Energy Community Secretariat

# Study on the implementation of EE1st principle in buildings, with the focus on reducing energy poverty

## Part one

ECA

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# 1 Introduction

## 1.1 Background

Economic Consulting Associates Limited (ECA), in association with Energetski institut Hrvoje Požar (EIHP) are supporting the Energy Community Secretariat (EnCS) in preparing a study to assist the Contracting Parties (CP) in addressing energy poverty through implementation of energy efficiency improvement measures in the buildings sector. The primary purpose of the study is to strengthen capacity within CP national institutions by sharing European Union best practices in capturing synergies between energy efficiency and social policy.

It is also expected that the study will feed into implementation of the draft *Ministerial Council Recommendations 2024/1/MC-EnC on accelerating the deployment of renewable energy projects and implementing the Energy Efficiency First (EE1st) principle* and of the *2022 ECS Policy Guidelines on identifying and addressing energy poverty in the Energy Community Contracting Parties*.

## 1.2 Purpose of this report

The purpose of this report is to present findings from Part 1 *Stocktaking of policies, legal and institutional requirements and practices of the scope of work*, which outlines the current status of using energy efficiency to address energy poverty in the CPs and current examples of how this is done in the European Union (EU). The report is structured as follows:

- Section 2 summarises EU directives and regulations covering energy efficiency the use of energy efficiency to address energy poverty, including examples of how these directives and regulations have been implemented in several EU countries.
- Section 3 outlines how each of the CPs have addressed energy efficiency and energy poverty to date, focusing on each countries NECPs
- Section 4 summarises existing financial support for use of energy efficiency to address energy poverty in the CP.
- Section 5 outlines challenges, gaps and recommendations for enhancing the role of the financial sector in advancing building renovations and alleviating energy poverty in the CPs.
- Section 6 proposes four models for funding and financing of energy efficiency measures in the CPs that could be used to alleviate energy poverty in the CPs.

A second report which goes further in-depth in terms of recommendations for CPs will also be developed as part of this assignment.

# 2 Stocktaking of EU policies, legislation, and practices

The Energy Efficiency First (EE1st) Principle is a central tenant of European Union (EU) energy and climate policy and requires energy efficiency-based solutions to be considered as a primary solution for all energy policy, legislation and investment decisions. When applying the EE1st principle, EU Member States (MS) must take into account the expected impact of a decision on energy poverty. As such, use of energy efficiency, including building renovation, is a primary tool for addressing energy poverty within the EU.

EU MS outline their national strategies for meeting EU climate and energy targets in their National Energy and Climate Plans (NECPs). In the preparation of their NECPs, MS must assess the number of households currently facing energy poverty, and if that number is significant, outline a plan for addressing the issue. By applying the EE1st principle, energy efficiency must be considered the first options for to reduce the number of households in energy poverty. NECPs therefore outline how MS that have identified the number of households in energy poverty to be significant intend to use energy efficiency measures to reduce energy poverty.

The remainder of this chapter first summarises the main EU regulation and directives[1] addressing energy efficiency and its use in addressing energy poverty; and provides examples of how these legal requirements have been applied in MS NECPs.

## 2.1 Review of relevant European Union (EU) regulation and directives

The EU has a comprehensive legislative package to support energy efficiency and building renovation, and include these into long term planning, centred around the development of national energy and climate plans (NECPs) for the EU Member States (MS). The three central legislative instruments included in this package are:

- Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action.
- Directive (EU) 2023/1791 on energy efficiency.
- Directive (EU) 2024/1275 on the energy performance of buildings.

[1] The EU has different types of legislative instruments, two of which are Regulations and Directives. Regulations are binding legislative acts that must be applied in their entitity across the EU. Directives are legislative acts that set out a goal that EU countries must achieve, however the individual countries devise their own laws to determine how to reach the goal of the directive.

Each of these instruments includes specific provisions targeting the reduction of energy poverty and the use of the EE1st principle. The following sub sections summarise these provisions.

### 2.1.1 Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action[2]

The purpose of Regulation (EU) 2018/1999 is to set the legislative framework for the Energy Union and Climate Action governance mechanism to ensure the achievement of the EU's climate targets in line with the 2015 Paris Agreement on Climate Change. The Regulation includes requirements to incorporate the EE1st principle into NECPs and defines EE1st as:

*" 'EE1st' means taking utmost account in energy planning, and in policy and investment decisions, or alternative cost-efficient energy efficiency measures to make energy demand and energy supply more efficient, in particular by means of cost-effective end use energy savings, demand response initiatives and more efficient conversion, transmission and distribution of energy, whilst still achieving the objectives of those decisions".*

#### Member States are required to prepare and submit to the European Commission an NECP, which must assess and address energy poverty and account for the EE1st principle

Article 3 of the Regulation requires the submission of an NECP for the period 2021 to 2030, and for each 10-year period subsequently. Amongst other requirements the NECPs must:

- take into account the EE1st principle,
- and assess the number of households on energy poverty considering the national context and based on indicative Commission guidance on relevant indicators on energy poverty.

