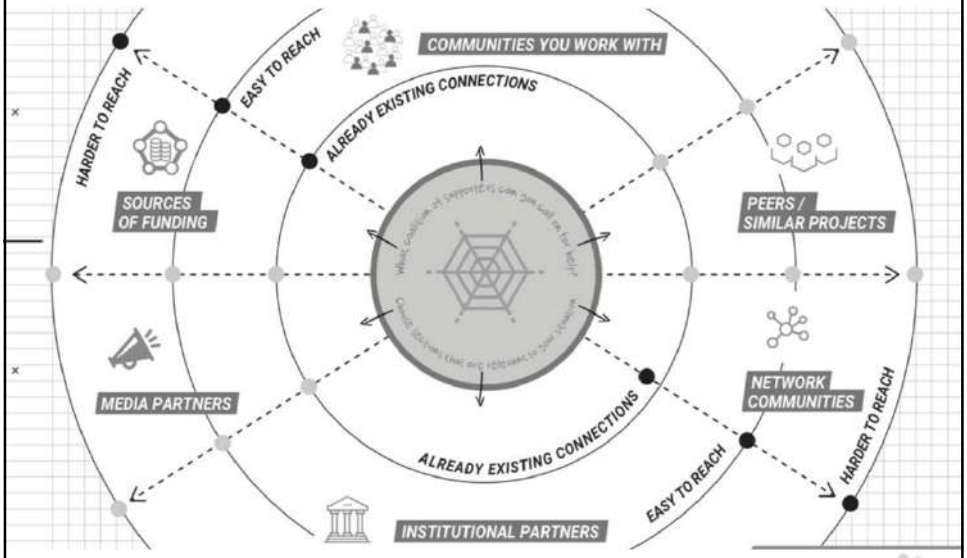
Crowdfunding & Innovative Finance

Exercise 1: Identify your community network



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Crowdfunding & Innovative Finance

Exercise 2: Develop a campaign pitch

Exercise: Based on what you have developed so far, write your crowdfunding pitch, including:

- Who is your target audience? What are you planning to achieve and why?
- Where, when, how (if relevant)?
- How much funding you're looking for?
- Why should people care?
- What are you offering in exchange?
- Call to action

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PART III: Collective Energy Initiatives – An Introduction

- Definition
- Differences
- Energy cooperatives
- How can they help fight energy poverty?
- How to start

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Collective Energy Initiatives
Definition

An energy community can be…

- A way of organising **collective citizen actions** to influence the energy system
- Entities that exercise **energy-related activities** (generation, distribution, supply, aggregation, consumption, sharing, storage of energy, provision of energy-related services, etc.)
- Non-commercial **market actors**
- Collective switching campaigns, collective investments in solar panels, the ownership of an energy supply company, a distribution network, etc.

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Collective Energy Initiatives
Definition

Energy communities are based on…

- Open and voluntary governance
- Ownership and control by citizens, local authorities and small businesses
- Social, environmental or local economic benefits rather than profit-making

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Collective Energy Initiatives
Differences

ENERGY COMMUNITIES

Two new definitions at the EU level

Renewable Energy Community (REC)		Citizen Energy Community (CEC)
All forms of renewable energy	⟷	Technology-neutral (only electricity)
Proximity of RE projects	⟷	No geographic limits
Individuals, local authorities and micro/small/medium enterprises	⟷	Any participant
Autonomous from individual members and traditional market actors	⟷	Undefined degree of autonomy
Effective control by individuals, local authorities and micro/small enterprises	⟷	Effective control includes medium-sized enterprises

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Collective Energy Initiatives
Differences

Energy Communities can have different legal forms:

Foundations

Partnerships

Limited liability companies

Energy cooperatives

Associations

Trusts

Non-profit organisations

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Collective Energy Initiatives
Energy cooperatives

ENERGY COOPERATIVES

A type of social and economic enterprise

A legal form that enables citizens to collectively own and manage energy-related projects and services

- Democratic governance (1 member – 1 vote)
- Citizens can consume and share energy from renewable sources
- People can invest by buying shares or financing projects
- Surpluses are reinvested to support its members and/or the community

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Collective Energy Initiatives
Energy cooperatives

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Source: International Co-operative Alliance: https://www.ica.coop

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Collective energy initiatives - video (1/2)

(a “refreshing" video about REScoops)

Source: REScoop The energy transition to energy democracy: https://www.youtube.com/watch?v=ZTmeNmWEupg

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Collective Energy Initiatives

How can they help fight energy poverty?

Accessibility

- **Economy**
  - Fair prices
- **Governance**
  - Fair decisions

Solidarity

- **Fair conditions**
  - Well-being rather than profit
- **Support**
  - Knowledge sharing

Sustainability

- **Social**
  - Integration and cohesion
- **Environmental benefits**
  - Less health risks

Local economy

- **From citizens, for citizens**
  - Benefits remain local
- **Financial autonomy**
  - Less external dependence

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Collective Energy Initiatives
How can they help fight energy poverty?

For example:

- **Sharing locally produced energy with vulnerable consumers**
  - More accessible energy prices
- **Collective purchase or ownership of goods and services**
  - Support for making investments with large upfront costs
  - Opportunity to participate in collective energy generation with no or low investments
- **Reinvesting in the community**
  - Round-up or similar mechanisms in energy bills to support vulnerable consumers
  - Accessible loans for investments within the community (e.g. microcredit)
- …and much more!

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Collective Energy Initiatives
How can they help fight energy poverty?

CASE STUDY 1

CASE STUDY	ENERGY SOLIDAIRE LES AMIS D'ENERCOORP	LOCATION France
PROBLEM DESCRIPTION	12M citizens in France suffer from energy poverty.	
SOLUTION	A non-profit association created a solidarity fund that raises money through micro-donations from the energy bills of consumers who are members of an energy cooperative. The resources support local social initiatives tackling fuel poverty by donating renewable energy from energy producers.	
IMPACT	So far Enercoop has: - 2500 clients, each donating around 36€ per year. - 90 000 € are annually collected, of which 50% are directly given to 6 associations that help citizens renovate their houses.	

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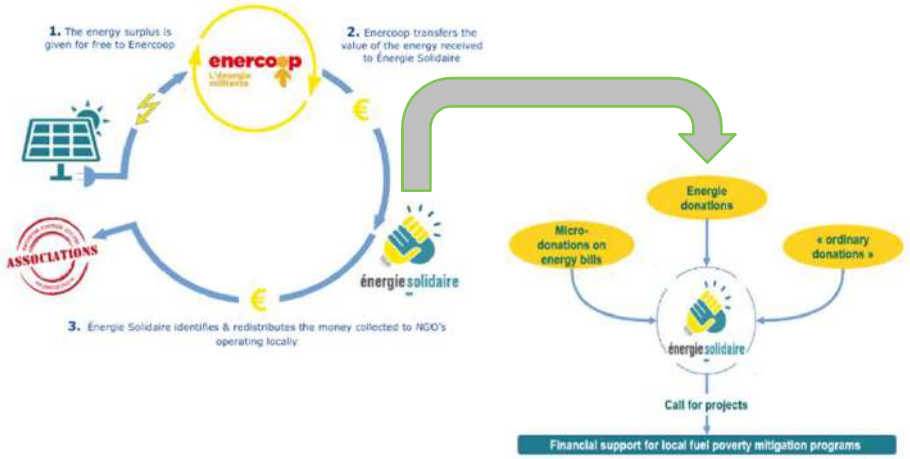
Collective Energy Initiatives
How can they help fight energy poverty?

CASE STUDY 1



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Collective Energy Initiatives
How to start

General guidelines to CREATE AN ENERGY COMMUNITY

1. **Get organized** → build up your group of people
2. **Define your goals** → which type of activity will be conducted?
3. **Choose your legal form** → energy cooperative?
4. **Look for support** → what kind of support, and from whom?
5. **Start your activity** → and tell the world about it!

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Collective Energy Initiatives
How to start

General guidelines to CREATE AN ENERGY COMMUNITY

1. Get organized → build up your group

- Gather motivated people → technical skills and knowledge are important, but motivation is key!
- Identify key leaders, or welcome potential ones
- Consider existing groups around you, the community might already be there! (and learn from them)
- Keep your team engaged through regular communication and activities

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Collective Energy Initiatives
How to start

General guidelines to CREATE AN ENERGY COMMUNITY

2. Define your goals → which type of activity will you conduct?

- Ask questions to yourselves (Who are you? What do you want to achieve? How are you going to do it?)
- Create your own narrative → Storytelling is key
- Define your main activities:
  - Energy efficiency and savings
  - Energy production
  - Energy management (sharing, storing, self-consumption…)
  - Energy supply, distribution, other services…
  - Education
  - Mobility
- Plan your process → Develop your strategy

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Collective Energy Initiatives
How to start

General guidelines to CREATE AN ENERGY COMMUNITY

3. Choose your legal form → energy cooperative?

- Having one is not mandatory, but most probably it will be helpful
- **Choose the legal form that best fulfills your needs** → In POWERPOOR, we think that energy cooperatives are the most appropriate ones. Some of their advantages are:

– Regional networks → Support and visibility
– Already existing rules/structures → You do not have to start from scratch
– Other cooperative initiatives → Can be a good inspiration, reference and support
– Social and economic perspective → A solid legal form to reach your goals

- **Define your structure**

– Internal rules
– Who will be the decision-makers?
– Who will be the investors?

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Collective Energy Initiatives
How to start

General guidelines to CREATE AN ENERGY COMMUNITY

4. Look for support → what kind of support do you need and from whom?

Support from:		Support in/as:
Local and regional administrations	⟷	Legal/fiscal procedures, legitimacy…
Other cooperatives	⟷	General/operational support
Companies and professionals	⟷	Service provision, technical support…
Associations and social movements	⟷	A broad reach, social legitimacy

Create a network around you → Reach the wider community

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Collective Energy Initiatives
How to start

General guidelines to CREATE AN ENERGY COMMUNITY

5. Start your activity → and tell the world about it!

- **Share your narrative** → Motivate others to join you or to engage in new projects
- Remember: maintaining an energy community is a **continuous process** which requires constant engagement**!**

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Collective Energy Initiatives - video (2/2)
A motivational video

"The Power of Community Energy"

Source: The Power of Community Energy! https://www.youtube.com/watch?v=ltyd8-haPjo

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Part IV- POWER FUND

What is it?

How to use it

POWER FUND is a Web based tool to help energy poor citizens identify and learn about collective innovative actions to tackle energy poverty.

To this end POWER-FUND integrates two main sections:

An Online marketplace for Collective Energy Initiatives

A open space on innovative financial instruments and community finance

Online marketplace for **Collective Energy Initiatives**

It provides users, i.e., individuals, including energy poor citizens, local and regional authorities, and communities / cooperatives, with four types of services:

Conceptualising Energy Communities: A brief introduction to Energy Communities, what they are, and what they can do for energy poverty.

Join a community: A list of energy communities / cooperatives per country, with information about their pricing and management policies, the services provided to energy poor citizens, and the process to join and become an active member;

Create a community: Guidelines on how an energy community can be established and operated by energy poor citizens and in close collaboration with local stakeholders, especially for the participating countries.

Operate a community: Tips and tools to help users in managing and operating their energy community, including tools for monitoring data on energy consumption / production, and evaluating the performance of a city/community/buildings, in terms of energy efficiency)

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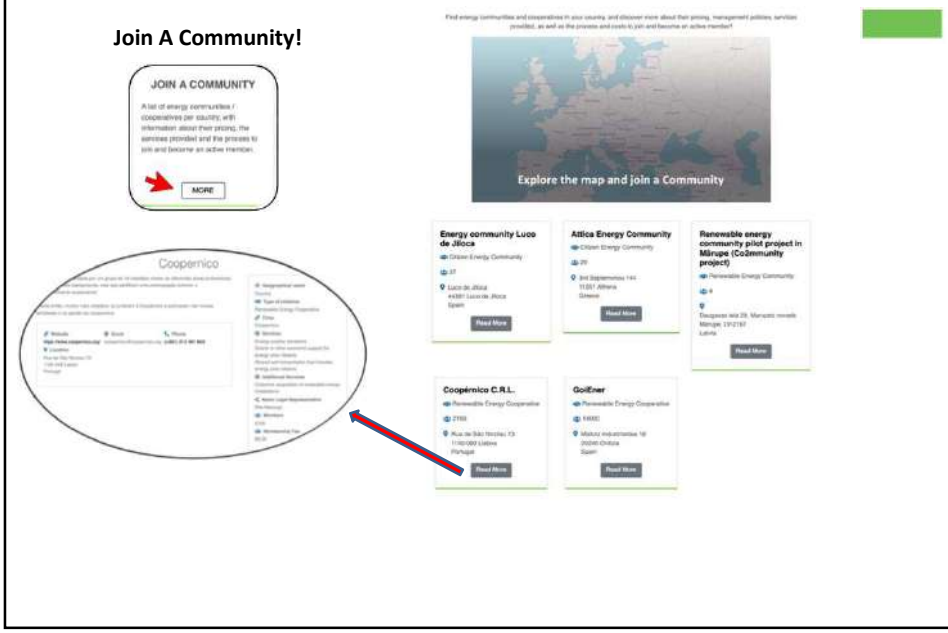
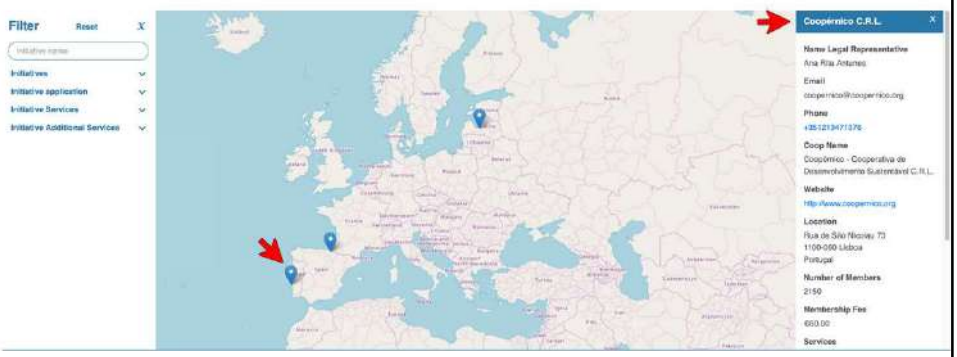
Conceptualising Energy Communities

Join A Community!



Find Your Community....



…..Or Register one.

