



# GREEN & SOCIAL HUB

Preventing and Combating  
Energy Poverty

Curated by



# PREVENTING AND COMBATING ENERGY POVERTY

## EXECUTIVE SUMMARY

Energy poverty, a complex socioeconomic challenge characterized by households' inability to secure adequate energy services, has emerged as a critical priority on the European political agenda. This report provides a comprehensive guide for local authorities on preventing and combating energy poverty, synthesizing research, experiences, and solutions with a particular focus on local-level interventions.

The issue has gained heightened attention following recent global crises, including the COVID-19 pandemic and the Ukrainian war, which have exacerbated vulnerabilities in energy access and affordability. Energy poverty occurs when three conditions converge: living in an energy inefficient house, having a low family income, and facing high variable energy prices. These factors can be further complicated by socio-demographic circumstances, family composition, health conditions, and cultural factors.

The European Union has responded with a robust framework centered on the Green Deal and complementary initiatives. The establishment of the Energy Poverty Advisory Hub (EPAH) represents a significant step in providing tools, resources, and technical assistance to local governments. The EU has also introduced various support mechanisms, including the Social Climate Fund and revised directives on energy efficiency and building performance.

Analysis of case studies from ACR+ members across Europe reveals diverse approaches to addressing energy poverty. Notable examples include Catalunya's comprehensive regulatory framework, Flanders' targeted assistance programs, and innovative initiatives in France, Croatia, and Italy. These cases demonstrate the importance of integrated approaches, stakeholder collaboration, and locally tailored solutions.

Key challenges identified include the multidimensional nature of energy poverty, lack of standardized definitions across EU member states, limited local-level data availability, and the need to balance immediate relief with long-term structural solutions. However, opportunities exist through increased political prioritization, potential for community improvement, alignment with broader climate goals, and access to EU support mechanisms.

The report concludes with practical recommendations for local authorities, emphasizing the need for comprehensive strategies that break departmental silos, engage communities, leverage local expertise, and implement both regulatory and structural measures. Success requires careful planning, effective implementation, and robust monitoring and evaluation frameworks.

To ensure sustainable impact, local authorities must adopt an integrated approach that combines immediate assistance with long-term solutions, while maintaining focus on procedural justice and inclusive engagement of vulnerable groups. The report underscores that addressing energy poverty is not just about providing energy access, but about ensuring a fair and sustainable energy transition that leaves no one behind.



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## INTRODUCTION

### BACKGROUND ON ENERGY POVERTY

Energy poverty is a complex issue that has become a priority on the political agenda, especially following recent economic crises such as the COVID-19 pandemic and the Ukrainian war. It is a condition in which a person is unable to secure materially and socially needed energy services in their home, encompassing security of supply, affordability, and access.

The EU Commission, through the Green Deal, has provided a clear and harmonized framework driving countries toward a fair and sustainable transition. Following recent global events, this framework has been improved in its strategy and means to increase attention on energy poverty.

### OBJECTIVES OF THE REPORT

This report aims to provide a guide for local authorities on preventing and combating energy poverty. It includes a review and research of experiences and solutions, with a focus on the local level. The study incorporates a desk review and survey targeting ACR+ members and their partners at the local level.

### SCOPE AND METHODOLOGY

The content of this report has been built on literature review, interviews and case studies.

Data were collected from EU and national government publications, EU and national organizations, journal articles, websites, books, internal records, deliverables from EU funded projects.

The scope of the report is to compile a guide on existing tools and best practices to tackle energy poverty in Europe. A specific chapter delves into some experiences from ACR + members throughout Europe.

## UNDERSTANDING ENERGY POVERTY

### DEFINING ENERGY POVERTY

Energy poverty is defined as a combination of three different conditions happening at the same time in a household:

- Living in an energy inefficient house
- Having a low family income
- Paying for energy at a variable price that tends to be very expensive

This combination of negative factors can be exacerbated by other parameters:

- Socio-demographic factors (e.g., ERP assignees, foreigners)
- Family composition (e.g., pensioners, single-parent families)
- Health (e.g., chronically ill)
- Limited knowledge of energy efficiency
- Cultural factors (i.e., accustomed to using household appliances that have become inefficient, reduced propensity to ensure necessary thermal comfort)

### CAUSES AND CONSEQUENCES

Energy poverty is a complex, multifaceted challenge taking place at domestic level.

This means that there is not one type of energy poverty, and its nature can vary, making it very challenging to identify and quantify its consequences.

The already mentioned negative factors can worsen the household condition due to the geographical location, climate, dwelling type, available heating/cooling equipment or the broader geopolitical aspects affecting energy prices.

Moreover a more broadly social nature of the phenomena has to be considered: characteristics of the labor market, employment levels, unemployment and underemployment, family composition, demographic dynamics, income differences between parents and children, home ownership or otherwise, north-south territorial dualism, low levels of education, endowment of cultural and social capital.



The effects of energy poverty are multiple.

There are consequences for health and well-being if facing extreme indoor temperatures that may exacerbate respiratory and cardiovascular illnesses, heat stroke or excess deaths.

Children in energy-poor conditions can be affected by particularly low educational attainment and increased absences from school, more often develop cold related health conditions at a young age and show lower social and emotional well-being.

For retired people and one parent households there may be subjective variables, such as the evaluation of one's quality of life, the sense of self-realization and the awareness of being poor.

During Covid 19 pandemic in many countries people were forced to confine themselves to their homes to flatten the epidemic curve. This emergency led to a decline in employment, which caused a drastic reduction in the income of families, and an obvious increase in the use of homes, with a consequent increase in domestic energy demand, by heating or cooling homes, using hot water, and using the Internet to work or study at home.

Energy poverty is also interconnected with climate change and other environmental challenges that generate an unequal burden on people and places.

Taking into consideration the heterogeneity of a country like Italy characterized by a wide variety of climates, both between regions and between municipalities within the same region, the measuring of energy poverty should be related to climate change because it will radically transform the performance of the built environment and will emphasize the deficiencies that it may present. In fact, there is a clear trend towards a decrease in energy demand for heating throughout the country, as well as an increase in energy demand for cooling.

## ENERGY POVERTY IN THE EU CONTEXT

While energy poverty has become a shared EU objective, there are discrepancies in definitions, in the capacity to combat energy poverty, and the extent and quality of measures and strategies in place across member states. Some national governments have been more reactive to EU legislation on efficient energy and climate adaptation (Northern and Western Europe including Portugal and Spain, as well as

some of the CEE countries), while others have been slower or more reluctant (Southern Europe including Italy and the remaining CEE countries).