Should a MS find the number of households in energy poverty to be significant, then an objective to reduce energy poverty must be included in the NECP. Furthermore, the MS must outline policies and measures addressing energy poverty, including social policy measures and other relevant national programmes.

#### Member States that include the objective to reduce energy poverty in the NECP must report on progress towards that objective

[2] European Union. 2018. Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action, amending Regulations (EC) No 663/2009 and (EC) No 715/2009 of the European Parliament and of the Council, Directives 94/22/EC, 98/70/EC, 2009/31/EC, 2009/73/EC, 2010/31/EU, 2012/27/EU and 2013/30/EU of the European Parliament and of the Council, Council Directives 2009/119/EC and (EU) 2015/652 and repealing Regulation (EU) No 525/2013 of the European Parliament and of the Council.

Chapter 4 of the regulation requires MS to prepare biennial progress reports on the status of NECP implementation. Where MS include the objective to reduce energy poverty in the NECP they must include information on progress towards reducing the number of people in energy poverty, quantitative information on the number of households in energy poverty, and information on policies and measures addressing energy poverty.

### 2.1.2 Directive (EU) 2023/1791 on energy efficiency[3]

The purpose of Directive (EU) 2023/1791 is to establish a common framework of measures to promote energy efficiency in the EU to meet the EU's energy efficiency targets. Furthermore, the directive is intended to contribute to the implementation of the EE1st principle. One of the objectives of applying the EE1st principle is to address the impact of energy poverty, defined in the Directive as

*"**[energy poverty]** means 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".*

#### Article 3 of Directive (EU) 2023/1791 sets when EU Member States must implement the EE1st principle

Per the Directive, MS must ensure that energy efficiency and demand-side response are assessed in planning, policy, and major investment decisions of more than EUR 100,000,000 each (or EUR 175,000,000 for transport infrastructure projects) for energy systems and non-energy sectors where those sectors have an impact on energy consumption and energy efficiency. Non-energy sectors specified include buildings, transport, water, information and communications technology (ICT), agriculture and financial sectors.

The Directive outlines four requirements for MS in applying the EE1st principle:

1. MS should promote the use of cost benefit analysis methodologies that allow assessment of wider benefits of energy efficiency and take into account the entire life cycle and long-term perspective, system and cost efficiency, security of supply and quantification from the societal, health, economic and climate neutrality perspectives, sustainability and circular economy principles in transition to climate neutrality. In decisions where cost benefit analyses are required, then MS should ensure such methodologies are applied.

2. Address the impact on energy poverty.

3. Identify entities responsible for monitoring the application of the EE1st principle.

[3] European Union. 2023. Directive (EU) 2023/1791 of the European Parliament and of the Council of 13 September 2023 on energy efficiency and amending Regulation (EU) 2023/955 (recast)

4. Include reporting on how the EE1st principle has been applied in national energy and climate planning, policy, and major investment decisions in national energy and climate progress reports submitted to the European Commission.

In addition to applying the EE1st principle to planning, policy, and major investment decisions; MS must apply the EE1st principle when concluding public contracts and concessions of value above thresholds given in relevant directives.[4, 5, 6] This includes when procuring contracts in the natural monopoly sectors of energy, water, transport, and postal services.

### Article 24 of Directive (EU) 2023/1791 requires Member States to take measures to empower and protect people affected by energy poverty

Several actions required from other Articles of the Directive (Article 8 and Article 22) are required to be implemented in a manner that gives priority to the people affected by energy poverty. In addition, Article 24 specifies several actions directly supporting households in energy poverty including:

- Implementing energy efficiency measures that mitigate distributional impacts from other policies and measures, such as energy taxes or emissions trading on buildings and transport.
- Target use of public funding to investments in energy efficiency improvements.
- Technical assistance and financial support targeting deep renovations and renovations with minimum energy gains.
- Technical assistance for social actors to support changes in energy consumption behaviours.
- Support access to finance for renovations with minimum energy gains.

To support implementation of actions to address energy poverty, MS are required to establish a network of experts from relevant sectors.

### Member States are required to implement energy efficiency obligation schemes, or alternative policy measures, that prioritise people affected by energy poverty

Article 8 of Directive (EU) 2023/1791 sets annual energy savings targets for MS. When determining how to achieve these targets, MS are required to set a share of the energy savings to be from people affected by energy poverty, vulnerable customers, low-income

[4] European Union. 2014. Directive 2014/23/EU of the European Parliament and of the Council of 26 February 2014 on the award concession contracts.
[5] European Union. 2014. Directive 2014/24/EU of the European Parliament and of the Council of 26 February 2014 on public procurement and repealing Directive 2004/18/EC.
[6] European Union. 2014. Directive 2014/25/EU of the European Parliament and of the Council of 26 February 2014 on procurement by entities operating in the water, energy, transport and postal services sectors and repealing Directive 2004/17/EC.

households, and people living in social housing. The share of savings from these groups must be at least in proportion to the share of people in these groups reported in NECPs.