Create A Community!

www.powerpoor.eu

Operating a community can be a complex task. To make it easier, here you find a list of tools and useful links that can help you operate and manage different aspects of your community:

- Monitoring and analysing the energy use (consumption and production)
- Energy billing
- Energy market
- Participation and decision making

Pylon

A neutral energy data facilitator for the provision of added-value services to every-day consumers and other stakeholders.

https://pylon-network.org/

HomeRule

Compile project's tool to help operate energy communities, with a focus on managing one building/home energy needs.

https://www.compile-project.eu/products/homerule/

GridRule

Compile project's tool to coordinate individual community members and optimize the whole community energy needs.

https://www.compile-project.eu/products/gridrule/

Demokratian

An online voting platform for horizontal decision-making

https://www.demokratian.org/

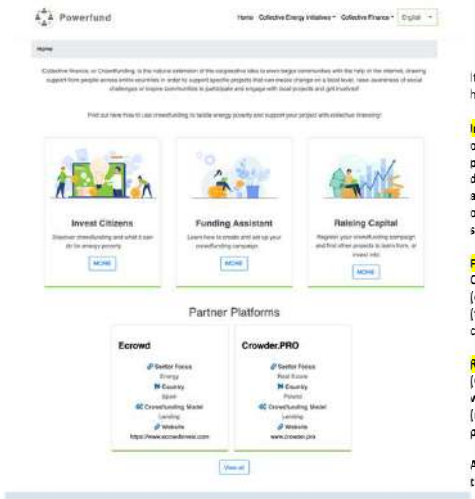
EnergyID

A public platform where citizens can register and insert and monitor their energy consumption and verify if they are consuming less or more than a similar citizen in their country.

https://www.energyid.eu

Operate A Community!

www.powerpoor.eu



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Rising Capital: A repository of relevant Investment opportunities (Crowdfunding campaigns) for citizens to examine and/or invest in, with all relevant info such as technology deployed, participation type (reward, lending and equity-based), location, and link to the hosting platform.

Additionally, a list of trusted crowdfunding platform is included for those who whish to begin planning their own campaign.

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Register your Crowdfunding Platform

www.powerpoor.eu

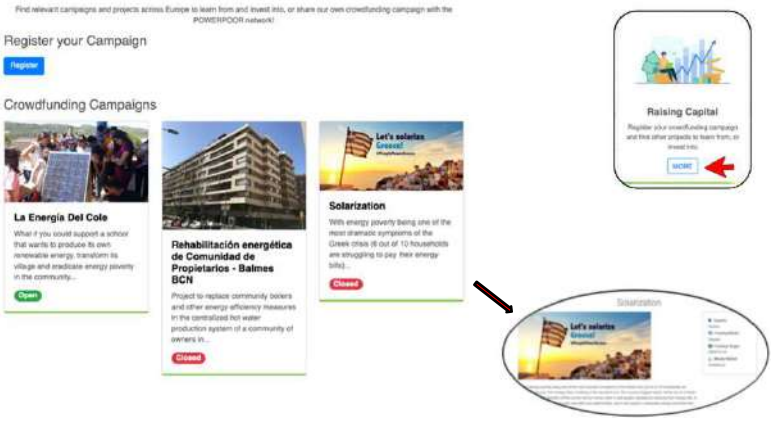
Invest Citizens

www.powerpoor.eu

Funding Assistant

www.powerpoor.eu

Raising Capital



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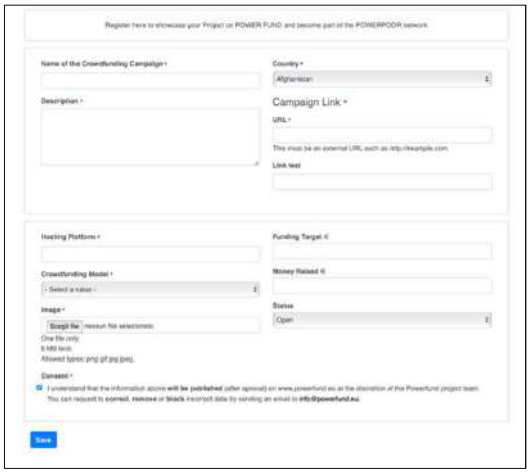
Register Your Crowdfunding Campaign



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Check it for yourself!

http://powerfund.powerpoor.epu.ntua.gr

www.powerpoor.eu

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Module Summary

Key Takeaways

References and Further Reading

POWERPOOR

Module Key Takeaways

- Citizen participation is the backbone of collective energy innovative actions
- Both Crowdfunding and Collective Energy Initiatives are powerful tools to improve energy-related conditions and accessibility
- They can be a good alternative to individual or traditional financing methods, and provide many benefits besides purely financial resources

References and further reading

- POWERPOOR Online Library: http://powerpoor.eu/library
- Powerfund Tool: https://www.powerfund.eu/
- Energy Poverty Observatory: https://www.energypoverty.eu
- Successful Crowdfunding in 15 Steps by ECN: https://www.youtube.com/playlist?list=PLKS4qNWhGkZEQKKDlGtNlg26aWonGC_MK
- "Community Energy: A practical guide to reclaiming power" by Friends of the Earth Europe, REScoop and Energy Cities. October 2020. Available here: https://www.rescoop.eu/toolbox/community-energy-a-practical-guide-to-reclaiming-power

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Thank you for your attention!

Name of Presenter(s)
Name of Organisation, Country
e-mail -

This project has received funding from the European Union's HORIZON 2020 research and innovation programme under grant agreement No 890437

POWERPOOR

Empowering Energy Poor Citizens through Energy Cooperative Initiatives

The POWER FUND tool

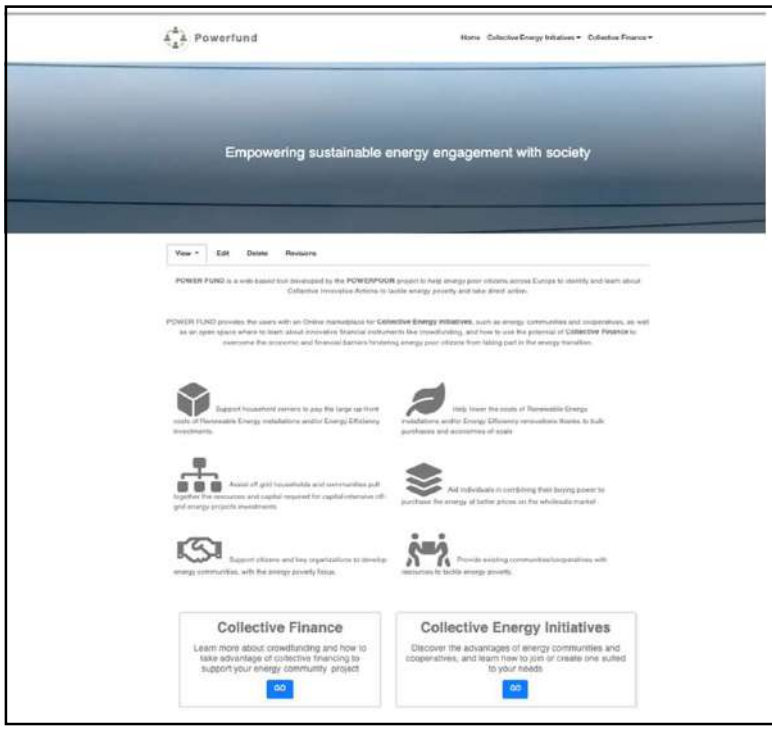
EUROCROWD, COOPERNICO, GOINER

This project has received funding from the European Union's HORIZON 2020 research and innovation programme under grant agreement No 890437

POWER FUND

What is it?

How to use it



POWER FUND is a Web based tool to help energy poor citizens identify and learn about collective innovative actions to tackle energy poverty.

To this end POWER-FUND integrates two main sections:

An Online marketplace for Collective Energy Initiatives

A open space on Innovative financial instruments and community finance

Online marketplace for Collective Energy Initiatives

It provides users, i.e., individuals, including energy poor citizens, local and regional authorities, and communities / cooperatives, with three types of services:

Join a community: A list of energy communities / cooperatives per country, with information about their pricing and management policies, the services provided to energy poor citizens, and the process to join and become an active member;

Create a community: Guidelines on how an energy community can be established and operate by energy poor citizens and in close collaboration with local stakeholders, especially for the participating countries.

Operate a community: Tips and tools to help users in managing and operating their energy community, including tools for monitoring data on energy consumption / production, and evaluating the performance of a city/community/buildings, in terms of energy efficiency)