### THE MULTIDIMENSIONAL NATURE OF ENERGY POVERTY

Energy poverty is a multidimensional issue that cannot be captured by a single measure or indicator. This complexity makes data collection a challenging procedure and the choice of tackling measures very specific and locally based. It also impedes participation in the energy transition, raising questions about the social inclusivity of the transition and its socio-economic feasibility.

## EU FRAMEWORK AND INITIATIVES

### THE EUROPEAN GREEN DEAL

The Green Deal strategy introduced by the EU Commission at the end of 2019 sews together economic, environmental and social objectives, with the aim to make Europe climate neutral by 2050 and ensure a just climate transition.

The strategy includes investment to provide affordable solutions to those affected by carbon pricing policies as well as measures to address energy poverty and facilitate capacity building.

In the Green Deal, energy poverty is addressed by housing improvement and retrofitting, because renovating houses can reduce energy bills and the negative impacts on the environment. It will also ensure an essential standard of living for vulnerable households, reducing exposure to health hazards.

The Communication included a ‘renovation wave’ of public and private buildings to ensure energy efficiency and affordability. In the framework of this initiative, particular attention was going to be given to the renovation of social housing, to help households to pay their energy bills, and also for tenants and multi-apartment buildings. The Communication recognized that renovation can also boost the construction sector and is an opportunity to create jobs locally.

## ENERGY POVERTY ADVISORY HUB (EPAH)

The European Parliament stressed that additional support was needed to understand and address energy poverty, instilling the launch of the Energy Poverty Advisory Hub (EPAH) by the European Commission.

EPAH aims to create a network of actors interested in combating energy poverty and accelerating a just energy transition by European local governments.

## EPAH TOOLS AND RESOURCES

EPAH has developed several tools to support local authorities:

1. **Publications:** These range from the collection of best practices and projects to the definition of monitoring indicators. They include the Handbooks series and the ATLAS, an interactive online database showcasing over 250 projects, measures, and policies addressing energy poverty globally.
2. **Technical Assistance:** This is divided into online capacity building activities and experts who support local authorities locally. Through two open calls in spring 2022 and spring 2023, 85 local governments from all 27 EU Member States have received technical assistance in energy poverty diagnosis or action plan development.

## EPAH HANDBOOKS SERIES

EPAH has developed three handbooks to support its methodology:

1. **The EPAH Handbook 1: A Guide to Energy Poverty Diagnosis**, which Focuses on practical assessment of energy poverty at the local level and defines a seven-step path to measure energy poverty regardless of geographical, cultural, and economic settings
2. **EPAH Handbook 2: A Guide to Planning Energy Poverty Mitigation Actions**, which provides information on preparing and integrating an energy poverty mitigation plan within the Local Social Climate Plan. The handbook focuses on guiding local actors through key questions in the planning phase

3. EPAH Handbook 3: A Guide to Implementing Energy Poverty Mitigation Actions, which provides practical advice based on collective peer experience, and support the transition of Local Social Climate Plans towards concrete action plan

## OTHER EU SUPPORT MECHANISMS

To complement the Renovation Wave strategy the EU Commission issued the first Recommendation on energy poverty (EU/2020/1563) to provide guidance on indicators to measure energy poverty, promote the sharing of best practices between EU countries and highlight EU funding programmes that prioritize measures targeting vulnerable groups.

Following the 2021 energy price increase the Commission published Tackling rising energy prices: a toolbox for action and support (EU/2021/660), listing a range of short and medium-term initiatives that can be used at national level to support vulnerable consumers.

In 2023 several acts were published in this field:

The Regulation EU/2023/955 establishing the Social Climate Fund, that from 2025 will provide funding to EU countries to support vulnerable households, including those affected by energy poverty, and vulnerable micro-enterprises by supporting investments for increased energy efficiency.

The revised Energy Efficiency Directive (EU/2023/1791), including a specific focus on alleviating energy poverty and empowering consumers

A new Recommendation on energy poverty (2023/2407) pushes cities to be on the forefront promoting renewable energy communities as a means to support vulnerable households to reduce their burden. It also requests that the municipalities ensure adequate knowledge of the phenomena within local administrators and staff.

In 2024 the revised Energy Performance of Buildings Directive (EU/2024/1275) foresees that EU countries include specific plans for the reduction of the number of people affected by energy poverty in their National Building Renovation Plans while the Electricity Market reform (Directive (EU) 2024/1711 and the revised gas market legislation strengthen consumer rights and protection.

## ANALYSIS AND PLANNING TO ADDRESS ENERGY POVERTY

### ENERGY POVERTY DIAGNOSIS

#### *DATA COLLECTION AND ANALYSIS*

A concrete analysis of energy poverty incidence has been carried out at the national level in most EU countries, with only a few reaching the regional level. However, at the local level, where interventions should take place, data are often not available, presenting a significant obstacle to finalizing any action.

Required data include:

- Identification of vulnerable households (partially already in contact with social services)
- Energy efficiency of appliances and general conditions of homes
- Access to fair energy prices and public transport
- Knowledge of energy savings

#### *IDENTIFYING VULNERABLE HOUSEHOLDS*

As mentioned earlier some Member States do not have clear identification and measurement criteria to address energy poverty. While the definition of energy poverty is instrumental in raising political and social awareness of the problem, that will not be enough to intervene effectively and tackle the structural roots of the problem, which extend beyond energy and climate aspects and encompass a spectrum of social, gender, labor, taxation, welfare, housing, and health issues.

Therefore, the identification of the target groups and their engagement activities may be influenced by some determinants like:

1. Accessibility and content of the language/words used: technical or foreign language can be found overwhelming or hard to understand;
2. Words such as ‘poverty’ and ‘vulnerability’ may not be neutral for the recipient;
3. Physical access for people with disabilities (deaf, silent, blind, etc.);
4. Accessibility to and acceptance of locations: physical location of focus groups and interviews can affect the discussion;
5. Safety fears on door-to-door interviews;

6. Emotional involvement: Talking about difficult situations can conjure anger, fear, grief.
7. Ethical aspects: Paying or not paying when involving low-income/precariously employed people.