Energy efficiency obligation schemes are defined in the EU as energy savings obligations imposed on energy distributors and/or retail energy sales companies (the obligated parties),[7] and are specified in the Directive as a policy mechanism to achieve these savings targets. These schemes should prioritise people affected by energy poverty, vulnerable customers, low-income households, and people living in social housing; and should also have no adverse impact on these people.

In order to achieve the objective of prioritising people in energy poverty, MS may require obligated parties to:

- achieve a share of their energy savings obligation through people affected by energy poverty,
- work with social services, local authorities or municipalities to promote energy efficiency improvement measures among people affected by energy poverty, and
- carry out renovation of buildings, replacement of appliances, and provide financial support and incentives for energy efficiency improvement measures.

If implementing the above three actions, MS must annually report on energy savings achieved by obligated parties from actions promoted among people affected by energy poverty.

### Member States are required to ensure information regarding energy efficiency improvement measures is transparent, accessible, and widely disseminated

Article 22 of Directive (EU) 2023/1791 outlines actions for information and awareness raising, including those specifically targeting households in energy poverty. Actions specifically targeting households in energy poverty include:

- Publicly supported energy consumption assessments.
- Establishment of “one-stop shops” providing technical, administrative, and financial advice for energy efficiency. These one stop shops should provide holistic support to all households with a focus on households affected by energy poverty and by the worst performing buildings.

### Member States are required to facilitate establishment of financing facilities for energy efficiency improvement, this may include the establishment of a national energy efficiency fund

Should a national energy efficiency fund be established, then the fund is required to support the implementation of measures prioritising people affected by energy poverty. Financial

[7] Joint Research Centre. 2015. Proceedings of the 8th International Conference on Energy Efficiency in Domestic Appliances and Lighting.

instruments listed that a national energy efficiency fund might support include: green mortgages and loads, on-bill and on-tax financing schemes, and loan guarantees.

### 2.1.3 Directive (EU) 2024/1275 on the energy performance of buildings[8]

The purpose of Directive (EU) 2024/1275 is to promote the improvement of energy performance of buildings in the EU. Specific relevant provisions of the Directive for Energy Poverty are described below.

#### Member States are required to establish a national building renovation strategy, which must include specific items addressing energy poverty

Per Article 3 of the Directive, National building renovation plans must include a roadmap with national targets and measurable indicators to monitor progress towards those targets. Reduction of the number of people affected by energy poverty is required to be included as a target.

Investment needs for implementation of the plan is also required to be included, including sources of finance and associated financing measures. These sources and measures must be in line with the target reduction of energy poverty set in the strategy.

#### Financial incentives introduced to address market barriers must target people affected by energy poverty

Article 17 of the Directive requires MS to provide financing, support measures and other instruments to address market barriers to the investment needed to meet targets set in national building renovation plans. In line with the requirements of Directive (EU) 2023/1791 noted above, financial incentives are required to target people affected by energy poverty.

#### Financial incentives specifically supporting residential building renovation must target people affected by energy poverty in line with Article 17

Article 9 requires MS to set a national trajectory for renovation of the countries residential building stock in line with targets set in the building renovation strategy. As part of the policy package introduced to support renovation of residential building stock, countries must put in place minimum energy performance standards (MEPS), technical assistance, and financial support mechanisms. In supporting compliance with MEPS, countries must introduce financial measures, and in particular financial measures targeting people affected by energy poverty.

#### One stop shops for the energy performance of buildings are required to provide dedicated services to households affected by energy poverty

[8] European Union. 2024. Directive (EU) 2024/1275 of the European Parliament and of the Council of 24 April 2024 on the energy performance of buildings (recast).

Article 18 of the Directive requires MS to set up “one stop shops” to provide technical assistance related to energy performance of buildings. These one stop shops are required to offer dedicated services to people affected by energy poverty. Furthermore, technical assistance facilities must have a particular focus on households affected by energy poverty.

## 2.2 Examples of addressing energy poverty through energy efficiency and building renovation

Policies and measures for addressing energy poverty through energy efficiency included in Regulation (EU) 2018/1999, Directive (EU) 2023/1791 and Directive (EU) 2024/1275 can be summarised into four categories:

- Preparing a building renovation strategy or plan, which includes specific targets for the reduction of energy poverty.
- Financial support, access to finance, and targeted used of public funds.
- National energy savings targets, and associated energy efficiency obligation schemes, that prioritise reduction in energy poverty.
- Technical assistance and information campaigns, including the establishment of one stop shops.

Six case study countries have been selected to serve as examples of how EU countries have implemented policies and measures in these four categories. Case study countries are listed and reasons for their selection summarised in Table 1.