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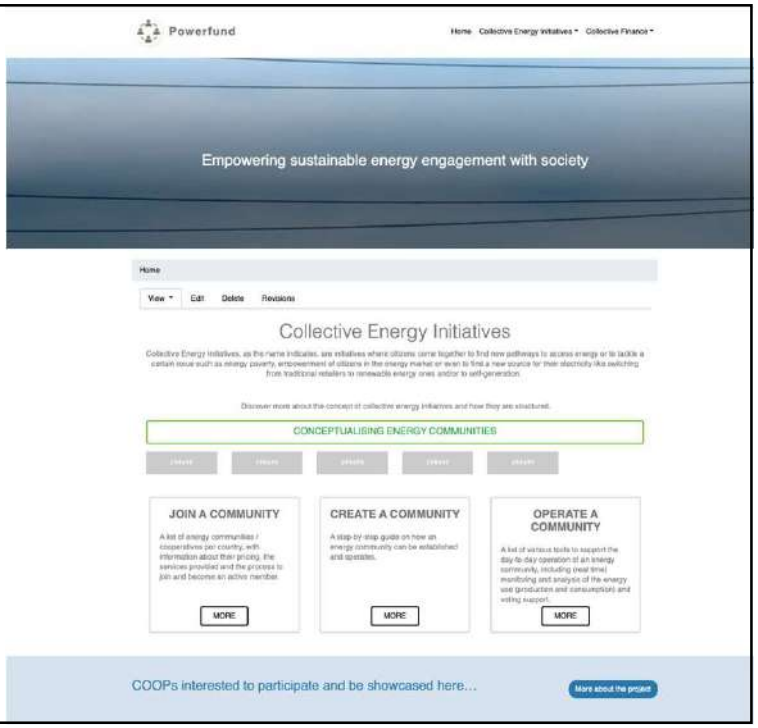
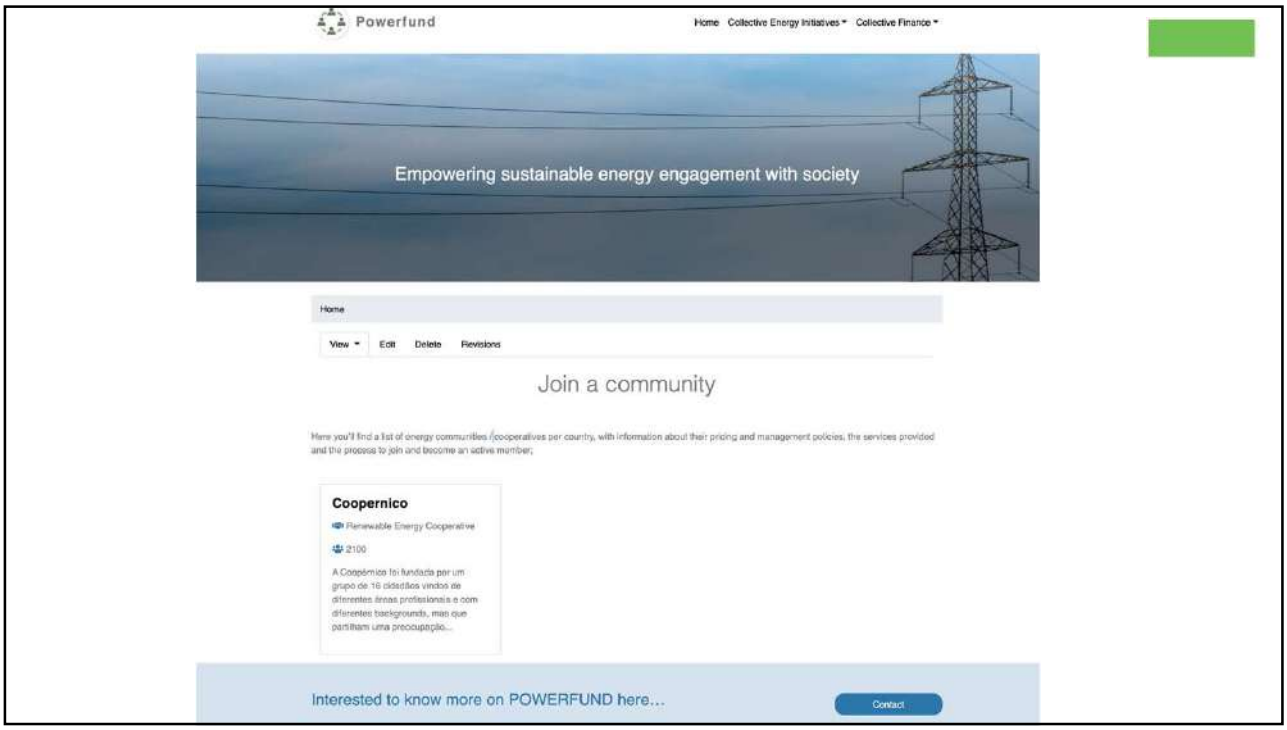
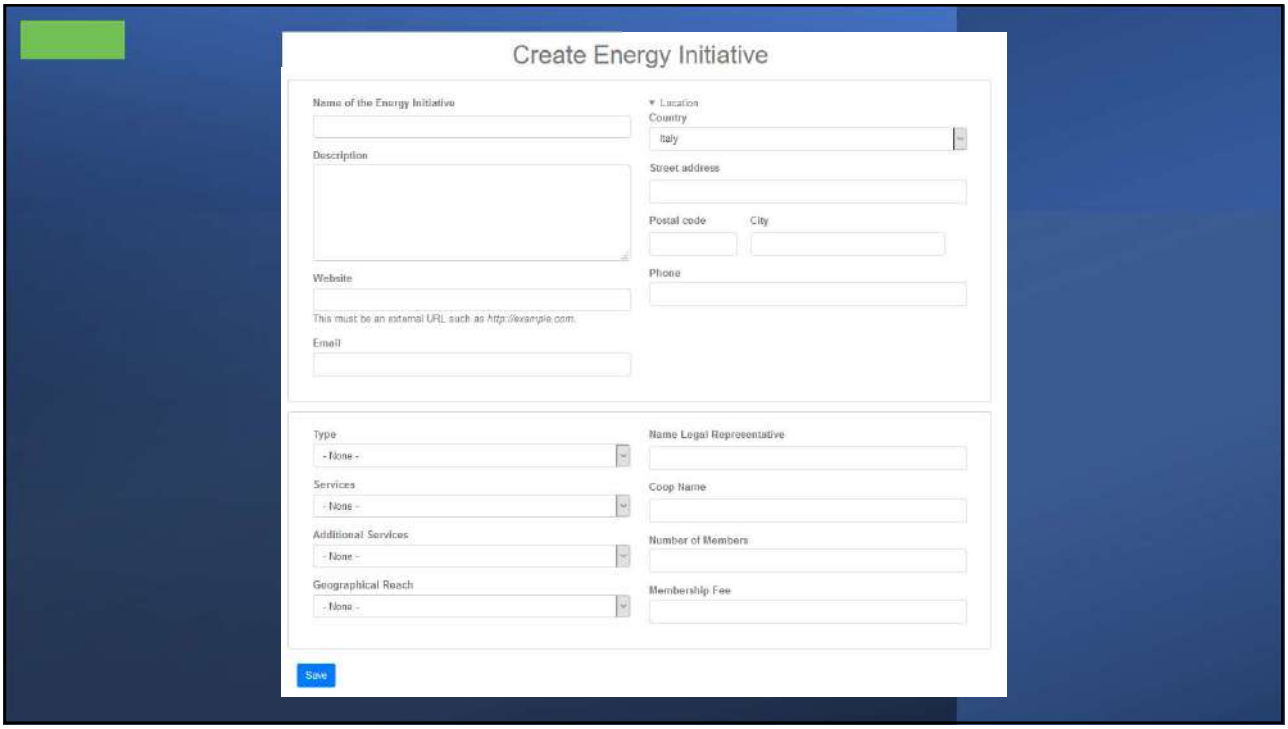
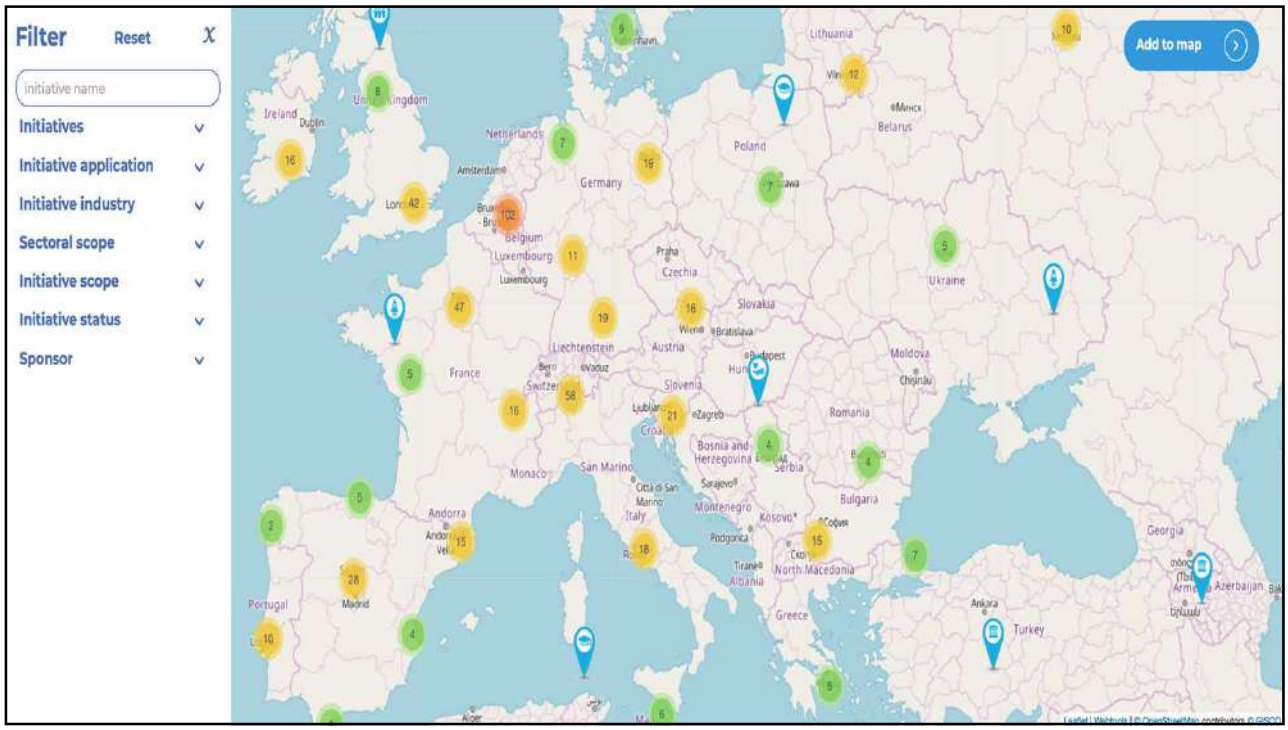
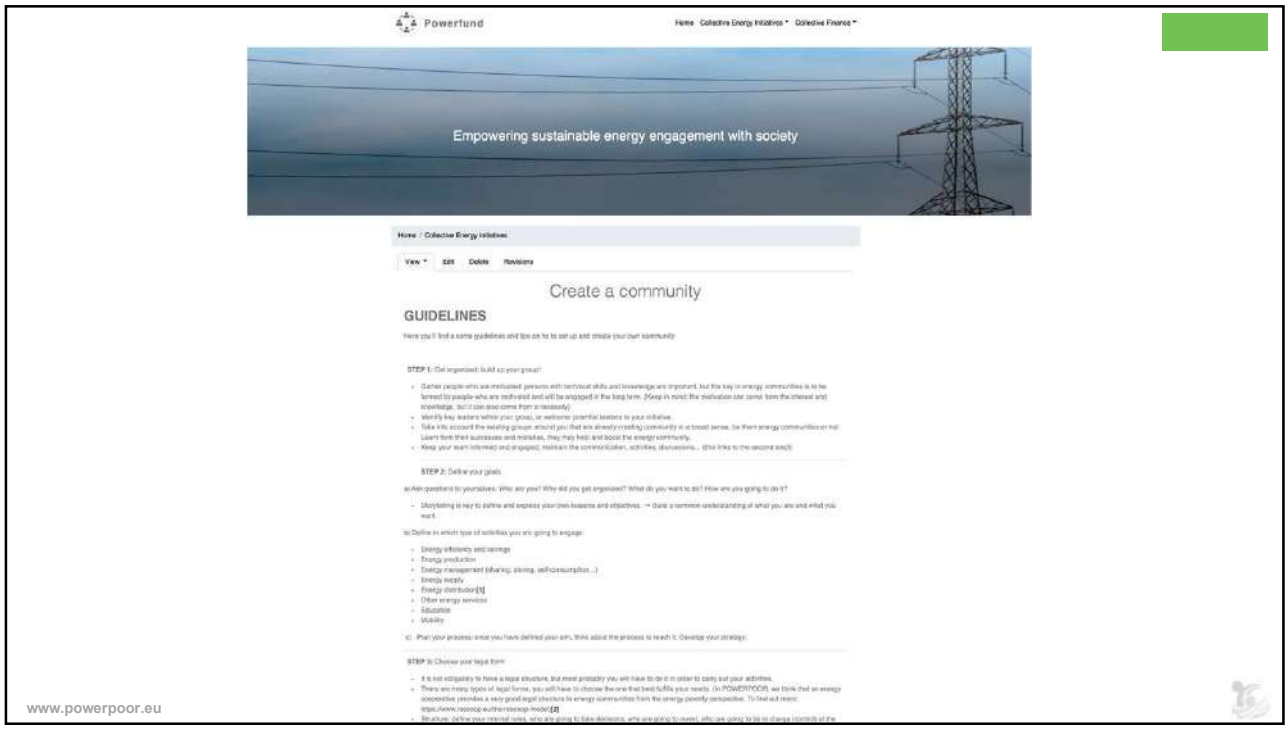
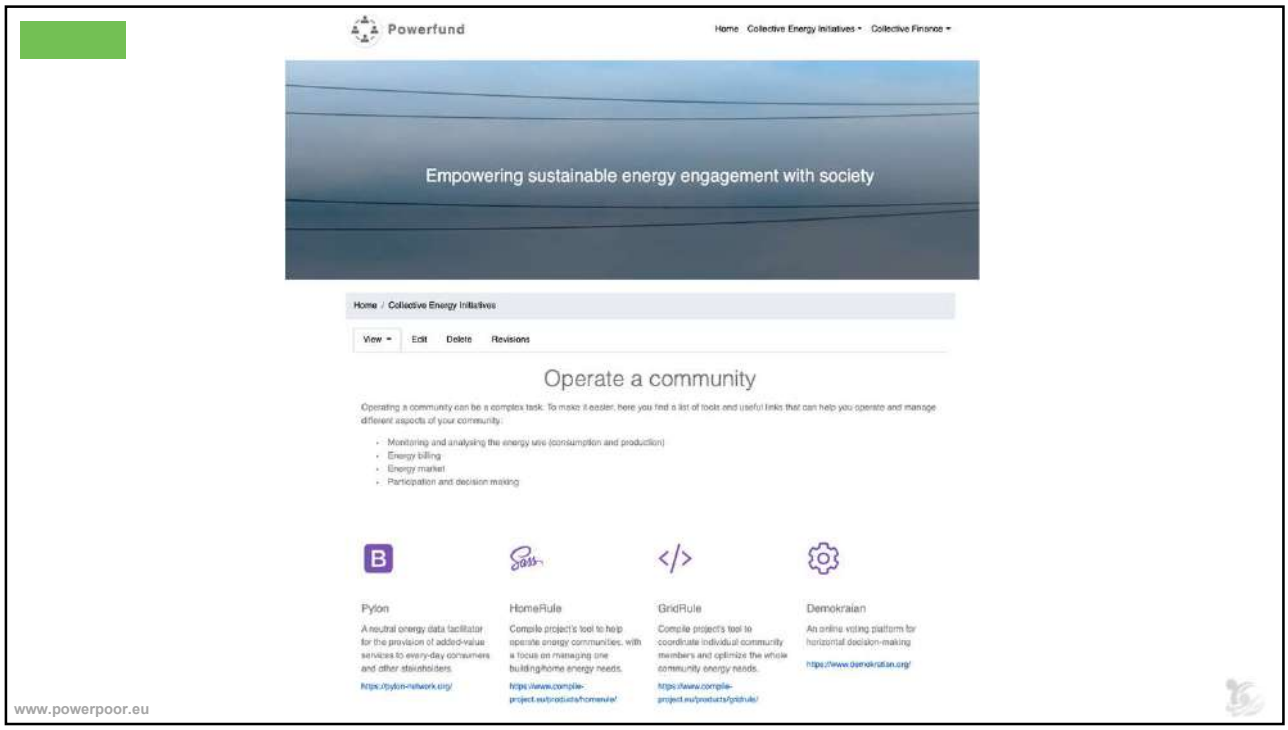


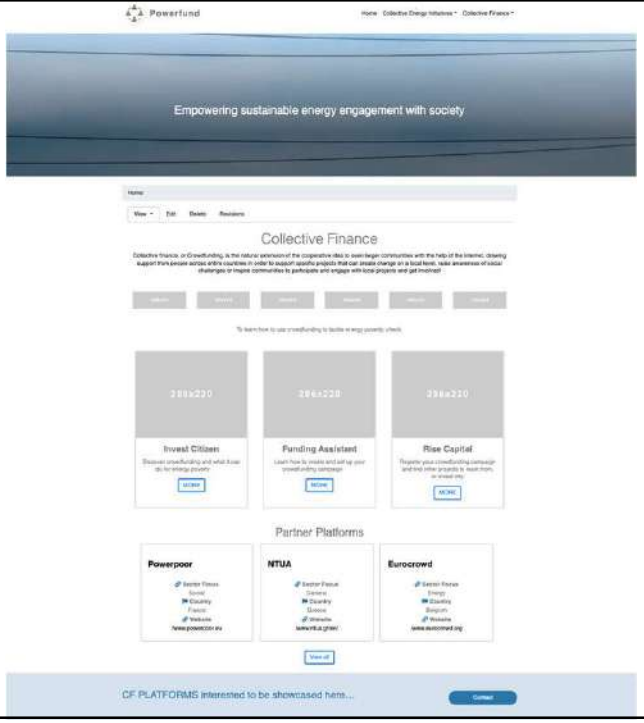

Powerfund
Home
Collective Energy Initiatives
Collective Finance
Empowering sustainable energy engagement with society
Home
View
Edit
Delete
Revisions
Join a community
Here you'll find a list of energy communities /cooperatives per country, with information about their pricing and management policies, the services provided and the process to join and become an active member;
Coopernico
Renewable Energy Cooperative
2100
A Coopérnico foi fundada por um grupo de 16 cidadãos vindos de diferentes áreas profissionais e com diferentes backgrounds, mas que partilham uma preocupação...
Interested to know more on POWERFUND here...
Contact


Create Energy Initiative
Name of the Energy Initiative
Description
Website
This must be an external URL such as http://example.com.
Email
Location
Country
Italy
Street address
Postal code
City
Phone
Type
- None -
Services
- None -
Additional Services
- None -
Geographical Reach
- None -
Name Legal Representative
Coop Name
Number of Members
Membership Fee
Save


Filter
Reset
initiative name
Initiatives
Initiative application
Initiative industry
Sectoral scope
Initiative scope
Initiative status
Sponsor
Add to map
Ireland
Dublin
Netherlands
Amsterdam
Germany
Belgium
Luxembourg
Czechia
Prgha
Poland
Belarus
Lithuania
Ukraine
Slovakia
Austria
Liechtenstein
France
Switzerland
Slovenia
Hungary
Moldova
Romania
Bosnia and Herzegovina
Serbia
Bulgaria
Monaco
San Marino
Italy
Montenegro
Kosovo
Albania
North Macedonia
Greece
Turkey
Georgia
Azerbaijan
Portugal
Madrid
Andorra


Powerfund
Home
Collective Energy Initiatives
Collective Finance
Empowering sustainable energy engagement with society
Create a community
GUIDELINES
www.powerpoor.eu