It is essential to go beyond talking using innovative approaches and, at the same time, it is also important the take advantage of existing interactions and expertise as in the case of the Social Services and the third sector (NGOs, parishes, etc.), that already deal with the poverty phenomena in its various dimensions (extreme, education, etc.) and, more important, already reach out the potential targeted groups.

The EPAH methodology suggests that while profiling vulnerable consumers information such as hobbies, interests, usage of digital tools, working hours, etc. should be included. This information could become useful especially when defining the framework of your actions.

#### ***DEVELOPING A LOCAL SOCIAL CLIMATE PLAN***

The Local Social Climate Plan, as proposed in EPAH Handbook 2, merges various perspectives:

Local: customized for a specific context

Social: centered on all consumers' needs, including vulnerable ones

Climate: addresses the EU just and sustainable transition objectives

If existing plans for sustainable energy, climate adaptation, or sustainable environment are already in place at the local level, the Local Social Climate Plan can be created by including energy poverty in these existing planning instruments based on the evidence from the diagnosis.

#### ***STAKEHOLDER ENGAGEMENT AND PARTICIPATION***

A diversity of knowledge and approaches is needed when preparing a diagnosis.

At the institutional level it is important to create a cross-departmental working group allowing departments, which seldom collaborate, to work together to share complementary skills. This approach will not only help to broaden the understanding of energy poverty but will also increase the ownership of the various team members around it.

Additional stakeholders to be considered could include local experts, Civil Society Organizations, non-governmental organizations (NGOs), Social Services, Cooperatives, Research Centers, Universities, Energy Agencies, Energy Companies, Banks, Investment Funds, Small and medium sized enterprises (SMEs) etc.

They could have a supporting role in providing information, facilitating communication with citizens, accessing innovative financial instruments, etc.

The external stakeholders need to be involved not only in the diagnosis aspect but also when developing future actions.

## SUPPORTING INSTRUMENTS TO IMPLEMENT ENERGY POVERTY MEASURES

### POLICY INSTRUMENTS

#### *COUNSELING AND ENERGY AUDITS*

Counseling focuses on a range of services that include fundings and extending interactions with government and energy suppliers. It is provided by different actors: public, charitable, and private. Energy Counseling for vulnerable households could be summarized in three possible actions:

1. Consultation with energy vulnerable households to identify factors contributing to their energy consumption patterns and costs
2. Performance of Energy Audits, providing households with ad hoc advice on reducing consumption and costs
3. Access to different support mechanisms, as many vulnerable households often have poor knowledge of social and financial support they may qualify for

#### *GRANTS AND LOANS*

Grants and Loans are usually provided by national, regional, and municipal governments, by private-civic schemes, and by non-governmental actors. They can be divided into two categories:

1. Contributions to pay existing energy costs

## 2. Instruments to facilitate home improvements and reduce energy inefficiency

While the first category provides tangible support, especially during energy price increases, it is not a structural solution. The second category, aimed at addressing a contributing factor to energy poverty, has a more effective impact.

### ***BUSINESS MODELS FOR IMPLEMENTATION***

Several business models can be applied at the local level to support the implementation of energy poverty measures. None of them is a definitive solution and a mix of them can be used. The local situation and strategy will define the way to apply them. The most referred models are listed below, summarizing their main characteristics:

- stakeholders to get involved
- activities to be carried out
- resources that need to be found
- cost and revenue structure
- additional features.

### ***ENERGY COMMUNITIES (REC)***

- Stakeholders: Members of the local community, technology suppliers, banks and financing organizations, social services, local NGOs, DSO
- Activities: Setup and manage an energy community, apply engagement strategies, invest in RES plants, generate and share renewable energy
- Resources: Local people, experts, time
- Cost and Revenue structure: Structural costs, technology maintenance, management costs, remuneration through dedicated incentives, savings from shared self-consumption
- Additional features: Active and passive membership options



### *ENERGY COOPERATIVES*

- Stakeholders: Members of the local community, technology suppliers, banks and financing organizations, DSO
- Activities: Setup and manage an energy cooperative, apply engagement strategies, invest in RES plants, generate and share renewable energy
- Resources: Local people, experts, time
- Cost and Revenue structure: Structural costs, technology maintenance, management costs, remuneration through reduced energy bills
- Additional features: Active membership only

### *ESCO MODEL*

- Stakeholders: Members of the local community, property owners, utilities, building managers
- Activities: Energy audits, refurbishment measures, agreement between ESCO and building owners/tenants
- Resources: ESCO experts, facilitator, time
- Cost and Revenue structure: No upfront investment costs, ESCO fees paid through achieved savings, additional savings from PV production
- Additional features: Need to establish trust between involved parties, renovation of buildings with RES production, performance and maintenance guarantees

### *ONE-STOP-SHOPS (OSS)*

- Stakeholders: Local government, technology partners, banks and financing organizations
- Activities: Provide information, technical and financial support, manage and monitor projects
- Resources: Technical experts, finance, partners network
- Cost and Revenue structure: Staff, premises, information kits, subscription or service fees, possible revenue for financing organizations
- Additional features: Direct interaction via help desk, online and events, benefits for property owners, building managers, and social housing managers

### *TECHNOLOGY LEASING*

- Stakeholders: Households, technology suppliers, banks and leasing organizations, facilitator, recycling organization
- Activities: Build local working groups, engage households
- Resources: Subsidies, investors/manufacturing company for installation and maintenance
- Cost and Revenue structure: No initial cost to buy appliances, monthly fee for a set period, energy savings due to new technology
- Additional features: Households engaged to understand advantages of renting, vulnerable households could benefit from the scheme

There are some barriers that may occur when applying one of these business models.

energy communities may experience financial scarcity as well as a lack of time available for volunteering. Other constraints include a lack, or a perceived lack of social and economic capital, and limited information about RECs;

OSS are often not permanent or long-term, due to funding ending or changing political support; they may also face inappropriate staffing and resources and/or results not being adequately user centric;

on ESCOs customers may have insufficient knowledge or confusing information about them, lack of motivation to undertake energy efficiency works, and mistrust as ESCOs are commercial entities;

technology leasing includes a service provider that leases energy-efficient appliances to households at a monthly rate, which includes full maintenance services for the duration of the contract. Often targeted information campaigns and clear outlines of the benefits have not been made available.

## ENSURING A FAIR TRANSITION

### THE ENERGY JUSTICE APPROACH AND THE JUST SUSTAINABILITY TRANSITION

The Energy Justice approach has been developed in the USA and aims to achieve equity in both social and economic participation in the energy system while remediating social, economic, and health burdens on marginalized communities.