**Table 1 Case studies of implementation of the EE1st principle in the EU**

| Country | NECP version<br>*Year submitted* | Reasons included |
|---|---|---|
| **Bulgaria**  | **Final updated NECP 2021-2030**<br>*2025* | • Located within the Balkans<br>• NECP sets the EE1st principle as a priority for Bulgaria<br>• NECP specifically mentions use of the EE1st principle in public buildings |
| **Germany**  | **Final updated NECP 2021-2030**<br>*2024* | • Has introduced EE law that includes binding EE targets<br>• NECP specifically mentions use of EE1st principle for use of buildings<br>• EE1st principle has been taken into account in the German Buildings Energy Act |
| **Greece** | **Final updated NECP 2021-2030**<br>*2025* | • Located within the Balkans<br>• NECP notes reduction of energy poverty as the primary objective in the buildings sector |

| Country | NECP version<br>*Year submitted* | Reasons included |
|---|---|---|
|  | | • NECP sets targets for reduction of energy poverty |
| **Poland**<br> | **Draft updated NECP 2021-2030**<br>*2024* | • NECP includes a set of clear indicators of energy poverty<br>• NECP includes an objective of reducing energy poverty<br>• NECP includes a set of actions, including deploying several financial instructions, targeting the reduction of energy poverty |
| **Romania**<br> | **Final updated NECP 2021-2030**<br>*2024* | • NECP includes a requirement for regulatory authorities overseeing gas and electricity networks to apply EE1st principle into decisions<br>• Has implemented a project monitoring the application of the EE1st principle<br>• NECP includes multiple specific objectives targeting energy poverty |
| **Slovakia**<br> | **Final updated NECP 2021-2030**<br>*2025* | • NECP specifically includes use of the EE1st principle to reduce final energy consumption in buildings<br>• NECP covers the need to extend existing building renovation programmes to support households at risk of energy poverty |
| **Croatia**<br> | **Final updated NECP 2021-2030**<br>*2025* | • NECP includes various measures for addressing fuel poverty<br>• Croatia is often looked to as an example within the Energy Community for relevant policies |

Source: Republic of Bulgaria. 2024. Integrated Plan Energy and Climate The Republic of Bulgaria. | Federal Republic of Germany. 2024. Update of the Integrated National Energy and Climate Plan. | Hellenic Republic. 2024. National Energy and Climate Plan – Revised Edition. | Republic of Poland. 2024. Version Preliminary. National Plan in the field of Energy and Climate by 2030. | Romania. 2024. Integrated National Energy and Climate Plan of Romania. 2025-2030 Update. | Slovak Republic. 2025. Update of the integrated national energy and climate plan 2021-2030. | Republic of Croatia. 2025. Integrated national energy and climate plan for the Republic of Croatia.

The subsections below summarise how each of the four categories of policies and measures are addressed in the examples countries NECPs. It is important to note that while these policies and measures do not explicitly refer to the EE1st principle, by prioritising energy efficiency as a tool for addressing energy poverty they are in effect implementing the principle.

### 2.2.1 Preparing a building renovation strategy, which includes specific targets for the reduction of energy poverty.

| Case study countries with reduction of energy poverty targets in building renovation strategies | |
|---|---|
|  | **Bulgaria's Long-Term Renovation Strategy includes an objective of reducing energy poverty among occupants of single-dwelling buildings.** |
|  | **Croatia's Long-Term Renovation Strategy aims to combat energy poverty through defining criteria to identify affected citizens, and through the renovation of buildings.** |

#### Bulgaria's Long-Term Renovation Strategy includes an objective of reducing energy poverty among occupants of single-dwelling buildings.

Bulgaria's NECP includes a summary of the existing Long-Term Renovation Strategy which outlines a strategy for renovation of residential and non-residential buildings within the country. The strategy foresees that 60% of the residential building stock and nearly 17% of the non-residential building stock will be renovated by 2050, resulting in energy savings of 7,329 GWh/year. Energy savings are expected to reduce greenhouse gas emissions by 3,274,453 tonnes of $CO_2$. The strategy includes the objective to reduce energy poverty among occupants of single-dwelling buildings. In addition, renovation of the building stock is noted as a measure to achieve national energy poverty targets.

#### Croatia's Long-Term Renovation Strategy aims to combat energy poverty through defining criteria to identify affected citizens, and through the renovation of buildings.

The Long-Term Renovation Strategy includes an activity to define indicators for energy poverty, and implement a system to monitor these indicators.

The Long-Term Renovation Strategy also includes a scheme to combat energy poverty and to support the use of renewable energy sources in residential buildings. Publicly owned and operated buildings (managed by the Ministry of Physical Planning, Construction, and State Planning), in which residents are not able to participate in the financing of renovation, are to be renovated through the scheme. The purpose is to reduce energy costs in energy-poor households and those vulnerable to energy poverty. A total of 397 buildings have been identified for renovation. Renovation is to be supported through funds collected through the energy efficiency obligation scheme, the national Environment Protection and Energy Efficiency Fund, and EU funds.

### 2.2.2 Financial support, access to finance, and targeted used of public funds

| Case study countries with providing financial support and targeted use of public funds to address energy poverty | |
|---|---|
|  | **Croatia is implementing energy renovation programmes for apartment buildings and family homes, supported through public funding.**<br>**Co-financing for implementation of energy efficiency measures in energy poor households will be made available in Croatia.** |
|  | **Germany provides income-based funding for heating replacement.** |
|  | **Greece uses on-bill financing and guarantees to support in energy efficiency improvements in households affected by energy poverty.**<br>**Greece will also support reduction of energy bills for vulnerable households through virtual net metering of community renewable energy schemes.** |
|  | **Poland has a range of financial instruments that are intended to address energy poverty alongside other objectives.** |
|  | **Slovakia will provide 100% funding for comprehensive renovation of homes for low-income households through the REPowerEU programme.** |

#### Croatia is implementing energy renovation programmes for apartment buildings and family homes, supported through public funding.