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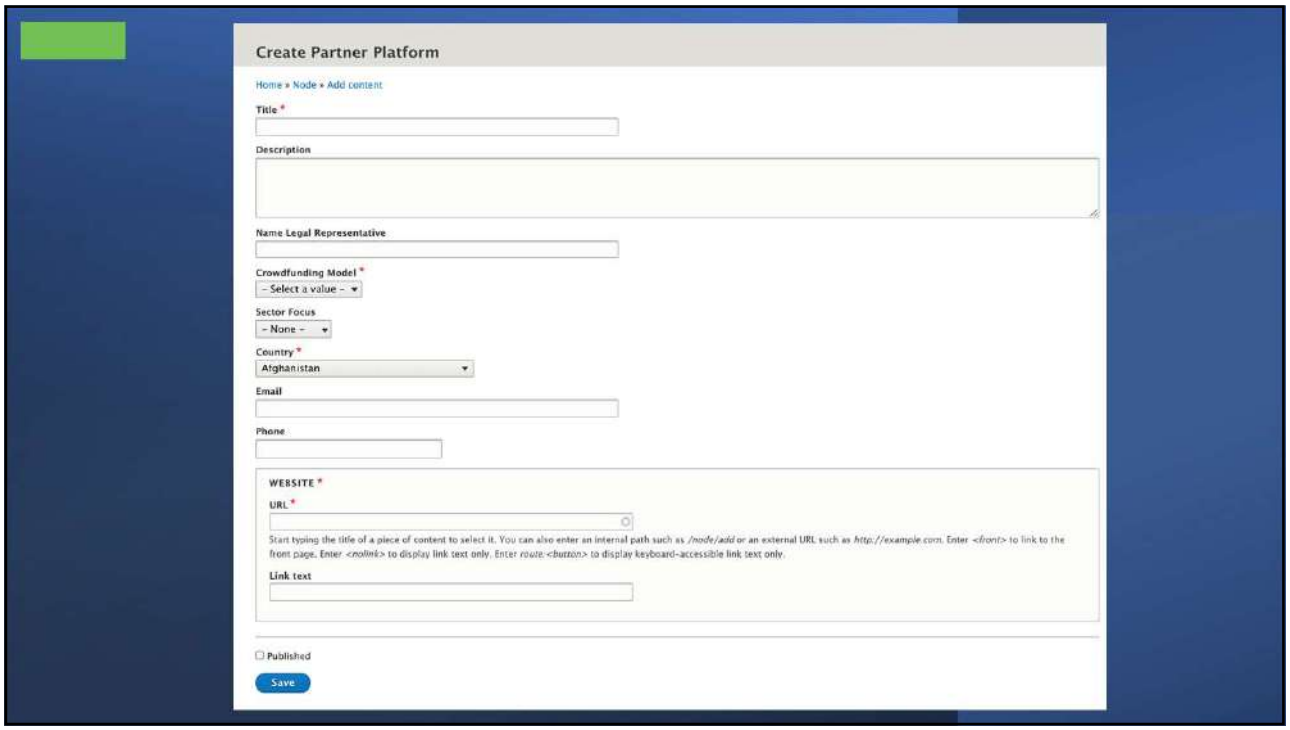
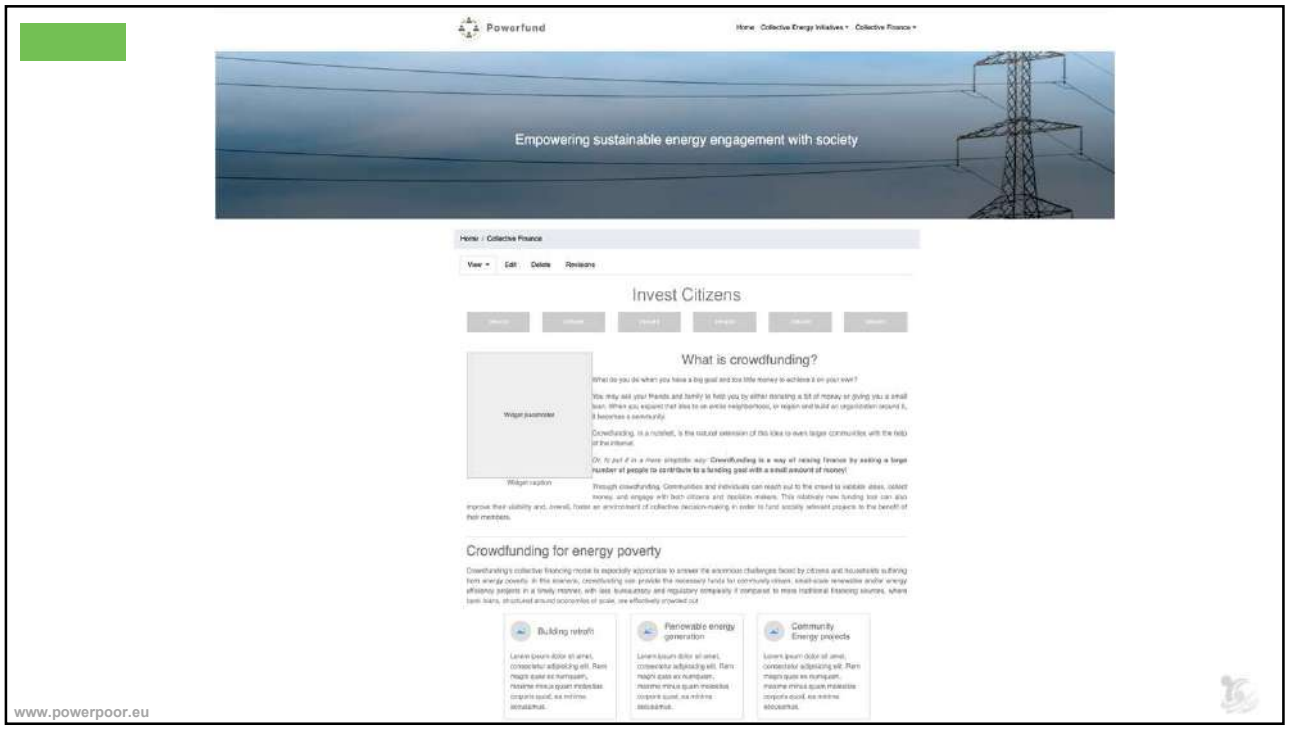

Create Partner Platform
Home » Node » Add content
Title *
Description
Name Legal Representative
Crowdfunding Model *
- Select a value -
Sector Focus
- None -
Country *
Afghanistan
Email
Phone
WEBSITE *
URL *
Start typing the title of a piece of content to select it. You can also enter an internal path such as /node/add or an external URL such as http://example.com. Enter <front> to link to the front page. Enter <nolink> to display link text only. Enter route:<button> to display keyboard-accessible link text only.
Link text
Published
Save


Powerfund
Empowering sustainable energy engagement with society
Invest Citizens
What is crowdfunding?
Crowdfunding for energy poverty
Building retrofit
Renewable energy generation
Community Energy projects
www.powerpoor.eu

Home / Collective Finance

View Edit Delete Revisions

Funding Assistant

0. Setting the stage

To successfully prepare a crowdfunding campaign there are a number of steps that must be considered, from setting the objective up to the marketing and communication strategy, each one requiring careful planning and attention to details.

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Set your funding target: To set your funding target you have to begin with your financial plan. To define the right amount you would like to raise with your campaign, you have to specify all costs and outlays of the project and account for the platform's fees and other campaign related costs

Identify the fitting type: It is important that your project's characteristics match the crowdfunding type that you will choose. Each type of crowdfunding has its own funding limits, so after setting your financial needs you can move on to identify the types of crowdfunding that best suit your project. Be also aware of the risk regarding crowdfunding campaigns set on all-or-nothing terms. Keeping in mind all these factors, you have to choose the most suitable type of crowdfunding for your project or you can combine various types using the mixed model.

Set out your value proposition: To set out your value proposition you have to find out your target group's preferences and create attractive rewards and perks to capture your funders' attention. It is also important to prepare a convincing story where you explain your backers why you are running the campaign, what's the project about and why and how they should support you. It is also very effective to present yourself, the organization and the current status of the project.

Communication and marketing: Before you launch the campaign, you have to conduct a thorough research to find benchmarks for your project, to try to relate your campaign to relevant news, topics and events and to find the best channels and multipliers for your communication actions. You also have to prepare usable information for your funders and followers not only in a digital way, but as well, depending on the situation, via traditional marketing media that could compliment your digital efforts. The more you keep your community informed, the better chances you have to gain support. Finally, focus on your inner circle and existing networks first, then try to reach new communities by leveraging influencers and various

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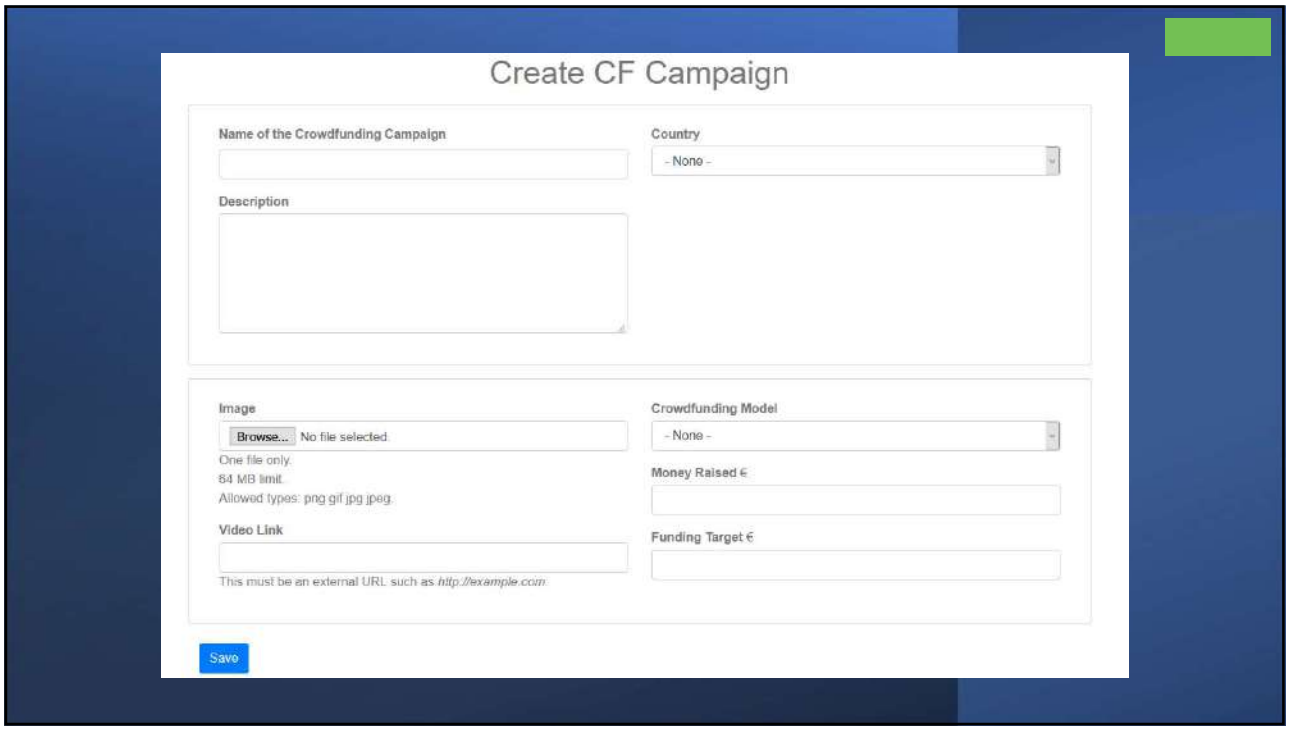
Rising capital

Solarization

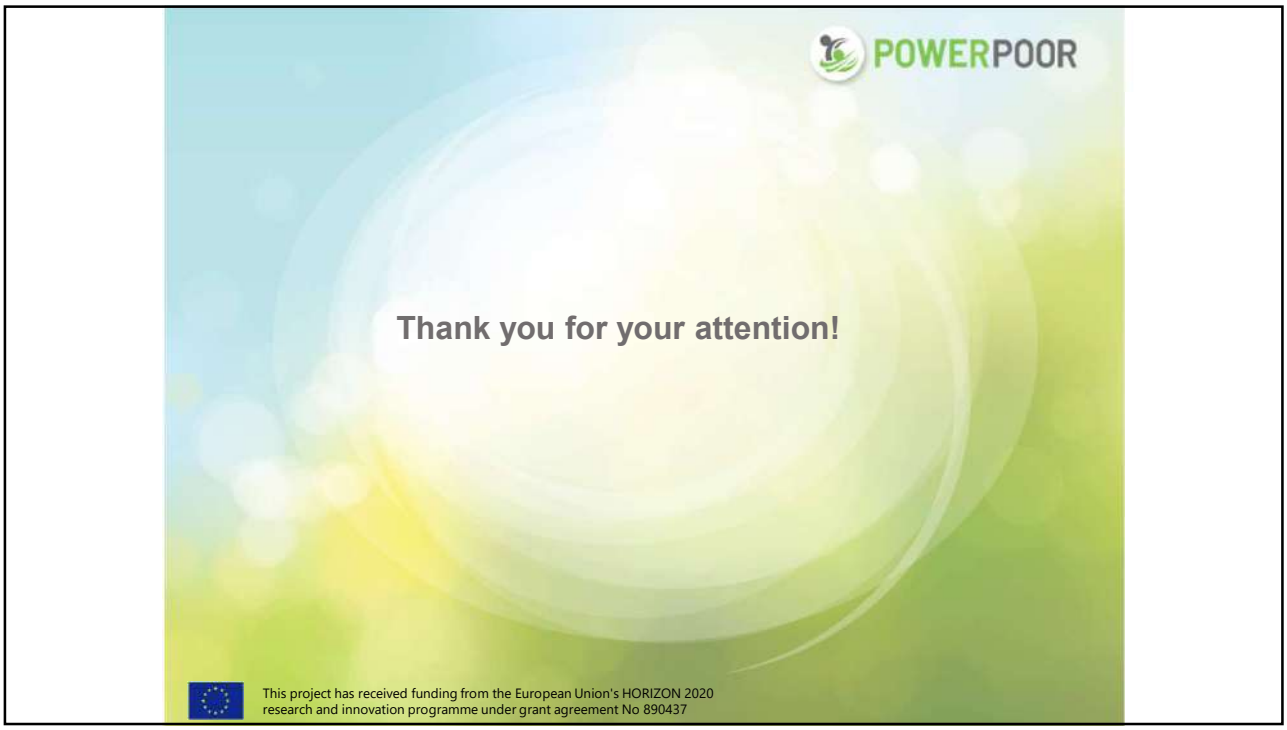
Country
Greece
Funding Model
Reward
Funding Target
€
Money Raised
€

With energy poverty being one of the most dramatic symptoms of the Greek crisis (6 out of 10 households are struggling to pay their energy bills), investing in this abundant sun, the country's biggest asset, will be key to a Greek recovery. The solarization of the country will put money back in real people's pockets by reducing their energy bills, it will put people back to work with new skills and opportunities, and it will support a renewable energy revolution that is sweeping the globe.



Check it for yourself!

http://powerfund.powerpoor.epu.ntua.gr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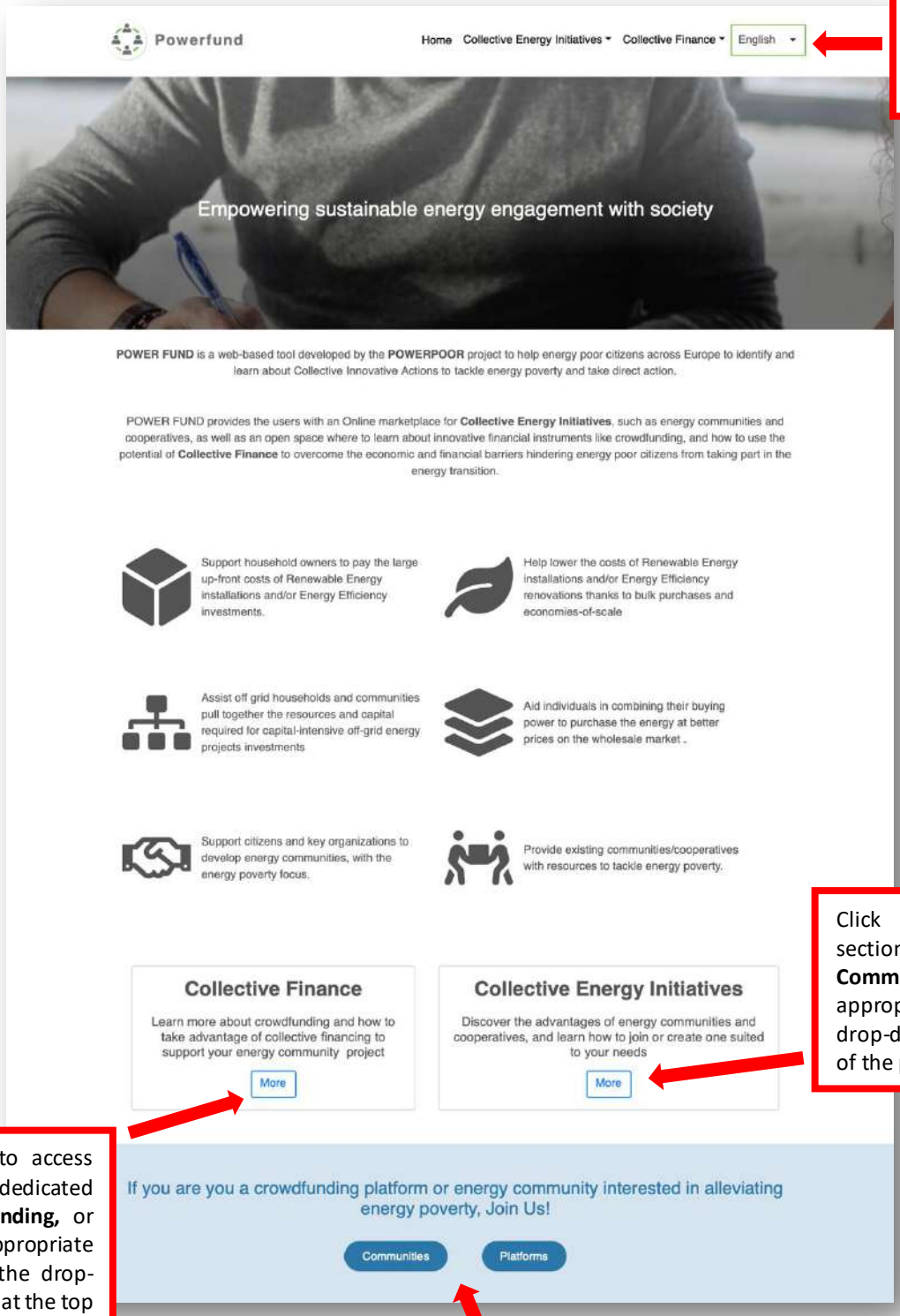
research and innovation programme under grant agreement No 890437