Its features include the Energy Justice Scorecard that applies five indicators when evaluating policies directed to vulnerable people:

1. Process: Participation of marginalized communities in policymaking
2. Restoration: Remedying prior and present harms faced by communities
3. Decision-making: Centering the decision-making of marginalized communities
4. Benefits: Focusing on economic, social, or health benefits for marginalized communities
5. Access: Making energy more accessible and affordable to marginalized communities

The Just Sustainability Transitions, developed by the European Environment Agency – E.E.A., indicates that delivering justice in Europe’s sustainability transition is multi-dimensional. It starts addressing the unequal distribution of the costs of climate and environmental policies across society and, at same time, aims to alleviate the unequal burden of pollution and climate risks for places and people too.

In exploring how the issue of justice is tackled in policies to promote sustainability transitions, the E.E.A. assesses three dimensions of justice:

- distributional justice — the allocation of costs and benefits across society;
- procedural justice — equal access to and participation in decision-making;
- recognitional justice — respect for, engagement with and fair consideration of diverse cultures and perspectives.

## REGIONAL CASE STUDIES FROM ACR+ NETWORK OF CITIES AND REGIONS

To compile the best practices from ACR + network of cities and regions, different methods were used. In the first two cases interviews were conducted with the relevant energy poverty experts within the members organizations because the two areas involved have a longer history (Belgium) or a structured approach (Spain) on energy poverty. The questions raised are indicated in italics. For the third and the fourth case the information was collected through literature review and their energy poverty activities only started after the Covid 19. Despite their innovative approach, it is too early to be able to define their efficacy. In the Italian case a mix of secondary research methods were applied, and it was chosen because they integrate energy poverty in their climate and environment planning.

### CATALUNYA REGION (ES)

Spain is the second largest country in the EU and the fourth most populated, with more than 80% of the population living in urban areas. Due to its varied geography and topography, Spain has a wide climatic diversity that include mediterranean, semiarid, continental and subtropical climate. This variety generates lower energy needs for thermal heating than the EU average but a higher need for cooling in the summer period. Energy poverty is a significant concern in Spain, with various regulations, challenges, and collaborative efforts to address it.

The data included in the National Strategy against Energy Poverty calculated using 4 main indicators (disproportionate expenditure, hidden energy poverty, inability to maintain the home at an adequate temperature, and late payment of bills), showed that between 3.5 and 8.1 million people were living in energy poverty in Spain. In 2022, according to EPAH data, the proportion of households reporting an inability to keep the home adequately warm had increased.

Nonetheless Spain is in an intermediate position within the EU in terms of the incidence of energy poverty. Spain is also one of the few countries in the EU (together with Portugal and Greece) with a strategy in place to tackle it.

### EXISTING COUNTRY REGULATIONS OR NORMATIVE ADDRESSING ENERGY POVERTY

Spain has implemented several measures to combat energy poverty:

1. National Strategy against Energy Poverty 2019–2024 (ENPE): Approved in April 2019, this strategy provides an official definition of energy poverty and vulnerable consumers. It sets reduction targets of at least 25% by 2025, aiming for a 50% reduction. The strategy outlines 19 specific measures to achieve these objectives. The national strategy against energy poverty recognizes that there are groups most at risk of facing energy poverty like:
  - Older adults, minors, pregnant women, people with illnesses and people with disabilities, as they are more susceptible to thermal extremes.
  - People with a lower educational level, which makes it more difficult for them to access existing social resources, either because of the complexity of the applications or because they are unaware of them.
  - People living in substandard housing, where the lack of thermal comfort can be compounded by insecurity and unhealthy circumstances.
  - Women and households where women are the sole income earner.
  - Single-parent households.
  - Migrant populations.

This strategy is going to be updated by the beginning of 2025.

2. Royal Decree-Law 15/2018: This decree mandates the development of the National Strategy against Energy Poverty and introduces urgent measures for energy transition and consumer protection.
3. Royal Decree-Law 17/2021: beneficiaries of the social bond (discounted rate) have four months to pay unpaid bills. Companies must provide these consumers for six months plus a comfort supply (minimum vital supply). Until February 28th, 2022, the ban on cutting basic supplies (water, electricity, and gas) for vulnerable households remains in force.
4. Social bonus for electricity (2009) and heating (2018), providing energy bill support through a direct discount on the electricity bill.

Measures have been undertaken at regional level too:

1. Catalan Law (Lei 24/2015) prohibits companies from disconnecting vulnerable households from electricity and natural gas supply. It obliges them to maintain energy services when households are facing economic difficulties.

2. Barcelona Climate Emergency Action Plan 2020-2030: the city intends to achieve zero energy poverty by 2030.

***CONSTRAINTS OR BARRIERS TO IDENTIFY AND/OR ENGAGE ENERGY POVERTY HOUSEHOLDS***

Several barriers hinder the effective identification and engagement of households experiencing energy poverty:

- Administrative Complexity: The process to apply for assistance like the Social Bonus is often complex and bureaucratic, deterring eligible households from applying;
- Lack of Awareness: Many households are unaware of the available support mechanisms or do not understand the eligibility criteria;
- Data Limitations: Insufficient data sharing between administrations can impede the accurate identification of vulnerable households;
- Stigma and Social Barriers: Some individuals may feel embarrassed to seek help or may not trust institutions, leading to underreporting and engagement challenges.

***MOST RELEVANT REGIONAL PARTNERS TO FIGHT ENERGY POVERTY***

Addressing energy poverty requires collaboration among various stakeholders:

- The need to ensure enhanced governance with a holistic approach to tackle energy poverty in Catalunya called for cross-departmental and vertical collaboration across national, regional, and local governance structures, involving closer engagement with vulnerable households and relevant energy and social partners and stakeholders. Public administrations like the Ministry for the Ecological Transition and the Demographic Challenge (MITECO) develop and implement national strategies and policies. There is the County Council, Metropolitan Areas, and Deputation at the regional level. Local Authorities: Municipalities and regional governments are crucial in identifying vulnerable households and delivering targeted interventions;
- Consider designating and empowering national energy poverty observatories, which may include public authorities, academia, NGOs, energy providers and suppliers, while giving them a clear mandate and means to identify, monitor, and analyze the situation of energy poverty at local, regional, and national level to inform decision-making. Organizations such as Alliance Against

Energy Poverty, Asociación Ecoserveis, Asociación de Ciencias Ambientales (ACA), and Ecodes Foundation conduct research and advocate for vulnerable populations.