The energy renovation programme for apartment buildings, intended to run from 2021-2030, is a continuation of a previous program run from 2014 to 2020. Renovations are intended to be implemented in three models: renovation of multi-apartment buildings undamaged by the earthquake, renovation of multi-apartment buildings damaged by the earthquake, financial and support to citizens at risk of energy poverty. Establishment of a special fund to reimburse costs to energy poor households or households at risk of energy poverty is under consideration. The fund would seek to specifically address the obstacle of securing enough co-owners consent for energy renovation of a building by ensuring all co-owners of the buildings have the financial means to undertake the renovation.

The energy renovation programme for family homes, intended to run from 2021-2030, is a continuation of a previous program run from 2014 to 2020. The programme supports energy efficiency for single family homes through co-financing enabled by funds from auctioning of greenhouse gas emissions units and fees collected from suppliers through the energy efficiency obligation scheme in the event of default of obligations. As with the energy renovation programme for apartment buildings, renovations are intended to be implemented in three models: renovation of family homes undamaged by the earthquake, renovation of family homes damaged by the earthquake, financial and support to citizens at risk of energy poverty.

#### Co-financing for implementation of energy efficiency measures in energy poor households will be made available in Croatia.

Implementation of energy efficiency measures in energy poor households in Croatia are to be supported through co-financing. This is expected to include the replacement of household appliances and upgrading or replacing heating systems with systems that are environmentally and economically more favourable, are more energy-efficient, and use renewable energy sources.

A list of priority technical measures, the degree of co-financing, and sources of funding will be outlined in the Program for Elimination of Energy Poverty, which will be adopted by the end of 2025.

### Germany provides income-based funding for heating replacement.

Germany's Federal Funding for Efficiency Buildings (BEG) programme provides funding support for improved energy efficiency in buildings. Under the scheme all buildings, residential and non-residential are eligible for a basic subsidy of 30% the cost of improvement. For low-income households, a further 30% subsidy is available for owner-occupiers with a taxable household income of up to EUR 40,000 per year.

### Greece uses on-bill financing and guarantees to support in energy efficiency improvements in households affected by energy poverty.

Innovative financial instruments aim to combine public and private finance to support households affected by energy poverty. Public funding is intended to support bulk procurement to achieve economies of scale and reduce the cost of implementation. Private financing is then intended to be leveraged through use of on bill financing, backed by a government guarantee, to enable households affected by energy poverty to pay off the cost of building renovation over time.

### Greece will also support reduction of energy bills for vulnerable households through virtual net metering of community renewable energy schemes.

The APOLLON program involves regional authorities establishing Citizens Energy Communities (CEC), comprised of local households as members, who will then procure renewable energy systems sized to cover the energy needs of the members. Power generated by the renewable energy systems will be fed into the grid and compensated using virtual net billing with compensation offset against the energy bills of CEC members.

### Poland has a range of financial instruments that are intended to address energy poverty alongside other objectives.

Several financial instruments are listed in the NECP as being aimed at addressing energy poverty. These are targeted towards specific customer types and specific outcomes and include:

- The My Pride programme, which cofinances small solar PV instillations, energy storage, heat storage, heat pumps, solar collectors, and energy management systems being installed by individuals or households.
- The Energy Plus programme, which co-finances projects aimed at reducing negative environmental impacts, including improving energy efficiency, that are being undertaken by businesses.
- The My Heat programme, which provides financial support for installing heat pumps in new single-family residential buildings.
- The Clean Air Priority Programme, which provides funding for energy renovation of buildings and replacement of old solid fuel heat sources with modern heat sources in single-family dwellings.
- The Stop Smog programme, which provides fully subsidy funded energy efficiency improvements and replacement of head sources for the lowest income households in single-family dwellings. Households covered by the programme are those where households members are entitles to cash benefits.
- The Thermo programme, which provides financial assistance to compensate owners of buildings who are carrying out activities that significantly reduce energy consumption.
- Tax credits for thermal renovations of single-family dwellings, targeting individuals.

These instruments are not all targeted solely towards addressing energy poverty, but reduction of energy poverty is one of multiple outcomes each seeks to address.

### Slovakia will provide 100% funding for comprehensive renovation of homes for low-income households through the REPowerEU programme.

The EUR 40.8 million Home Light Recovery programme provides 100% funding of renovation of single-family homes at risk of energy poverty. Other funding support is available via the State Housing Development Fund, which supports apartment buildings in achieving a minimum 30% primary energy saving through grants and loads; and the Social Climate Fund, which supports the renovation of vulnerable households in apartments and single-family dwellings.

Currently under consideration is a tax policy reform that would provide tax relief for households living in energy poverty which have undergone renovations to improve energy efficiency.