POWER FUND



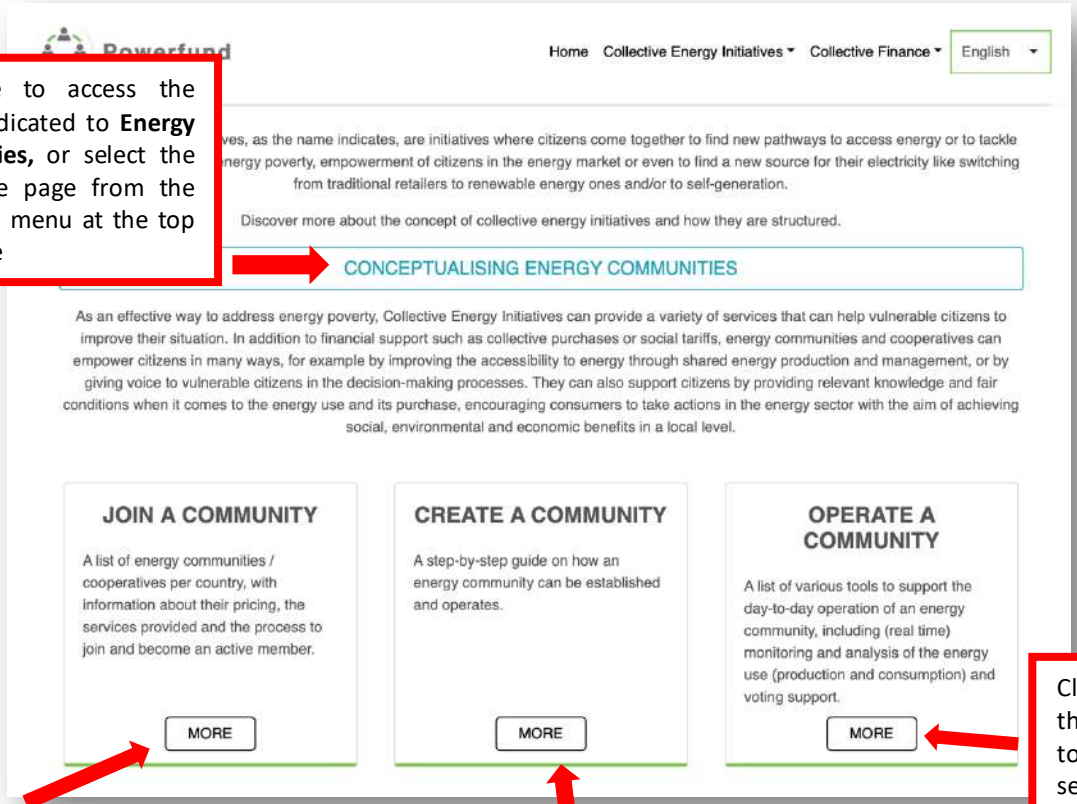
Select your language from the drop-down menu

Click here to access the section dedicated to **Energy Communities,** or select the appropriate page from the drop-down menu at the top of the page

Click here to access the section dedicated to **Crowdfunding,** or select the appropriate page from the drop-down menu at the top of the page

Select one of the two option to access the registration forms to add a **Crowdfunding Platform** or an **Energy Community** to Power Fund

Home / Collective Energy Initiatives



Click here to access the section dedicated to **Energy Communities,** or select the appropriate page from the drop-down menu at the top of the page

Click here to access the section dedicated to **Crowdfunding,** or select the appropriate page from the drop-down menu at the top of the page

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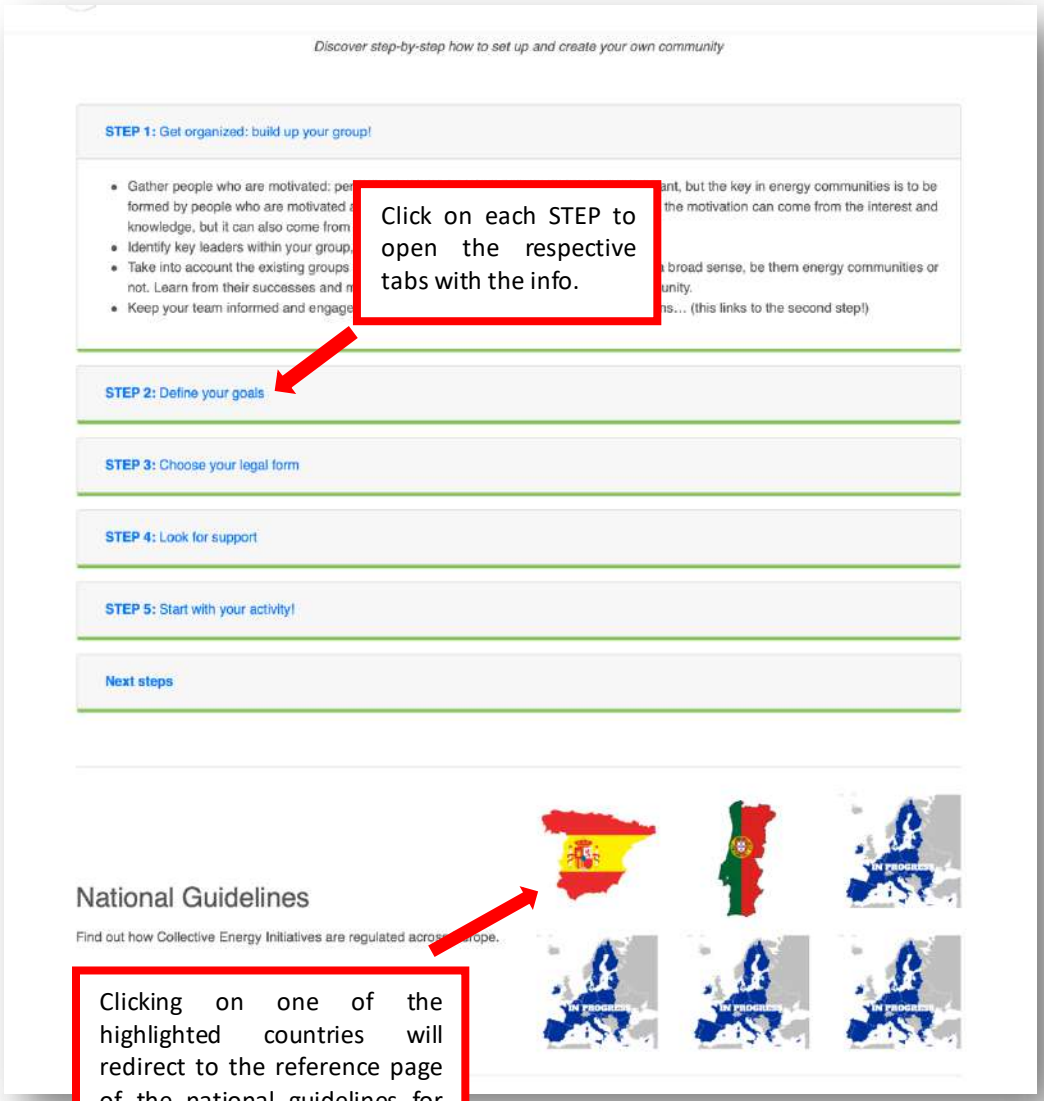
Home / Collective Energy Initiatives / Create a Community



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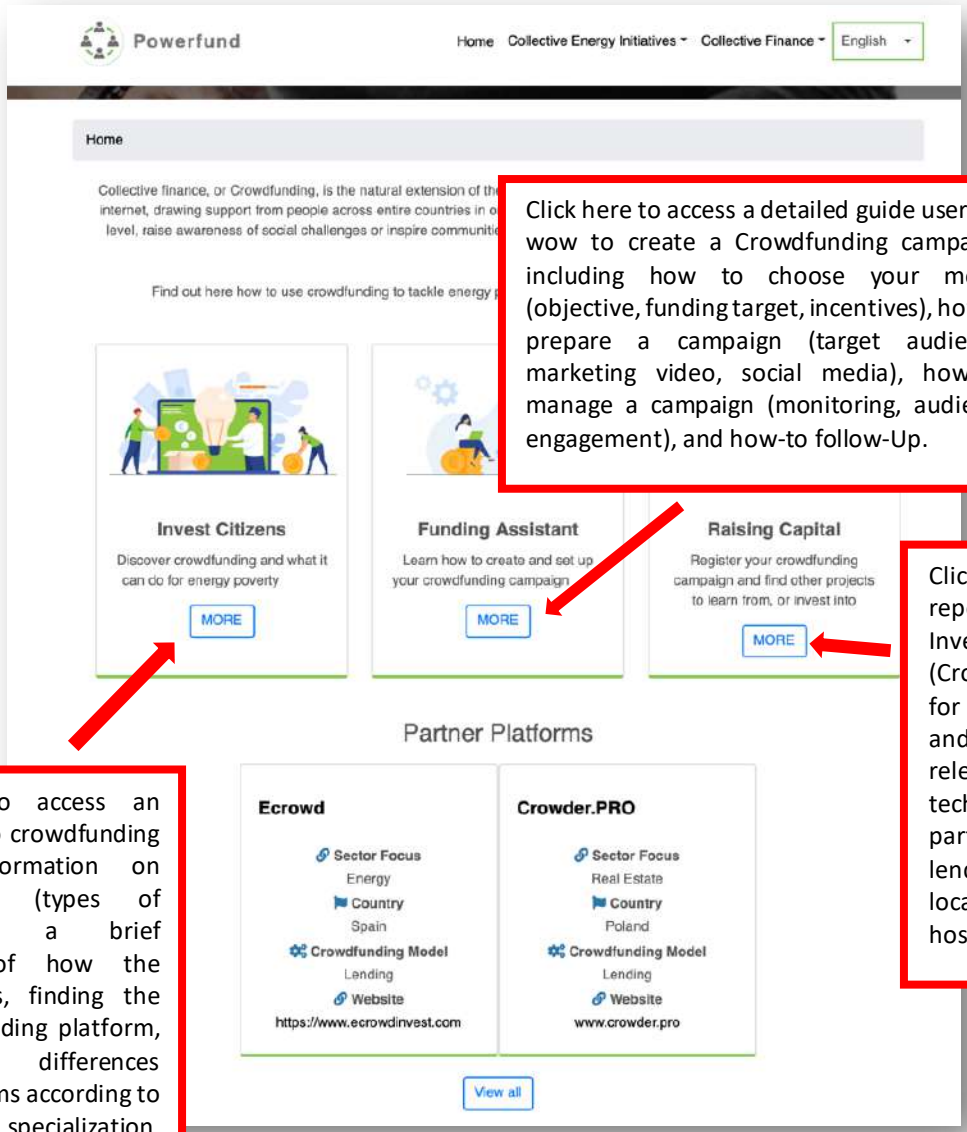

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Learn how to set up and create your own crowdfunding campaign!

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Once the groundwork is done, the time has come to put your campaign online. You may set up your own campaign site with DIY ("do it yourself") crowdfunding and payment tools or you can register on an existing platform. The opted-for type of crowdfunding determines which selection of platforms may suit your needs best. Just remember:

Click on each STEP to open the respective tabs with the info.

1. How to engage your network and go beyond

2. How to create compelling incentives for your backers

3. How to set your crowdfunding campaign's goal

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Empowering Energy Poor Citizens through Energy Cooperative Initiatives

MODULE 4
Planning Energy Poverty Actions on the Local Level

NTUA, ICLEI

This project has received funding from the European Union's HORIZON 2020 research and innovation programme under grant agreement No 890437

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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
  - Part IV – Energy Poverty Guidebook for Energy Planning
- Module summary
  - Key takeaways
  - Further reading

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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

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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 Convenant 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

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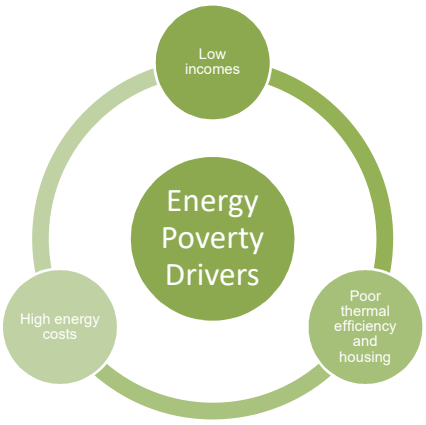
Challenges related to energy poverty in cities

Main drivers of energy poverty



These interrelations can be identified mainly in cities and urban settings

(1) Energy Poverty Handbook. 2016.

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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.

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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)

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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

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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.*

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Tackling energy poverty in SECAPs
The EU Covenant of Mayors

Covenant of Mayors for Climate & Energy EUROPE

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

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Tackling energy poverty in SECAPs
The EU Covenant of Mayors – an ever-growing community

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

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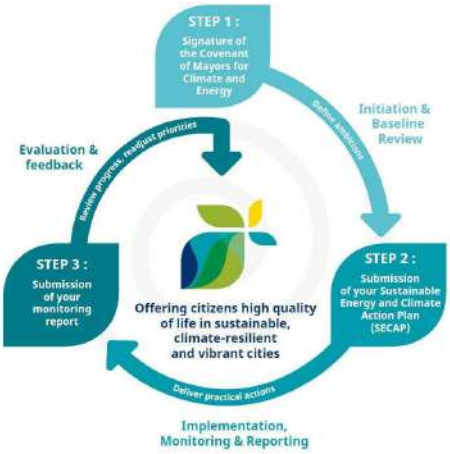
Tackling energy poverty in SECAPs

The Covenant of Mayors' step-by-step guide



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Covenant of Mayors and the Energy Poverty Pillar

Covenant of Mayors for Climate & Energy EUROPE

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

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Tackling energy poverty in SECAPs
Energy Poverty in the SECAP

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

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

- Design a strategy to tackle the issue and mainstream energy poverty into mitigation and adaptation measures
- Indicate the vulnerable groups targeted in the actions
- ***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

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Tackling energy poverty in SECAPs
Designing Energy Poverty Policies in Cities

STEP 1: Shortlist Measures
- Area focus
- Financial resources

STEP 2: Explore Measures
- Target groups
- Stakeholders

STEP 3: Define Measure
- Implementation responsibilities
- Funding options

High Cost
- Investment assistance
- Energy audits

Low Cost
- Information desk
- Information campaign

Target Group Options
- Social or private housing
- Vulnerable consumers
- Specific energy types

Key Stakeholders
- Internal stakeholders
- External stakeholders

- Local/regional governments
- National government
- European Union
- Businesses
- Energy suppliers
- Network operators
- NGOs

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

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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

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Integration of Energy Poverty in the SECAP template

The integration of Energy Poverty in the SECAP template is defined in 4 elements:

Reduction goal	Assessment tool	List of indicators	Actions

A political commitment built on the CoM EU commitment text...