### **REGIONAL PRACTICES ADDRESSING YOUTH**

While many initiatives address energy poverty in a broad manner, Catalunya policies planning integrates approaches that makes easier outreach of youth, such as:

- When designing measures and actions that tackle energy poverty, focus on targeted and tailored communication that builds trust among beneficiaries of relevant schemes and avoids stigmatizing vulnerable groups. Use of qualified front-line workers to help identify and advise households in energy poverty.
- Step up energy efficiency information campaigns targeting households affected by energy poverty, to ensure that those population groups receive tailor-made information and advice while using all the potential of energy advisory networks and one stop shops. Those campaigns should encourage the uptake of energy efficiency measures also in the rental sector, mitigating split incentives between landlords and tenants and reducing energy poverty through lower energy bills resulting from renovations.

Specific regional actions targeting youth are:

- Educational Programs: NGOs and educational institutions run programs to raise awareness among young people about energy efficiency and sustainable practices.
- Youth Engagement Projects: Initiatives encourage youth participation in community energy projects, fostering empowerment and practical skills.
- Targeted Assistance: Some programs support young individuals or families with children, recognizing their vulnerabilities.

### **FLANDERS REGION (BE)**

Belgium is one of the smallest countries in the EU and the eighth most populated, with more than 95% of the population living in urban areas. About 45% of its size is occupied by the Flemish region, which has the lowest energy poverty indicators of all three regions (the other two are Walloon and Brussels

Capital). The region is characterized by higher levels of income, smaller and attached housing and a warmer climate (on average) than the other regions.

Belgium has recognized energy poverty as a significant and increasingly important societal concern. Consequently, the fight against energy poverty has benefitted from various action plans and policy measures, which are closely targeted at impoverished or low-income population groups.

**EXISTING COUNTRY REGULATIONS OR NORMATIVE ADDRESSING ENERGY POVERTY**

In April 2024, a Royal Decree establishing the criteria for assessing the number of households in a situation of energy poverty defined:

- Energy poverty as a household’s lack of access to essential energy services, where such services provide basic levels and decent standards of living and health, including adequate heating, hot water, cooling, lighting, and energy to power appliances, in the relevant national context, existing national social policy and other relevant national policies, caused by a combination of factors, including at least non-affordability, insufficient disposable income, high energy expenditure and poor energy efficiency of homes”;
- Energy poverty indicators as the set of statistics and data indicating the number of households finding themselves in a situation where:
  - o A disproportionate share of disposable income is spent on energy costs;
  - o Energy consumption is reduced below their basic needs;
  - o They feel like they are having trouble paying their energy bills.

However these definitions and indicators are set at federal level, but no official definitions or indicators exist yet at the regional levels. Previously, the Roi Baudoin Foundation published an annual Energy Poverty Barometer to measure energy poverty, using the same set of indicators later used in the Royal Decree, to grasp the multidimensional nature of energy poverty.

- The concept of a (Regional) Protected Consumer is applied differently in each region. In Flanders, a ‘protected customer’ is entitled to the federal social tariff for energy, which is only granted to individuals who receive certain benefits or allowances.



- In the Flanders region, households consuming gas delivered by the grid operator with a prepaid meter if their commercial contract is terminated because of default payment, can apply for a ‘minimal heating allowance’ issued by their local welfare actors during the period November to March.
- No legal definition for transport poverty exists in Belgium. The number of households at risk of transport poverty has not yet been assessed, given the lack of uniform methodologies and indicators. This project will support the establishment of the indicators. In the Belgian context, the most important and relevant dimensions with regard to transport poverty are transport availability, accessibility, and affordability. In Flanders, there is no comprehensive indicator that measures transport poverty, but there is a set of useful indicators like:
  - o Federal indicator (Statbel) on annual family expenditure on transport;
  - o distribution of Flemish families according to vehicle ownership;
  - o accessibility to De Lijn bus and tram stops;
  - o Modal split of passenger transport according to net income;
  - o Annual travel behaviors survey (OVG) (Flanders & Brussels)

#### ***CONSTRAINTS OR BARRIERS TO IDENTIFY AND/OR ENGAGE ENERGY POVERTY HOUSEHOLDS***

The 2024 edition of the annual energy poverty barometer calculates that 21.8% of Belgian households are at risk of energy poverty in 2022. Many of them are single-parent families and (older) single people. One in five households in energy poverty is made up of at least one person employed. Tenants, and especially social tenants, are overrepresented in energy poverty rates. Households are affected differently depending on the region with Flanders recording the lowest rate of households at risk of energy poverty with 16.4%.

This regional difference is mainly due to differences in the housing market (e.g., more apartments in Brussels, older housing stock in the Walloon region), income differences (lower average income in Wallonia and Brussels compared to Flanders), climate differences (colder winters in Wallonia). However the above-mentioned figures are based on a specific Belgian methodology, which makes them not comparable to other countries’ figures.

Belgium has not yet assessed the number of households in transport poverty nor decided the indicators that should be used when assessing them. In addition, data on the energy efficiency of buildings for households in the different regions/communities might pose a limitation because it may not be sufficient to draw a thesis on energy poverty.

#### ***MOST RELEVANT REGIONAL PARTNERS TO FIGHT ENERGY POVERTY***

The engagement of stakeholders has already started at national level in Belgium and has produced an initial list. They include Ministries and Administration, Public Institutions and Agencies, NGOs, Association representing specific vulnerable groups.

#### ***REGIONAL PRACTICES ADDRESSING YOUTH***

Overall, in Belgium energy poverty is considered part of the traditional concept of poverty. No specific activity was listed on actions specifically undertaken to reduce the energy poverty burden of Youth.

#### **RÉGION PAYS DE LA LOIRE (FR)**

The Grand Chambord and the Beauce Communautés de Communes in the Val de la Loire (France) created "La Maison de l'Habitat" to facilitate activities related to the local building stock via one access point, one number, and one website (<https://www.maisondelhabitat.fr/>).

Key features:

- Offers a local service with an interface connected to all participating partners
- Ensures regular presence throughout the territory to reach out to people who need help
- Provides assistance to residents in various fields (technical, financial, legal, urban planning, etc.)
- Offers financial subsidies to residents to overcome low financial capacity and credit rating
- This approach has proven to be a great opportunity to fight energy poverty for vulnerable households.