### 2.2.3 National energy savings targets, and associated energy efficiency obligation schemes, that prioritise reduction in energy poverty.

| Case study countries with providing financial support and targeted use of public funds to address energy poverty | |
|---|---|
|  | **Bulgaria has stated an intention to set energy reduction targets that prioritise households facing energy poverty.** |
|  | **Greece requires responsible parties within the countries energy efficiency obligation scheme to implement low-cost measures in households affected by energy poverty.** |

#### Bulgaria has stated an intention to set energy reduction targets that prioritise households facing energy poverty.

Bulgaria introduced an energy savings obligation scheme in 2021, intended to run through to 2030. The scheme places individual energy savings targets on electricity suppliers, heat transmission companies and suppliers, suppliers of natural gas, liquid fuel traders, and solid fuel traders. The scheme supports the achievement of energy reduction targets, that to be set so as to prioritise households facing energy poverty.

#### Greece requires responsible parties within the countries energy efficiency obligation scheme to implement low-cost measures in households affected by energy poverty.

Greece introduced an energy efficiency obligation scheme in 2017. Obligated parties in the scheme are electricity, gas and oil suppliers with a market share of more than 1%.[9] Responsible parties are required to implement relatively low-cost measures in households affected by energy poverty. Measures include installation of smart meters, provision of energy-efficient lamps, and the installation of efficient heating, cooling, and hot water systems.

Obligated parties are also required to provide education, information, and technical advice to households to help in addressing energy poverty through energy management. Obligated parties are recommended to include energy audits as part of this support.

### 2.2.4 Technical assistance and information campaigns, including the establishment of one stop shops.

| Case study countries with providing technical assistance and information campaigns targeting energy poverty | |
|---|---|
|  | **Bulgaria's NECP includes an intention to establish an Energy Poverty Observatory supported by the EU Social Climate Fund.** |

[9] ODYSSEE-MURE. Energy Efficiency in Greece. Accessed: 28 February 2025.

| Case study countries with providing technical assistance and information campaigns targeting energy poverty | |
|---|---|
|  | **Croatia is aiming to create a network of connected professionals who are ready to engage in dialogue and contribute to the decarbonisation of the building stock.**<br>**As part of a program to combat energy poverty, Croatia will support capacity building through local information centres.** |
|  | **Germany provides energy efficiency advice to low income households through the Electricity Savings Check (SSC) project and consumer advice centres.** |
|  | **Greece is targeting rapid roll out of smart meters in households affected by energy poverty to help better management of energy consumption.** |
|  | **Romania is implementing one stop shops at local administration level to support households affected by energy poverty.** |
|  | **Slovakia provides information to households living in energy poverty through a establishing network of energy advisors and a one stop shop website.** |

### Bulgaria's NECP includes an intention to establish an Energy Poverty Observatory supported by the EU Social Climate Fund.

The proposed Observatory aims to be a platform for bringing together a wide community of officials and researchers working in the field of energy poverty in Bulgaria. The Observatory would be attached to the Council of Ministers of the Republic of Bulgaria and would support coordination of decision making and implantation of energy poverty measures and policies.

The aim is to create a new knowledge centre, which not only serves as a comprehensive information resource for stakeholders on the levels of energy poverty in Bulgaria and measures to address it, but also to stimulate progress in analytical research into the causes and consequences of the problem in Bulgaria. In addition, the Observatory will develop innovative policies and practices to tackle energy poverty and will also serve as a reference point for stakeholder discussions and exchange of knowledge on the topic.

### Croatia is aiming to create a network of connected professionals who are ready to engage in dialogue and contribute to the decarbonisation of the building stock.

Croatia has adopted the *Charter of Cooperation for the Decarbonisation of Buildings by 2050* to improve cross-sectoral communication and cooperation between the public and private sectors and civil society. In addition to cross sector cooperation public information campaigns focusing on the EE1st principle and energy renovation of buildings are to be undertaken.

Dialogues on energy poverty specifically are intended to be held as part of the activities undertaken under the charter. There dialogues will raise awareness of energy poverty and aim to establish criteria for energy poor households and low-income households.

### As part of a program to combat energy poverty, Croatia will support capacity building through local information centres.

Capacity building will be delivered through local information centres, and energy poor citizens as well as citizens at risk of energy poverty will be provided with adequate information and advice on energy efficiency measures that contribute to the reduction of energy poverty and on opportunities for co-financing such measures.

### Germany provides energy efficiency advice to low-income households through the Electricity Savings Check (SSC) project and consumer advice centres.

The SSC project trains formerly long-term unemployed to provide energy and water efficiency advice. Advice is given through home visits with a focus on energy-saving behaviour and savings potential from replacing cooling appliances. Online and telephone advice is also provided.

Consumer advice centres provide advice on energy efficiency, energy savings, energy-efficient refurbishment, modern heating technology, and funding opportunities. Advice is available through online presentations, and individually in person or via telephone call. On-site consultations at a home are available free of charge for low-income households (for other households a fee of EUR 30 is charged for on-site consultations).

### Greece is targeting rapid roll out of smart meters in households affected by energy poverty to help better management of energy consumption.