Energy Poverty		
Goal	Target year	Base year
Tackle energy poverty to ensure a just transition by [select target year]	[Drop-Down]	[Drop-Down]

...supported by the possibility to choose **monitoring indicators** for quantitative targets

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List of indicators (a flexible approach!)

- A list of **54 indicators** divided in six categories:

- Climate (4 indicators)
- Socio economic (19 indicators)
- Facilities/housing (20 indicators)
- Mobility (5 indicators)
- Policy and Regulatory Framework (5 indicators)
- Participation/awareness raising (1 indicator)

These indicators offer options to define, quantify and work with energy poverty topics at the local level, thanks to the variety and diversity of the indicators, municipalities can choose the most tailored indicators to their context and possibilities

List of indicators

ANNEX - Indicators for Energy Poverty

Area	Priority level	Related indicators	Unit	Description
Climate	Monitoring indicator	Frequency of heat waves	Average per month/year	Frequency of heat waves per month in a year
	Monitoring indicator	Frequency of cold waves	Average per month/year	Frequency of cold waves per month in a year
	Monitoring indicator	Number of heating degree days per year	Number of HDD and CDD /year	Heating degree day is a measurement designed to quantify the demand for energy needed to heat a building, it is based on the outside temperature where heating is needed
	Monitoring indicator	Number of cooling degree days per year	Number of HDD and CDD /year	Cooling degree day is a measurement designed to quantify the demand for energy needed to cool a building, it is based on the outside temperature where cooling is needed
Socio-economic	Monitoring indicator	Percentage of population or households spending up to XX % their income on energy services	(%)	Share of population / households spending more than an specific percentage of their income on energy services putting them in an situation of energy poverty
	Monitoring indicator	Vulnerable households	(%)	**The here provided description is only an example, municipalities can write here their own description of vulnerable households / population** Households with lonely parents, parents with more than 3 childrens, families with low incomes, households recieving social support, families with low level of education, households out total number of households
	Monitoring indicator	Arrears on utility bills	(%)	Share of (sub-) population having arrears on utility bills, based on question "In the last twelve months, has the household been in arrears, i.e. has been unable to pay on time due to financial difficulties, for utility bills (heating, electricity, gas, water, etc.) for the main dwelling?"
	Related indicator	Average price of electricity	(€)	Average price in (€) of the consumned electricity kwh in the municipal households
	Related indicator	Average price of gas	(€)	Average price in (€) of the consumned gas kwh in the municipal households
	Related indicator	Energy related expenditure / local GDP	(%)	Relationship between the yearly energy cost the households and the local GDP, percentual average of the local GDP destinated to the energy
	Monitoring indicator	High share of energy expenditure in income (2M)	(%)	The 2M indicator presents the proportion of households whose share of energy expenditure in income is more than twice the national median share. Note: where income distributions are more equal, variance in energy expenditure translates to higher 2M shares. High variance in energy/income shares can occur due to structural differences in energy expenditure between household groups, as well as in situations where energy is often, but not exclusively, included in rent
	Related indicator	Citizens under poverty threshold / number of citizens	(%)	Percentage of the local population suffering from poverty, persons and families under the line of incomes considering the family size
	Related indicator	At-risk-of-poverty rate	(%)	People at risk of poverty or social exclusion (% of population). The at-risk-of-poverty rate is the share of people with an equivalised disposable income (after social transfer) below the at-risk-of-poverty threshold, which is set at 60 % of the national median equivalised disposable income after social transfers.

Assessment and monitoring tool

Using the **monitoring indicators** municipalities can track the development of specific energy poverty related aspects

The **monitoring indicators** can be used as local targets to monitor the reduction of energy poverty at the local level

A **flexible approach**: municipalities can decide with which indicators to work

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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.

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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

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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*

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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.

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PART III: Climate and Social Innovation Tools.

How can social and climate systems innovation alleviate energy poverty?

Concrete tools for system thinking

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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

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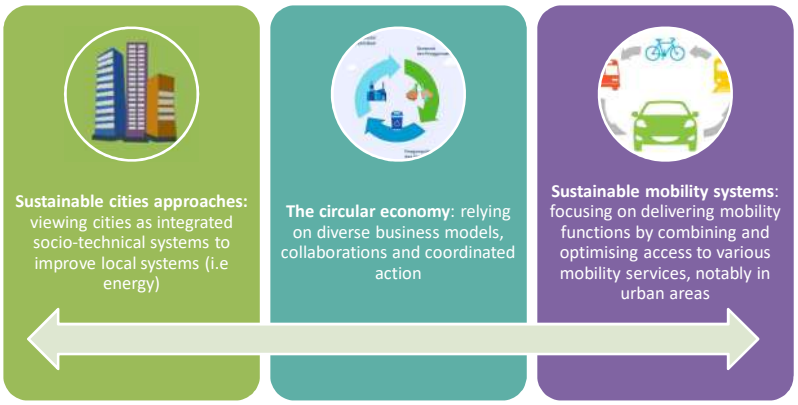
Climate Systems Innovation
Examples and concept application areas



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

Source: Climate KIC. 2017. Climate Innovation Insights

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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**".*

Source: SMARTEES Project. 2017. https://local-social-innovation.eu

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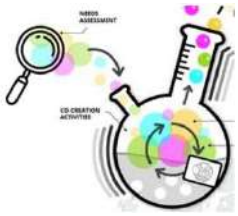
Introducing the Living Labs Approach

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?



Source: Adapted from PROSEU.eu

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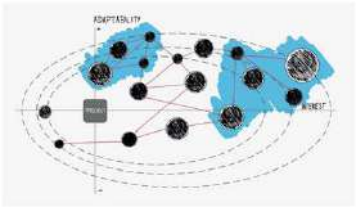
The right tool for the job: **Exploration Stage**

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).

Source: Climate KIC 2017.

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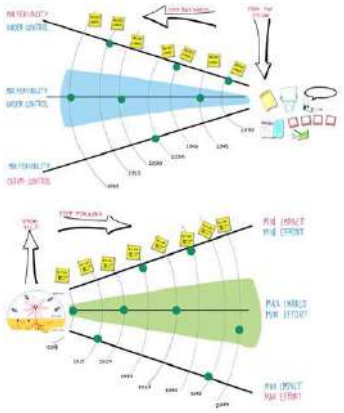
The right tool for the job: **Exploration Stage**

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.



#ThinkInSystems

Source: Climate KIC 2017

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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	Inability to afford
• Availability of social housing • Availability of public transport • Energy / gas / heating grid coverage • Energy poverty share in municipal budget allocation. • Others..	• High share of energy costs • Low available income • Existing regional/national mechanisms to support energy poor households • Income and employment level • Others...

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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 Metsovo Municipality
DESCRIPTION	The first primary survey that examined the energy poverty problem in the area of Metsovo took place in 2015 and showed that 88% of households in the Municipality were energy poor. 21% of households reported an inadequately heated home, 14% of them reported arrears in energy bills and 13% reported damp-mould problems. The low income-high cost problem is attributed to the harsh climatic conditions, the considerable rise of fuel prices between 2009 and 2014 and, the shrinkage of the average annual income by 29.10%, at the same period.	
STAKEHOLDERS	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 Major 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.	
IMPACT	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.	

Source: STEP-IN Project. 2019

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Case Study

Social Innovation Tools for the energy transition.

CASE STUDY	Aberdeen Heat Network Source: SMARTEES Project	SCOPE/ LOCATION Aberdeen City, UK
DESCRIPTION	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.	
STAKEHOLDERS	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.	
IMPACT	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 CO_2emissions 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.	

Source: SMARTEES.eu

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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 Greater Manchester
DESCRIPTION	The Living Lab engages with and builds upon GMCA's Local Energy Advice Programme (LEAP) for 2018-2019. LEAP is a service that provides free advice and support to energy poor and vulnerable households, alongside offering energy efficiency measures that are in some cases also free of charge. The Living Lab has access to resources and trained energy advice experts, alongside GMCA's existing networks and expertise in working with vulnerable households.	
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

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PART IV: Energy Poverty Guidebook for Energy Planning

Energy poverty guidebook for energy planning

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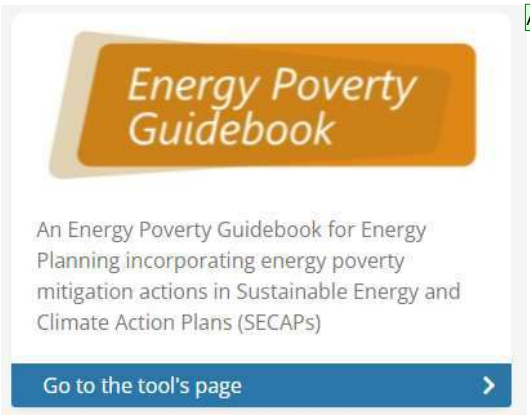
The POWERPOOR Energy Poverty Guidebook for Energy Planning

AH4



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Slide 38

AH4 Link to guidebook on website to be included once the guidebook deliverable is ready. A new version of this module to be included on Teams.

Hinsch- ICLEI Europe, 17/12/2021

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The POWERPOOR Energy Poverty Guidebook for Energy Planning

Energy Poverty Guidebook

The POWERPOOR Energy Poverty Guidebook for Energy Planning has been developed to enable municipalities to be part of a sustainable future and play their role in the just energy transition by following the POWERPOOR approach of tackling energy poverty through joint energy initiatives and leveraging innovative financing schemes.

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The POWERPOOR Energy Poverty Guidebook for Energy Planning

Energy Poverty Guidebook

The Guidebook includes:

- ✓ Energy poverty mitigation through joint energy initiatives
  - The POWERPOOR approach
  - The role municipalities can play
- ✓ Preparing the bottom-up approach
- ✓ Energy poor citizens support programmes
- ✓ TARGETing the problem
- ✓ ACTions to tackle energy poverty
- ✓ FUNDing joint energy initiatives to tackle energy poverty

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The POWERPOOR Energy Poverty Guidebook for Energy Planning

The POWERPOOR Energy Poverty Guidebook for Energy Planning is available:

- ✓ On the POWERPOOR website → https://powerpoor.eu/toolkit
- ✓ In the stand-alone POWERPOOR Toolkit page → http://powerpoor.epu.ntua.gr/powerpoor-toolkit/

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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 and Guidebook is aimed at giving support to this process.

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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
- STEP IN project Interim Report – Urban Labs. https://www.step-in-project.eu/wp-content/uploads/D2.2_Urban-LL-Interim-Report_final.pdf
- Climate KIC. Climate Innovation tools.

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Empowering Energy Poor Citizens through Energy Cooperative Initiatives

ANNEX 2: Lists of Case Studies and List of H2020 Sister Projects in PDF

No.	Case Study Name	Short description	Geographical Scope	Module	Type of Case Study	Resposible
1	Energy Poverty Observatory - Indicators Framework	Description of the EPOV and the indicators	EUROPE	Module 1	Policy Action	ICLEI
2	ENERGY POVERTY ADVISORY HUB (EPAH)	Description of the new EPAH and its role	EUROPE	Module 1	Policy Action	HOUSING EUROPE
3	Assist Project	ASSIST focuses on strengthening consumers rights with special reference to vulnerable consumers	BE, FI, IT, PL, ES, UK	Module 1	EU Project	HOUSING EUROPE
4	FER (Fair Solutions for Better Community)	Investigating energy consumption habits in energy-poor households, implementing energy efficiency measures, educating energy advisors	Croatia (Zagreb)	Module 2	EU Project	Society for Sustainable Development Design (DOOR)
5	On the sunny side	Cooperative offers citizens professional support at every step until the realization of a small solar power plant.	Croatia	Module 2	EU project	Green Energy Cooperative (ZEZ)
6	REACH - Reduce Energy use And Change Habits	Contribute to energy poverty abatement at practical and structural level, and empower energy poor households to take actions to save energy and change their habits, and to establish energy poverty as an issue that demands structural solutions at local, national and EU level.	Bulgaria, Croatia, North Macedonia, Slovenia	Module 2	EU Project	FOCUS DRUSTVO ZA SONARAVEN RAZVOJ (FOCUS)
7	Through knowledge to warm home	Initiate an innovative social service - energy consultancy for poor households - and enable energy-poor households to save energy and change their habits.	Croatia (Sisačko-Moslavačka County)	Module 2	EU Project	Society for Sustainable Development Design (DOOR)
8	IDEA - Innovative Direction in Energy Advising	Decrease energy poverty by implementing an educational platform for energy awareness.	Slovenia, Bulgaria, Croatia, Cyprus	Module 2	EU Project	UNIVERSITY OF CYPRUS
9	Together to more comfortable housing 1-4	Project is focused on visits to energy poor households in city of Zagreb. Project has been renewed for 4 consecutive years, with specific vulnerable groups addressed every year. For example, women-only households or homes from disabled people.	Croatia (Zagreb)	Module 2	Local action - Zagreb, City office for social protection and persons with disabilities (Croatia)	Society for Sustainable Development Design (DOOR)
10	ENPOR – Action to Mitigate Energy Poverty in the Private Rented Sector poverty	The general objective of the ENPOR project is to draw attention to energy poverty in the private rental sector (PRS), taking into account the needs of landlords and tenants and to include them in the wider political context	Netherlands, Germany, Belgium, United Kingdom, Greece, Croatia, Italy, Estonia and Austria	Module 2	EU project	INSTITUTE FOR EUROPEAN ENERGY AND CLIMATE POLICY STICHTING (IEECP)
11	EmpowerMed– Empowering women to take action against energy poverty	The main objective of the project is to contribute to energy poverty abatement in the Mediterranean	Spain, France, Italy, Slovenia, Croatia and Albania	Module 2	EU Project	FOCUS DRUSTVO ZA SONARAVEN RAZVOJ (FOCUS)
12	SocialWatt	SocialWatt will develop and provide utilities and energy suppliers with appropriate tools for effectively engaging with their customers and working together towards alleviating energy poverty	Greece, Netherlands, Belgium, Austria, Romania, France, Spain, Ireland, Latvia, Croatia, Italy	Module 2	EU Project	Institute of Communication and Computer Systems (ICCS)