## ZAGREB (HR)

The City of Zagreb started the "Fair solution for a better community" project to use an integrated approach to fight energy poverty. Key aspects include:

- Multi-stakeholder partnership involving the Faculty of Electrical Engineering and Computing at the University of Zagreb and the Croatian civil society organization DOOR
- DOOR trained university students to carry out basic energy audits and implement low-cost energy improvements in vulnerable households

Project outputs included energy advice for 102 energy-poor households, small repairs in 30 households, and replacement of old appliances with energy-efficient ones in 30 households

Following the COVID-19 pandemic, Zagreb was awarded technical assistance within the 1st EPAH application. This allowed the city to:

- Expand the quality of energy poverty diagnosis, targeting 500 households
- Conduct data analysis to show the extent of energy poverty in the city
- Create a foundation for selecting possible interventions to be included in the SECAP revision

## CAMPANIA REGION (IT)

The case of the Joint Office for Environmental Sustainability (UCSA) of the Municipalities of Palma Campania, San Gennaro Vesuviano, San Giuseppe Vesuviano, and Striano in the Metropolitan City of Naples represents a comprehensive approach to deal with energy, climate and environment at the same time.

### *UCSA BACKGROUND AND OBJECTIVES*

UCSA was established in 2016, and its main objectives include:

- Raising awareness and transferring sustainable development themes within local strategies
- Communicating and disseminating climate change challenges to local populations and administrations
- Supporting participating local authorities in developing territorial studies on shared issues

- Monitoring the negative effects of anthropogenic pollution
- Pursuing the effectiveness of having a supra-municipal planning structure
- Creating partnerships for interaction in the local, regional, Italian, and European panorama

### ***UCSA STRATEGIC APPROACH TO ENERGY POVERTY***

UCSA's approach to energy poverty embraces:

1. Establishment of a local One-Stop-Shop (OSS) available in every participating municipality
2. Introduction of UCSALab, a living lab targeting "citizens under 30"
3. Promotion of capacity building activities for local authorities
4. Joining various European networks focused on sustainability and energy transition
5. Participation in the H2020 POWER UP project to support the creation of local energy market players with a social agenda

### ***RENEWABLE ENERGY COMMUNITY AS UCSA BUSINESS MODEL***

UCSA's pilot in the H2020 Power Up project centers on the concept of the Italian Renewable Energy Community (REC). Key aspects incorporate:

1. Selection of specific areas in San Giuseppe Vesuviano and Palma Campania
2. Focus on social housing buildings with a total PV potential of 280 kWp
3. Integration of new installations with existing photovoltaic systems on public buildings
4. Creation of two different models of energy communities:
5. Co-creation process for PV installation on 6 selected buildings
6. Public systems on public buildings sharing energy with vulnerable households

### ***MAIN STAKEHOLDERS AND PLANNED ACTIONS***

Key stakeholders in the UCSA model involve:

- Municipalities as the key players
- Households and local companies
- AESS (project partner) providing expert assistance

The current planned actions comprehend:

- 5 public meetings with local communities and REC's activation/co-design group
- The development of a memorandum of understanding between various local stakeholders
- Technical consultancy, awareness-raising, and information actions on energy consumption and savings

### **CHALLENGES AND LESSONS LEARNED**

Despite the comprehensive strategy, UCSA activities were delayed by the late approval by the National Government of the law on energy communities.

Moreover, the co-creation process produced limited interest from the community and tenants of selected buildings.

### **OTHER ITALIAN NOTABLE INITIATIVES**

#### **FONDAZIONE CON IL SUD AND BANCO DELL'ENERGIA (IT)**

In 2022, Fondazione con il Sud (FdS) launched a call for NGOs and Parishes to encourage the creation of new renewable energy communities supporting vulnerable households in Southern Italy. Key aspects encompass:

- Focus on promoting scalable and sustainable practices for renewable energy production and sharing
- Experimenting with energy efficiency and waste reduction practices
- Developing systems for measuring and monitoring energy consumption and benefits
- Promoting citizen involvement in energy choices
- Supporting socially relevant activities and services for vulnerable groups
- Developing information, awareness, and training actions for the local community

The initiative faced challenges due to the need for additional funding for PV installation costs, which was later provided by Banco dell'Energia. The project's start was further delayed due to pending legislation from the Italian government.

On the other hand, Banco dell'Energia is promoting some interventions to vulnerable households channeled through the NGOs throughout Italy.

The main actions undertaken consist in the payment of the energy bills for a few months while, at the same time, they are replacing electrical equipment in the houses to become more efficient and reduce the energy costs.

## ADDRESSING ENERGY POVERTY: LESSONS LEARNT FROM CASE STUDIES ANALYSIS

### KEY CHALLENGES IN TACKLING ENERGY POVERTY

#### *COMPLEXITY AND MULTIDIMENSIONAL NATURE OF ENERGY POVERTY*

- Lack of standardized definitions and measures across EU member states
- Limited data availability at the local level
- Balancing short-term relief with long-term structural solutions

#### *OPPORTUNITIES FOR LOCAL AUTHORITIES*

- Increased political prioritization of energy poverty issues
- Potential to bridge social and economic gaps within communities
- Alignment with broader energy transition and climate action goals
- Access to EU support and funding mechanisms

#### *STRATEGIES FOR EFFECTIVE IMPLEMENTATION*

Considering the analyzed cases to ensure an effective implementation at local level, the following 5 components need to be covered accurately.

- Breaking Departmental Silos: Local governments should work to break internal departmental silos and ensure a joint interdepartmental venture when addressing energy poverty.
- Community Engagement and Empowerment: Ensure better connection within community members through ongoing public dialogues
- Develop clear communications strategies: Empower the most vulnerable and remove barriers to participation
- Leveraging Local Expertise: Gather expertise from local social partners to facilitate the process and potentially reduce costs.
- Regulatory Measures: Use regulatory measures to support vulnerable households, such as introducing minimum energy performance standards for houses in the rental market, preventing increasing housing costs and/or evictions
- Structural Measures for Long-term Impact: Add structural measures to complement temporary relief: facilitate the uptake of renewable energy, improve access to decarbonized public transport and shared mobility options, promote energy-efficient solutions to reduce energy bills while supporting energy transition and emissions reduction

## RECOMMENDATIONS FOR LOCAL AUTHORITIES

The previously mentioned EPAH Handbook 3, A Guide to Implementing Energy Poverty Mitigation Actions, published last October is a practical guide to whoever wants to develop, implement and evaluate actions to reduce the impact of energy poverty at local level.