Greece is implementing a regulatory package to protect households affected by energy poverty. Part of this package includes adopting incentives for the rapid promotion of smart meters for households facing energy poverty. Subsequently, regulatory measures that will enable better self-management of energy consumption are intended to be introduced. Details of the incentives for adoption of smart meters, and subsequent regulatory measures are not provided in the NECP.

Greece also provides targeted information and education to households affected by energy poverty, owners of buildings rented by households affected by energy poverty, and entities involved in implementing technical measures addressing energy poverty. Information dissemination is done through a range of channels, including regional authorities, professional associations, consumer associations, and educational bodies; and through the establishment of one stop shops specifically targeting energy poverty. Topics covered include energy savings advice and better understanding of energy tariffs.

### Romania is implementing one stop shops at local administration level to support households affected by energy poverty.

One stop shops will provide information and technical advice related to energy efficiency and the utilisation of renewable energy with a focus on investments supported by public funding and finance. The one stop shops are also expected to perform analysis to identify energy-poor

households to facilitate prioritisation of future investment. Based on this identification of energy-poor households, it is intended that income-support and heating-aid will be consolidated and targeted towards the energy poor.

**Slovakia provides information to households living in energy poverty through a establishing network of energy advisors and a one stop shop website.**

A network of energy advisors has been established to advise households living in energy poverty free of charge on proposed solutions to energy poverty, including improving understanding of tariffs and state support schemes that might be available. A one stop shop website is intended to be developed to provide all information relevant to energy poverty in one place, including the possibility of prior verification via an automatic or contact form on whether the household meets the criteria for being at risk of energy poverty.

# 3 Stocktaking of the existing status in the Contracting Parties

This chapter examines how the NECPs of the Energy Community contracting parties have addressed energy poverty, with a particular focus on building renovations. By analysing the various initiatives, policies, and funding mechanisms outlined in these plans, we aim to provide a baseline for assessment of how the contracting parties can enhance their approach to addressing energy poverty.

Summaries of each country's efforts are included in the following subsections.

| Status in the Contracting Parties | |
|---|---|
|  | **Albania is developing a long-term building renovation plan that will support retrofits of residential buildings, including energy poor households.** |
|  | **Bosnia and Herzegovina addresses energy poverty through multiple strategies, plans and frameworks.** |
|  | **Georgia uses technical assistance in developing a building renovation strategy.** |
|  | **Kosovo*[10] is tackling the data gap on energy poverty and developing a Building Renovation Strategy to analyse barriers to building renovation.** |

[10] Throughout this Report, this designation is without prejudice to positions on status, and is in line with UNSCR 1244 and the ICJ Opinion on the Kosovo declaration of independence.

| Status in the Contracting Parties | |
|---|---|
|  | **Moldova's plan for reducing energy poverty by 50% in 2030.** |
|  | **Montenegro has developed of a Building Renovation Strategy that will achieve legal and strategic preconditions for an effective "renovation wave" in Montenegro.** |
|  | **North Macedonia is developing a Building Renovation Strategy and promotes building renovation as long-term measure for vulnerable customers.** |
|  | **Serbia adopted Strategy and has a goal to reduce energy poverty by 75% in 2030 with a set of measures aiming at building renovation.** |
|  | **Ukraine has developed a Long-term Strategy for thermal modernization of buildings by 2050.** |

### Albania is developing a long-term building renovation plan that will support retrofits of residential buildings, including energy poor households.

Albania's NECP provides a summary of actions taken with regard to building renovation to date including minimum requirements for energy performance in buildings and targets to be achieved from a long-term building renovation plan which will be prepared. The target foresees that the Municipality of Tirana will support 1000 retrofits of residential buildings focused on energy efficiency by 2035 (with extension beyond 2035), leading to approximately 1 million kWh of energy saved yearly. Additionally, other municipalities will be engaged in this program, therefore additional savings are expected.

The urgent need for a building renovation plan is highlighted in the NECP. Some of the dimensions of a long-term building renovation plan are to start progressive renovation of the residential building stock and financial support for improving energy efficiency in private buildings. To finance implementation of energy efficiency and building renovation, the importance of cross-border cooperation is highlighted. The Building Renovation strategy has been adapted in February 2025, and it estimates the need to invest 24 billion Euros in renovation by 2050, 69% of which is required for the residential sector. The strategy requires lowering energy consumption by investing in thermal insulation of walls, roofs, floors, window replacement, and replacement of heating systems[11].

[11] Weblajm. Alban. 2025. 24 miliardë euro investime për stokun e ndërtesave të dekarbonizuara. Accessed 20 May 2025

Energy poverty is not yet clearly defined and monitored in Albania. There are no specific policies addressing energy poverty, only compensation schemes in the form of cash benefits for households in need. The compensation schemes are general for welfare, however, they do provide compensation for energy use.