13	ENGAGER	A research network funded via the European Co-operation in Science and Technology (COST) scheme. It is aimed at developing and strengthening an international community of researchers and practitioners focused on combating energy poverty – a condition typically manifested by the inability to secure adequate levels of domestic energy services (such as heating, lighting, cooling, appliances).		Module 2	EU Project	Society for Sustainable Development Design (DOOR)
14	THE RAY OF THE SUN - THE LIGHT OF HOPE	The goal is to bring electricity through solar systems to five households in Sisak-Moslavina County that do not have access to electricity.	Croatia	Module 3	Crowdfunding Project	Green Action (ZA)
15	CROWDLENDING MODEL FOR ENERGY COOPERATIVE RES PROJECTS	Cooperative members lend their money so the cooperative can promote and install RES project on the rooftop of the entities without profit.	PT	Module 3	Crowdfunding Project	COOPERNICO
16	WORLD´S FIRST PORTAL FOR RES PROJECTS – Citizenergy.eu	Citizenergy online portal to find a funding platform for your project or to upload your project and let	Global	Module 3	Platform - Online Portal	COOPERNICO
17	SOLARISATION OF GREECE: REWARD CROWDFUNDING CAMPAIGN FOR SOLAR PANELS	Greenpeace Greece launched a Reward crowdfunding campaign to finance the installation of solar panels onto selected households that lived on the brink of energy poverty in the island of Rhodes	GR	Module 3	Crowdfunding Project	COOPERNICO
18	CROWDLENDING CAMPAIGN FOR Energy rehabilitation of Community of Owners	Crowdlending campaign for the realization of a series of energy efficiency measures.	ES	Module 3	Crowdfunding Project	COOPERNICO
19	Energy Solidaire From Les Amis d'Enercoop	solidarity fund that raises money through micro-donations from energy bills of consumers of an energy cooperative and supports local social initiatives tackling fuel poverty by donating produced energy by renewables producers.	FR	Module 3	Collective Energy Initiatives	GOINER
20	Urban Living Lab - Greater Manchester Step-In Project	The Living Lab engages with and builds upon Manchester Local Energy Advice Programme (LEAP) for 2018-2019 that provides free advice and support to energy poor and vulnerable households, alongside offering energy efficiency measures that are in some cases also free of charge.	UK	Module 4	Local Action - Living Labs	ICLEI
21	Mountain Living Lab - Metsovo, Greece. Step-In project	The LL began with an energy café that involved different stakeholders, i.e. vulnerable citizens, policy- makers, representatives of the local authorities to dicuss energy savings and cost reduction issues	GR	Module 4	Local Action - Living Labs	ICLEI
22	Aberdeen Heat Network Fuel Poverty Policy Sandbox. Smartees Project.	Planning of Aberdeen Heat Network to reduce fuel poverty and provide affordable warmth in the city .	UK	Module 4	Local Action - Policy Sandbox	ICLEI
23	FIESTA - Families Intelligent Energy Saving Targeted Action	aims to help families with children save energy at home, acting on their electricity consumption behaviour and appliance-purchasing decisions through a comprehensive programme, including an energy audit tool and energy efficiency guide for households.	Croatia, Spain, Italy, Bulgaria, Cyprus	Module 2	EU Project	AREA Science Park

24	Social Green	Project intends to address the issue of green social housing in order to contribute to reduce the GHG emissions as well as to reduce the fuel poverty indicators in EU regions towards a lower carbon economy.	Portugal, Spain, Croatia, Estonia, Sweden, Romania	Module 2	EU Project	CEiiA
25	Compete4SECAP	Aimed at helping local authorities put their existing Sustainable Energy Action Plans (SEAPs) into action. The project promoted the adoption of standardized energy management systems in municipalities through the coordination of national competitions and peer-to-peer exchanges which steered the attention and involvement of local to national authorities in 8 European countries. The project also helped facilitate the upgrade of SEAPs into Sustainable Energy and Climate Action Plans (SECAPs), as per new planning approaches promoted by the Covenant of Mayors.	Croatia, Cyprus, France, Germany, Hungary, Italy, Latvia, Spain	Module 4	EU Project	EKODOMA(EKO)
26	C-TRACK50	Aims to mobilise and guide public authorities at a local and regional level, in order to achieve climate resilience and carbon neutrality by 2050.	Croatia, Greece, Romania, Hungary, Austria, Poland, Germany, Belgium, France, Spain, Portugal and Latvia	Module 4	EU Project	NATIONAL TECHNICAL UNIVERSITY OF ATHENS (GR)
27	PentaHelix	Aims to empower local and regional authorities to find innovative and cost effective approaches to develop, finance, implement and improve sustainable energy and climate action plans (SECAP) that contribute to reaching national and European climate and energy goals and policies. The main objective is to develop an innovative pentahelix based method and use this to engage and support authorities on multiple levels together with other key stakeholders in different sectors for increased SECAP development and implementation.	Croatia, Belgium, Spain, Latvia and Norway	Module 4	EU Project	Faculty of Mechanical Engineering and Naval Architecture (Croatia)
28	EMPOWERING	Empowering local public authorities to build integrated sustainable energy stratigies	Croatia, Spain, Greece, Sweden, Hungary and Romania	Module 4	EU project	SVIM - Sviluppo Marche S.r.l. (Italy)
29	CEESEU	The objective is capacity building of local governments in the target area in order to develop an Action Plan for Sustainable Energy and Climate Change - SECAP.	Croatia, Austria, Slovenia, Latvia, Hungary, Poland, Romania, the Czech Republic, Germany and Bulgaria.	Module 4	EU project	MENEA (Croatia)
30	iDEAL	The aim of the iDEAL project is to improve the climate change monitoring system and the planning of adaptation measures in the covered regions.	Italiy, Croatia	Module 4	EU project	IRENA (Croatia)
31	ENES-CE	Collaboration between public bodies and citizen energy groups in implementing local energy strategies in Central Europe	Central Europe	Module 4	EU project	MENEA (Croatia)

32	Joint SECAP	Joint strategies for Climate Change Adaptation in coastal areas	Italiy, Croatia	Module 4	EU project	IRENA, Primorje-Gorski Kotar County, County of Split-Dalmatia, Municipality of Vela Luka, International Centre for Sustainable Development of Energy, Water and Environment Systems – Sdewes Centre (Croatia)
33	Sunroofs from Križevci (Križevački sunčani krovovi)	Group investment project with micro loan model. Instaling a photovoltaic power plant on the roof of the administrative building of the Development Center and Technology Park Križevci with direct consumption on site. No incentives and feed-in tariffs by the state. Installation of a photovoltaic power plant on the roof of the City Library "Franjo Markovic", Križevci.	Croatia - City of Križevci	Modul 3	Local Action	Green Energy Cooperative (Zelena energetska zadruga - ZEZ)
34	CROWDLENDING MODEL FOR ENERGY COOPERATIVE RES PROJECTS	Cooperative members lend their money so the cooperative can promote and install RES project on the rooftop of the entities without profit.	PT	Module 3	Crowdfunding Project	COOPERNICO
35	WORLD´S FIRST PORTAL FOR RES PROJECTS – Citizenergy.eu	Citizenergy online portal to find a funding platform for your project or to upload your project and let the world know you need support	Global	Module 3	Platform - Online Portal	COOPERNICO
36	SOLARISATION OF GREECE: REWARD CROWDFUNDING CAMPAIGN FOR SOLAR PANELS	Greenpeace Greece launched a Reward crowdfunding campaign to finance the installation of solar panels onto selected households that lived on the brink of energy poverty in the island of Rhodes	GR	Module 3	Crowdfunding Project	COOPERNICO
37	CROWDLENDING CAMPAIGN FOR Energy rehabilitation of Community of Owners	Crowdlending campaign for the realization of a series of energy efficiency measures.	ES	Module 3	Crowdfunding Project	COOPERNICO
38	Energy Solidaire From Les Amis d'Enercoop	solidarity fund that raises money through micro-donations from energy bills of consumers of an energy cooperative and supports local social initiatives tackling fuel poverty by donating produced energy by renewables producers.	FR	Module 3	Collective Energy Initiatives	GOINER
39	Urban Living Lab - Greater Manchester Step-In Project	The Living Lab engages with and builds upon Manchester Local Energy Advice Programme (LEAP) for 2018-2019 that provides free advice and support to energy poor and vulnerable households, alongside offering energy efficiency measures that are in some cases also free of charge.	UK	Module 4	Local Action - Living Labs	ICLEI
40	Mountain Living Lab - Metsovo, Greece. Step-In project	The LL began with an energy café that involved different stakeholders, i.e. vulnerable citizens, policy- makers, representatives of the local authorities to dicuss energy savings and cost reduction issues	GR	Module 4	Local Action - Living Labs	ICLEI
41	Aberdeen Heat Network Fuel Poverty Policy Sandbox. Smartees Project.	Planning of Aberdeen Heat Network to reduce fuel poverty and provide affordable warmth in the city .	UK	Module 4	Local Action - Policy Sandbox	ICLEI
42	Energy Cooperative of "Zeleni Prelog" citizens	The goal is to promote and develop an energy-independent community, renewable energy sources, promote sustainable development and encourage social innovation and entrepreneurship.	Croatia		Local Action	

43	Energy Cooperative "KLIK"	Objective is to contributed to the development of an energy-independent city of Križevci and in the transition to a climate-neutral city.	Croatia		Local Action
44	Green Energy Cooperative	Objective is to achieve real changes in the development of energy and the involvement of citizens in the process of energy transition, enable citizens to participate in planning, decision-making, construction and energy production, and to participate in profit sharing.	Croatia	Module 3	Local Action
45	Energy Cooperative "Otok Krk"	The goal is to make renewable energy sources and energy efficiency available to every private and legal entity on the island, in order to reduce the dependence of islanders on increasingly expensive fossil fuels and contribute to stopping climate change.	Croatia		
46	Energy Cooperative Apsyrtides	Objective is energy production, energy efficient and environmentally friendly renovation, construction and promotion of energy efficiency and the use of renewable energy sources	Croatia		

Project	Full Name	Starting Date	Ending Date	Type	Coordinator	What they do	Partners	Partners also in PowerPoor	Countries involved	Countries also in Powerpoor	Cordis	Website
ENPOR	Actions to Mitigate Energy Poverty in the Private Rented Sector	1 Sept 2020	31 Aug 2023	H2020 Energy Poverty Sister Project	INSTITUTE FOR EUROPEAN ENERGY AND CLIMATE POLICY STICHTING (Netherlands)	ENPOR will examine in depth energy poverty policies for the Ptivate Rented Sector across the EU, monitor the dimensions of energy poverty in the PRS, support tailored policies and will provide guidelines for other countries.	CLIMATE ALLIANCE (Germany), THE UNIVERSITY OF MANCHESTER (UK), UNIVERSITY OF PIRAEUS RESEARCH CENTER(Greece),DRUSTVO ZA OBLIKOVANJE ODRZIVOG RAZVOJA(Croatia),CENTRE FOR RENEWABLE ENERGY SOURCES AND SAVING FONDATION(Greece),AGENZIA NAZIONALE PER LE NUOVE TECNOLOGIE, L'ENERGIA E LO SVILUPPO ECONOMICO SOSTENIBILE(Italy),MITTETULUNDUSUHING TARTU REGIOONI ENERGIAAGENTUUR(Estonia), OSTERREICHISCHE ENERGIEAGENTUR AUSTRIAN ENERGY AGENCY(Austria), Stichting Hogeschool Utrecht(Netherlands),WUPPERTAL INSTITUT FUR KLIMA, UMWELT, ENERGIE GGMBH(Germany), UNION INTERNATIONALE DE LA PROPRIETE IMMOBILIERE(Belgium).	DOOR	Germany, United Kingdom, Greece, Croatia,Italy, Austria, Estonia, Netherlands ,Belgium	Greece, Croatia, Estonia, Germany, Belgium	https://cordis.europa.eu/project/id/889385	https://www.enpor.eu/
EnergyMEASURES	Tailored measures supporting energy vulnerable households	1 Sept 2020	31 Aug 2023	H2020 Energy Poverty Sister Project	UNIVERSITY COLLEGE CORK - NATIONAL UNIVERSITY OF IRELAND, CORK	EnergyMEASURES will map out key indicators characterising those most at-risk of energy poverty, and **will leverage partners' ongoing projects** and use their **existing relationships with energy poor and at-risk households** to recruit them for the household energy engagement programmes. Recruited householders will be provided with low-cost energy measures and empowered to change their energy-related behaviours and practices through an approach that is cognisant of existing housing conditions and is reflective of the lived experience of householders	ENERGY ACTION LIMITED(Ireland), DUNEWORKS BV(Netherlands),STICHTING PON(Netherlands), GEMEENTE EINDHOVEN(Netherlands), AUTONOOM PROVINCIEBEDRIJF KAMP C (Belgium), SAMENLEVINGSOPBOUW ANTWERPEN PROVINCIE(Belgium), STOWARZYSZENIE GMIN POLSKA SIEC ENERGIE CITES(Poland), RESIDENTIAL BUILDING MANAGEMENT COMPANY HABIDOM DOOEL SKOPJE(North Macedonia), MUNICIPAL ENERGY EFFICIENCY NETWORKECOENERGY ASSOCIATION(Bulgaria), TIGHEAN INNSE GALL LIMITED(UK), OIKOPLUS KG(Austria)		Ireland, Netherlands,Belgium,Poland,North Macedonia, Bulgaria, United Kingdom, Austria	Belgium	https://cordis.europa.eu/project/id/894759	https://energymeasures.eu/
STEP	Solutions to Tackle Energy Poverty	1 Jun 2019	31 May 2022	H2020 Energy Poverty Sister Project	BUREAU EUROPEEN DES UNIONS DE CONSOMMATEURS ,Belgium.	STEP is to alleviate energy poverty by facilitating behavioural change through trusted, tailored advice provided directly to consumers in or at risk of energy poverty and by implementing low-cost energy efficiency solutions in energy poor households. E**leven consumer and research organisations from across the EU are putting together a set of solutions to help people who face energy poverty.**	ASOCIACIJA LIETUVOS VARTOTOJU ORGANIZACIJU ALIANSAS ALLIANCE OF LITHUANIAN CONSUMER ORGANISATIONS(Lithuania), SDRUZHENIE BULGARSKA NATSIONALNA ASOTSIATSIYA AKTIVNI POTREBITELI(Bulgaria), CITIZENS ADVICE READING(UK), KYPRIAKOS SYNDESMOS KATANALOTON(Cyprus), DECO -ASSOCIACAO PORTUGUESA PARA ADEFESA DO CONSUMIDOR(Portugal), DTEST, OPS(Czechia), FEDERACJA KONSUMENTOW STOWARZYSZENIE(Poland), LATVIJAS PATERETAJU INTERESU AIZSTAVIBAS ASOCIACIJA(Latvia), SPOLOCNOST OCHRANY SPOTREBITEL'OV (S.O.S.) POPRAD ZDRUZENIE(Slovakia), ASSOCIATION FOR THE CONSERVATION OF ENERGY(UK), CITIZENS ADVICE MANCHESTER(UK),COVENTRY CITIZENS ADVICE(UK), THE ASSOCIATION FOR DECENTRALISED ENERGY(UK).		Belgium, Lithuania, Bulgaria,United Kingdom, Cyprus, Portugal, Poland, Latvia, Slovakia, Czechia	Belgium, Portugal, Latvia	https://cordis.europa.eu/project/id/847080	https://www.stepenergy.eu/
ComAct	Community Tailored Actions for Energy Poverty Mitigation	1 Sept 2020	31 Aug 2023	H2020 Energy Poverty Sister Project	NADACIA HABITAT FOR HUMANITY INTERNATIONAL, Slovakia.	The ComAct project aims to make high-impact/high-cost energy-efficient improvements in multi-family apartment buildings in the central eastern european and in the formerly Soviet Union countries affordable and manageable for energy-poor communities as well as to create the necessary assistance conditions for lifting them out of energy poverty.	ASOCIACIJA LIETUVOS VARTOTOJU ORGANIZACIJU ALIANSAS ALLIANCE OF LITHUANIAN CONSUMER ORGANISATIONS(Lithuania), BUILDINGS PERFORMANCE INSTITUTE EUROPE ASBL (Belgium), ENOVA D.O.O. SARAJEVO(Bosnia and Herzegovina), ZDRUZENIE ZA HUMANO DOMUVANJE HABITAT-MAKEDONIJA SKOPJE(North Macedonia), INITIATIVE WOHNUNGSWIRTSCHAFT OSTEUROPA E V(Germany),FONDATSIYA TSENTAR ZA ENERGIYNA EFEKTIVNOST - ENEFEKT(Bulgaria), VAROSKUTATAS (METROPOLITAN RESEARCHINSTITUTE) KFT(Hungary), ASSOCIATION ODESSA HOUSING UNION(Ukraine), OBSHTINA BURGAS(Bulgaria).		Slovakia, Lithuania, Belgium, Bosnia and Herzegovina, North Macedonia, Germany, Bulgaria, Hungary, Ukraine,	Belgium, Germnay, Hungary, Bulgaria	https://cordis.europa.eu/project/id/892054	https://comact-project.eu/
SocialWatt	Connecting Obligated Parties to Adopt Innovative Schemes towards Energy Poverty Alleviation	1 Sept 2020	31 Aug 2023	H2020 Energy Poverty Sister Project	INSTITUTE OF COMMUNICATION AND COMPUTER SYSTEMS, Greece	SocialWatt aims to support obligated parties under Article 7 of the Energy Efficiency Directive to develop, adopt, test and spread innovative energy poverty schemes across Europe. Energy poor citizens are the main target group that will benefit from the innovative schemes. SocialWatt will support energy companies to fulfil their energy efficiency obligations, as well as improve public relations, promote Corporate Social Responsibility strategies, reduce debt and overhead in managing debt and enhance their public image.	INSTITUTE FOR EUROPEAN ENERGY AND CLIMATE POLICY STICHTING(Netherlands), REGULATORY ASSISTANCE PROJECT(Belgium), E7 ENERGIE MARKT ANALYSE GMBH(Austria), ISPE PROIECTARE SI CONSULTANTA SA(Romania), ELECTRICITE DE FRANCE(France), NATURGY ENERGY GROUP SA(Spain), ELECTRICITY SUPPLY BOARD(Ireland), PUBLIC POWER CORPORATION S.A.(Greece), CEZ VANZARE SA(Romania), SIA FORTUM JELGAVA(Latvia),HEP - ESCO DOO ZA VODENJE I FINANCIRANJE PROJEKATA ENERGETSKE UCINKOVITOSTI(Croatia), EVISO SRL(Italy),OSTERREICHISCHE CARITASZENTRALE(Austria)		Netherlands, Belgium, Austria, Romania, France, Spain, Greece, Latvia, Croatia, Italy, Ireland	Greece, Croatia, Belgium, Belgium, Spain	https://cordis.europa.eu/project/id/845905	https://www.socialwatt.eu/en/home
EmpowerMed	Empowering women to take action against energy poverty in the Mediterranean	1 Sept 2019	31 Aug 2023	H2020 Energy Poverty Sister Project	FOCUS DRUSTVO ZA SONARAVEN RAZVOJ, Slovenia	EmpowerMed aims to contribute to energy poverty abatement in the Mediterranean through, implementing a set of practical energy efficiency and RES measures, tailored to empower households in energy poverty and specifically focused on women and health, assessing their efficiency and impacts to formulate policy recommendations and promoting policy solutions among key actors for stimulating action against energy poverty at local and EU level.	DRUSTVO ZA OBLIKOVANJE ODRZIVOG RAZVOJA(Croatia), SOGESCA s.r.l.(Italy), UNIVERSIDAD AUTONOMA DE BARCELONA(Spain), FUNDACIO INSTITUT DE RECERCA DE L'ENERGIA DE CATALUNYA(Spain), GERES GROUPES ENERGIES RENOUVABLES(France), ASSOCIACIO CATALANA D'ENGINYERIA SENSE FRONTERES(Spain), WOMEN ENGAGE FOR A COMMON FUTURE EV(Germany), MILIEUKONTAKT SHQIPERI(Albania)	DOOR	Slovenia, Croatia, Italy, Spain, France, Germany, Albania	Croatia, Spain, Germany	https://cordis.europa.eu/project/id/847052	https://www.empowermed.eu/