### *DEVELOPING A COMPREHENSIVE ENERGY POVERTY STRATEGY*

The Local Social Climate Plan sets the overall objective and ensures policymakers and key stakeholders support and approval. In the EPAH methodology, the three phases – diagnosis, planning, and implementation - are supposed to take place consequently. However, the defined path may be delayed by various causes like elections, postponement of approvals waiting for new or amended legislation, staff or working group member turnover, etc.

It is imperative to revise the diagnosis and planning process, and update strategies based on new developments, so as to ensure that implementation efforts are shared and aligned with your municipal

objectives. That may mean engaging the working group to ensure that all team members are informed and aligned with our objectives. Their involvement is essential, especially following a turnover. When new individuals assume responsibility for the project, it is important to provide them with the necessary context and reasoning that led to the planning decisions. This ensures continuity and understanding.

Make sure that any updates or changes made are documented, updating the list of useful documents and resources to reflect the latest information available and maintaining the traceability and accessibility of these documents.

In the planning phase, you identify actions and set goals within a potential time frame. To facilitate management, guarantee effective execution and prevent risks, it is indispensable to delineate the multiple tasks included in your plan.

Establishing an action plan that includes responsibilities, stakeholder involvement, costs, time frames, resources needed and how the task engages and reaches vulnerable consumers provide a tangible, practical and comprehensive roadmap of the action. The action plan will lay out the needed information on how, when and what needs to be done from a technical, legal, social and financial point of view. A specific focus needs the development in strong collaboration with the financial department of a comprehensive financial plan.

This will guarantee:

- the design the expected expenditure timeline;
- the planning of the cash flow needed for the implementation of the tasks.

Last but not least the monitoring activities need to be planned, covering from the baseline definition to midterm assessments based on a combination of different indicators. It is important to include in the budget some provisions that may allow the recruitment of external consultants if needed. The indicators include the already identified energy poverty indicators, plus the Key Performance Indicators - KPIs. KPIs should be designed to help local municipalities measure implementation progress as an opportunity to gather additional information that helps designing future actions.

The monitoring plan should include:

- Energy poverty indicator



- Key performance indicator
- Data collection method and tool
- Monitoring time frame
- Monitoring lead
- Responsible actors
- Resources needed
- Feedback and adjustments
- Financial flow

### *IMPLEMENTING EFFECTIVE MEASURES*

In this document an inventory of best practices has been reported but, when implementing them, it is paramount to direct them to your target group. Awareness campaigns are the key to tackling energy poverty, throughout the different phases and actions. It is important to consider that there are different types of vulnerabilities but, for a series of disparate cultural and social reasons, the target may not realize that they are in a vulnerable situation.

The effectiveness of an awareness campaign is based on several ingredients:

- Target group: Each group of vulnerable consumers' needs to be profiled to better select the correct approach.
- Objective: Two are the types of messages produced:
  - Informational ones providing factual data and knowledge on energy poverty, services available, key concepts on energy efficiency, appliances etc.
  - Transformational ones focusing on driving behavioral change by inspiring and motivating people to take action. They go beyond providing information and seek to create a personal connection and a sense of urgency.
- Communication: The materials and means used to reach the right target. Printed materials, blogs, radio, billboards, local newspapers, digital campaigns and promotion during special events can be used knowing that not all target audiences will be reached by the same means. Some key elements to be taken into consideration while planning communications:

- Timeline: The right moment to start and run your campaign in relation to the objective and the target audience.
- Who is running the campaign? When addressing domestic energy, the actors running the campaign (either institutional, regional or non-governmental) may influence the perception of the message. Local celebrities or influencers are often used in this aspect, and they can increase recognition if managed thoughtfully, but assessing their effectiveness, credibility and reputational risk is essential.
- Language and tone: Making sure that everyone can understand using a simple, jargon-free, empathetic, non-technical language is the key.
- To make energy poverty more visible and engaging, it may be worth linking the campaign to topics that are already prominent in the life of the target group.
- Gathering community interests ensures that selected actions reflect the needs and priorities of those it aims to serve, which will also improve its chances of being successful.

### ***MONITORING AND EVALUATION***

Within the time frame of each action, it is important to take the proper time to comprehensively evaluate the impact of the three phases: Diagnosis, Planning and Implementation. The milestones delineated in the monitoring plan allow the involvement of beneficiaries (vulnerable consumers) and key stakeholders (CSOs, social services, energy agencies etc.) and the collection of their feedback.

If an activity is not performing as expected, it is worth conducting a risk assessment to identify potential constraints early and set up strategies to solve them promptly. Once the activities have been completed, performing an impact assessment is a crucial step as it helps understand the broader implications. Impact assessments enable measuring the immediate outcomes as well as the long-term effects of a project on stakeholders, the environment and the wider community.

It is imperative to bear in mind that the value of an impact assessment depends on the quality of information and data collected throughout the whole process. Measuring the impact triggers a learning process that improves future planning, refine strategies, enhance transparency and accountability, showing to stakeholders how the work has been done and if time and resources assigned to the action

have produced results. The impact assessment can also include external evaluators who may grant an analysis from a different perspective.

## CONCLUSION

The multidimensional nature of energy poverty raises the need to address a variety of challenges like the lack of standardized definitions across EU member states, the limited local-level data availability and the need to balance immediate relief with long-term structural solutions.

The EU Green Deal has linked tackling energy poverty to a just and fair energy transition. Europe should now strive to understand how energy poverty manifests in each Member State because policy action and attention may vary at the level of individual Member States, with discrepancies in definitions, the capacity to combat energy poverty, as well as the extent and quality of the measures and strategies in place. Moreover public or citizen engagement is frequently done without acknowledging that communities consist of various groups with different values, norms, and perspectives and “vulnerable groups are often excluded.

To enhance policy design that will reduce climate impact too, the establishment of a framework reflective of the variations between different territories would be highly recommendable. At the same time, this framework should aim to foster connections and collaboration across local, regional, national, and international levels. Facilitating knowledge sharing and leveraging best practices would assist policymakers in developing more context-specific and effective strategies to tackle energy poverty.

Last but not least EU-funded projects should prioritise the development of contextual knowledge promoting a more targeted and effective policy design and implementation.

At local level local institutions must consider that the understanding of energy poverty is situational, and thus any actions to tackle it must consider and be adapted to their local conditions. Policy design should recognise that the drivers of energy poverty are rooted in cross-cutting structural factors. Therefore, it would be crucial to enforce the comprehensive monitoring of housing conditions, health policies, urban space, energy access, employment and income, as well as climate change, breaking down the department silos attitude between and within institutions operating locally.

Strategies for a systematic collection and availability of data will be needed because energy poverty is unable to be captured by a single measure or indicator.

Protective measures for consumers in vulnerable situations, ensuring they are not deprived of essential services due to non-payment of energy bills. In line with this, will be essential as well as the elimination of historical debts to prevent a gradual accumulation of interest.

Gathering community interests will ensure that the plan reflects the needs and priorities of those it aims to serve, which will also improve its chances of being successful. This process will include pursuing procedural justice that allows the involvement and influence of vulnerable and marginalized social groups in the decision-making process.

Tackling energy poverty is a long and complex battle, but nowadays opportunities exist through increased political prioritization, potential for community improvement, alignment with broader climate goals, and access to EU support mechanisms.

The time for action has come.

## APPENDICES

### BEST PRACTICES FACTSHEETS

The following examples have been selected to try to cover the best practices across Europe that started earlier supporting households affected by energy poverty.

Other cases have followed them and nowadays the EPAH Atlas and the Rete Assist Atlas provide a complete picture of the current practices taking place in Europe and Italy. To navigate through them use the EPAH Atlas website at <https://energy-poverty.ec.europa.eu/discover-community/epah-atlas> and the Rete Assist Atlas at [www.atlaspovertaenergetica.it](http://www.atlaspovertaenergetica.it)

Wien Energie Ombudsman Service for Social Hardship Cases - Austria

Managing Authority: Wien Municipal utilities

Planned interventions: Payment deferrals and negotiation of debit payments in installments

Specific content of the interventions: Heating and insulation measures

Other Depts or Stakeholders involved: Various depts. of the municipality, associations, the eviction prevention services and civic initiatives

Budget allocation: N/A

Funding: Wien municipality and other partners

Outputs: 17500 houses involved since 2011

Challenges: N/A

Weaknesses: N/A

Topics covered: Utilities bills payment

Warmer Homes - Scotland

Managing Authority: Warmworks Scotland a private social enterprise joint venture partnership

Planned interventions: Energy efficiency and small scale production of renewable energy

Specific content of the interventions: Heating and insulation measures

Other Depts or Stakeholders involved: Scottish sustainable charity and a private provider of energy efficient solutions

Budget allocation: 19 millions Euro

Funding: Scottish government

Outputs: 20000 houses involved since 2015

Challenges: Interventions decided unilaterally according to the home assessment performed by managing authority

Weaknesses: expensive renovations are finalised only with the household contribution, available through the Energy Saving Trust after passing a credit check.

Topics covered: Wall and loft insulation, installation of small scale renewable energy systems, central heating improvements.

Flanders Noodkopers

Managing Authority: Ghent municipality

Planned interventions: Audit and renovation of homes in a state of vulnerability

Specific content of the interventions: Energy efficiency and building renovation

Other Depts or Stakeholders involved: Various depts. of the municipality, university, private enterprises, Chamber of Commerce

Budget allocation: between 10000 and 1000000 euros per each selected house

Funding: Ghent Municipality

Outputs: 100 houses involved achieving reductions of 50% on consumptions per sqm and of almost 6500 kg/year CO2 emissions.

Challenges: Funds available

Weaknesses: large initial investment

Topics covered: Heating and cooling systems, access and consumption of energy, energy efficiency, financing programs.

Barcelona Audit and PAE (punto de asesoramiento energetico)

Managing Authority: Barcelona Provincial Council

Planned interventions: Audit and renovation of homes in a state of vulnerability

Specific content of the interventions: Communication campaign, consumer consultancy, protection and responsibility, efficiency energy and home redevelopment

Other Depts or Stakeholders involved: Social security, Environment and Home depts. of the Provincial Council, private enterprises, university

Budget allocation: approx 500000 euros

Funding: Barcelona Provincial Council

Outputs: 5000 people reached; approx 2000 utility contracts optimised, 19% cost reduction of utilities, free installation of 23000 elements for energy efficiency

Challenges: stakeholder involvement, skepticism about having inspections carried out at home, the flow of information between social operators and beneficiaries, follow up post interventions.

Weaknesses: limited time frame

Topics covered: Heating and cooling systems, air quality, health behaviour change, household appliances, quality of housing, climate change

## USEFUL RESOURCES AND TOOLS

### EPAH OBSERVATORY

The European Commission established at the end of 2016 the Energy Poverty Observatory, later incorporated in the EPAH Observatory.

It is the main resource for the national governments due to its compilation of resources and development of national energy poverty indicators that serve as references to evaluate energy poverty diagnoses at the national level or undertake cross-country comparisons.

The EPAH Observatory try to spotlight the latest data and research findings comprising:

a national indicators dashboard housing the most recent official data at the European level;

a comprehensive publications database, accessible to everyone for submission of relevant publications.

### EPAH DIGITAL ACADEMY

Within the EPAH resources it is important to mention the Digital Academy. Its main aim is to support local governments, to play an active and significant role in tackling energy poverty by providing learning opportunities to increase knowledge and build capacity on the thematic.

The EPAH Digital Academy has released a course for each of the developed methodological handbooks.

It also produced an extended course that addresses civil servants, technical staff, and practitioners with the objective of increasing knowledge and capacity on practical aspects of energy poverty mitigation and pushing local actions.

### RETE ASSIST ATLAS

Within the Italian project PENETREN, the RETE ASSIST produced an online ATLAS that gathers all International and national initiatives that are addressing energy poverty.

The ATLAS serves also as an access tool to a list of the EU funded projects on energy poverty.



## LIST OF USEFUL PROJECTS DEALING WITH SOME ASPECT RELATED TO ENERGY

POVERTY

COMACT

COOLTORISE

EMPOWERMED

ENERGY MEASURES

ENPOR

INNOVATE

NEON – National Energy Ombudsmen Network

PAPILLON

POWERPOOR

SAVE2

SCCALE 203050

SHARES

SOCIAL WATT

STEP-IN

SUN4ALL

UP-STAIRS

WELLBASED

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