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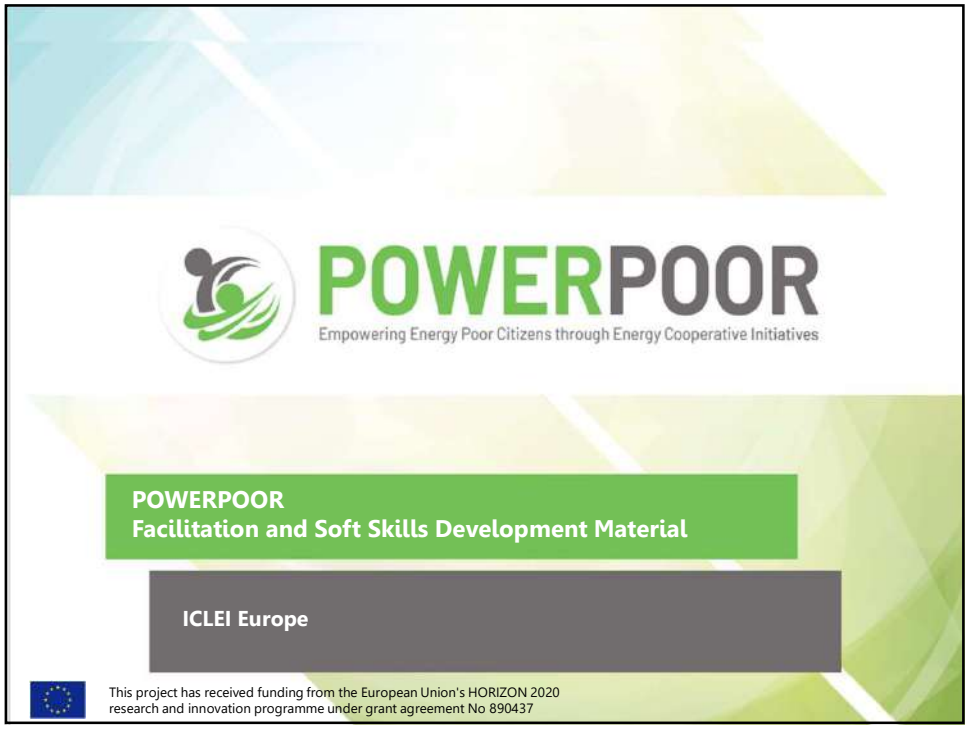
Empowering Energy Poor Citizens through Energy Cooperative Initiatives

ANNEX 3: Complementary material
Slides for soft skills material in PDF



Content and structure

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- Facilitation tips and tricks
  - Welcome and warm up
  - Designing an agenda and script
  - Asking meaningful questions
  - Posture and presence
  - Closing
- Tools for online engagement

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PART I: Facilitation and Soft Skills

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Welcome and Warm Up

- It is always important to know the context, audience and participants profile. (GDPR)
- **Always prepare an agenda** and meeting goals, and share it with participants.
- Interact with participants: via surveys, short exercises, warm ups, etc.
- This will give the facilitator and impression where the group is.

What's your current mood regarding this training day?

What do you expect from this training?

Anything else to include in the agenda?

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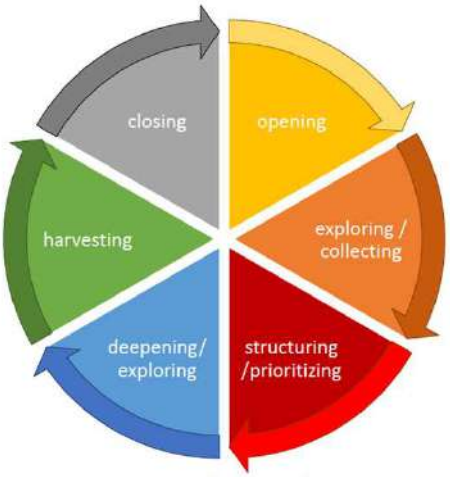
Preparing an agenda and script

- Define your meeting/session goals
- Prepare and manage time properly
- Practice and rehearse (online tools)



Prototype of a facilitation cycle / suedlicht

(1) Suedlicht- Facilitation Training. 2020

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Working Questions – Asking useful questions

What is the aim/desired result of your event?

- Gathering information?
- Spreading information?
- Retaining information (participants)?

One way

- Facilitating discussion?
- Facilitating change of perspective?
- Facilitating networking, connection?

Exchange

- Creating ideas, visions?
- Developping ideas, solutions?

Creating & building

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Working Questions – Asking useful questions

Types of Questions

- Closed questions -> polarisation/differentiation e.g.: citizen's referendum (simplified): Shall area „xy" be restored?
- Open ended questions -> exploration e.g.: how much change are we willing to accept?
- Circulary/systemic -> change of perspectives e.g.: redesigning the riverbed: What would the Dreisam recommend we do?

Exploring answers and pre-structuring results

Finishing sentences

„We will have reached our goal if/when..."

Structured Charts

What are the challenges	How could we overcome them?
-	-

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Body language for face to face and online meetings

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Body language for face to face and online meetings

- Power Poses: by Amy Cuddy

https://youtu.be/phcDQ0H_LnY

- Digital Body language – conquering Online Meetings

https://youtu.be/6FLjrA5SIks

- Using ZOOM for Medium / Large Groups.
  - Intro, Waiting Room, Camera/Mic, Co-Host, Time Lines, Back-up Plans, Use Breakout Rooms, Use chatbox, include Videos, Recap

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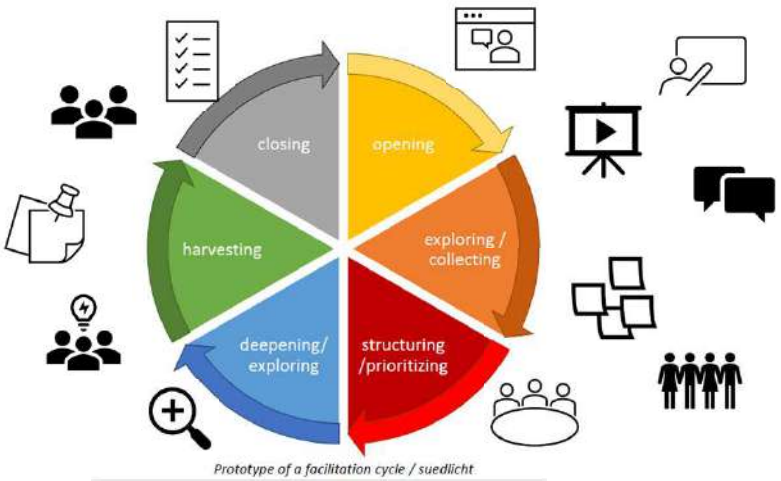
Use engagement tools and materials



Prototype of a facilitation cycle / suedlicht

(1) Suedlicht- Facilitation Training. 2020

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Closing

- Design questions you would like to explore with the group.
- Wrap up and describe next steps.
- Keep a attendance List

Your learning journey?

Which part of the training you like the most?

How satisfied are you?

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PART II: Tools for online engagement.

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Online Engagement Tools

Tool	Main Use	Free Version Features	Paid Versions Feature
Slido	Q&A and polling	Up to 100 participants, 5 polls per event	Adding participants, unlimited polls, branding, etc.
Mentimeter	Q&A and polling	Unlimited audience, 2 question slides, 5 quiz slides	Unlimited questions, import presentations, branding, etc.
Kahoot!	Quizzes/ Competitions	Up to 10 players, only multiple-choice questions	Adding players, adding question types, etc.
MURAL	Visual collaboration	Only 30 day free trial	Price per membership, unlimited visitors

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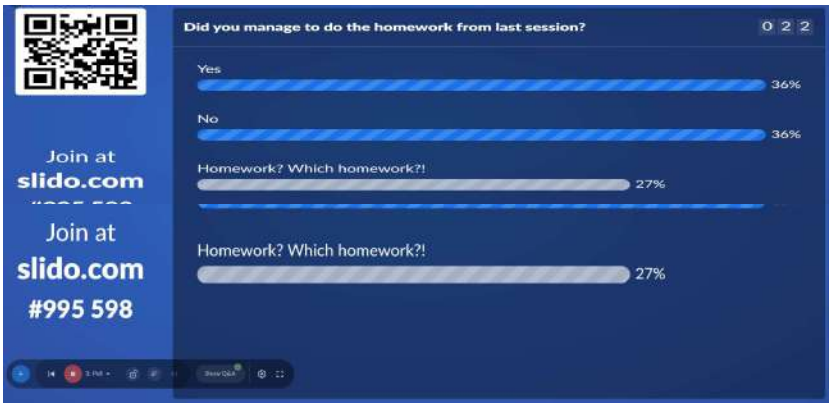
Slido



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Mentimeter

www.powerpoor.eu

POWERPOOR

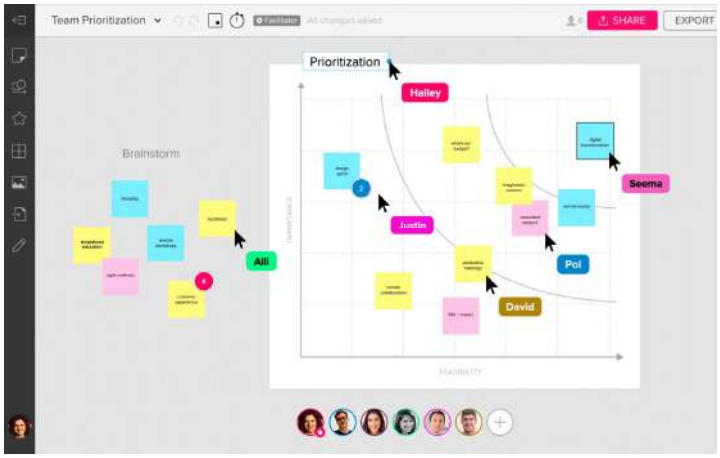
Kahoot!

kahoot.com

www.powerpoor.eu

POWERPOOR

MURAL



mural.co

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Online Training and Session Tools

Tool	Main Use	Free Version Features	Paid Versions Feature
GoToWebinar	Online Meetings	Only free trial	Nr. of participants and features depend on plan
Zoom	Online Meetings	100 participants and 40 minutes	Adding participants, time, transcripts, etc.
Webex	Online Meetings	100 participants and 50 minutes	Adding participants, time, storage, etc.
Google Meet	Online Meetings	100 participants and 1 hour when 3+ participants	Adding participants, time, polls, etc.
Google Classroom	Create/manage class, assignments	Always free	
EasyClass	Create/manage class, assignments	Always free	
Google Forms	Creating forms	Always free	

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References and further reading

- Slido: www.sli.do
- Mentimeter: www.mentimeter.com
- Kahoot!: www.kahoot.com
- MURAL: www.mural.co
- GoToWebinar: www.gotomeeting.com
- Zoom: https://zoom.us/
- Webex: www.webex.com
- Google Meet: meet.google.com/
- Google classroom: https://classroom.google.com
- Easyclass: www.easyclass.com
- Google Forms: https://docs.google.com/forms