The NECP provides targets on energy efficiency that aim to reduce energy consumption per unit, contribute to an affordable energy supply, and reduce energy poverty. To support achievement of these targets, an action plan for reducing energy poverty will be developed based on the experiences of the EU countries. It will define grants for the renovation of the worst performing buildings and for the exchange of old household appliances, and establish a national system for planning, monitoring, and implementing measures for eradicating energy poverty. It is expected that these measures will provide support for 213,000 households with a cost for the state budget of ALL 1.76 billion (EUR 14.22 million) a year.

Primary and secondary legislation amendments are currently being developed to transpose the revised Energy Performance of Buildings Directive and include the EE1st Principle in some procurement procedures that are above certain thresholds.

### Bosnia and Herzegovina addresses energy poverty through multiple strategies, plans, and frameworks.

Bosnia and Herzegovina's draft NECP emphasises the adoption of the Building Renovation Strategy and establishing a sustainable legislative and policy framework for successful implementation of the strategy. Regarding energy poverty, the strategy will provide incentives for social categories to improve the energy performance of residential buildings.

The Strategy for the Long-Term Renovation of Buildings has been adopted by the Government of the Federation of BiH in 2024 and by the Parliament of the Federation of BiH in March 2025. It aims to reduce final energy consumption in buildings from 1,73 mtoe in 2020 to 1,26 mtoe by 2050[12].

Annex 11.4 of the Strategy for the Long-Term Renovation of Buildings addresses and elaborates on energy poverty, and energy poverty analysis undertaken by the Agency of Statistics of Bosnia and Herzegovina are presented. The analysis uses the definition of an energy poor household as a "*household that spends more than 10% of its income on heating in order to maintain an adequate level of thermal comfort*". The results show that, based on this criteria, 17,1% of the population is energy-poor. The data used is from 2015, so it is estimated that this number is even higher, considering the trend of rising energy prices in recent years. Further comprehensive analysis of energy poverty in BiH is presented in the strategy, with the conclusion that there is a need to develop and implement an Energy Poverty Reduction Program that includes the use of renewable energy sources in residential buildings for particularly vulnerable categories of the population. A list of proposed measures for reducing energy poverty is also provided, these include: implementing energy efficiency

[12] Nijaz Mušanović. 2023. Strategy for the long-term renovation of buildings in the Federation of Bosnia and Herzegovina for the period up to 2050. Accessed 19 May 2025

measures, education and awareness-raising campaigns, and social policies providing income-based assistance and developing targeted support programs.

A vulnerable consumer is defined in the Energy Law and Regulation of Energy Activities that was adopted in the Federation of Bosnia and Herzegovina. Based on that definition, a vulnerable consumer has a right to a subsidy for a portion of their electricity consumption needs. However, there are no legally defined protection programs for energy poor consumers in any area of electricity supply. The NECP provides a set of measures for socially vulnerable consumers and defines policy measures that will contribute to lowering energy poverty. These measures include:

- identifying areas with the highest energy poverty and where households most affected by access to affordable energy,
- energy retrofit programs targeted at energy-poor households, and
- financial support to help pay energy bills, and education on efficient use of energy.

Encouraging generation of electricity from renewable sources can also contribute to the elimination of energy poverty.

The establishment of a sustainable energy framework for the implementation of the strategy includes the development of regulation that can be used to encourage energy efficiency, introduce mandatory schemes to initiate building renovation, and provide incentives for social categories to improve energy performance of residential buildings.

An education programme on energy efficiency is also planned to help reduce energy poverty. The education programme is aimed at vulnerable consumers and includes information about energy appliances, proper energy use, and tips on reducing energy bills in the household. Awareness-raising campaigns about measures that reduce energy consumption and cost will aim to protect from further development of energy poverty.

The EE1st principle is not addressed in the NECP.

### Georgia uses technical assistance in developing a building renovation strategy.

The building renovation strategy is currently under development in Georgia with the technical assistance of the EU/KFW project, as planned in the NECP. A draft version will soon be available.

Vulnerable consumers are defined in the Law of Georgia on Energy and Water Supply as a "*household customer which due to its social status and/or health condition and in accordance with applicable legal acts is recognised by the competent national authority of Georgia as being a vulnerable customer to whom the right to system use and/or supply of electricity or natural gas is granted under special conditions in accordance with the provisions of this Law*"[13]. There are a number of mechanisms in place to protect vulnerable citizens from high prices for electricity and gas. Data on energy poverty and its extent is collected and analysed.

[13] Parliament of Georgia. 2019. Law of Georgia on Energy and Water Supply

Therefore, it is known that energy poverty is widespread in Georgia, especially related to the availability of proper heating technology and adequate levels of energy, and it is more common in rural areas. Causes of energy poverty are known and they are mostly due to the condition of distribution networks, unsustainable use of fuel wood, poor thermal performance of residential buildings, and generally low efficiency of buildings.

The NECP proposes the continuation of ongoing social assistance programs for vulnerable households and those in mountainous areas. The objective of this measure is to reduce the percentage of energy poor population and reduce energy poverty from 43% in 2017 to less than 15% in 2030.

Implementation of energy efficiency awareness-raising campaigns are planned to inform the public about financially effective and easily achievable options for saving energy in households.

In the energy security dimension of the NECP, all policies and measures shall reflect the EE1st principle.

### Kosovo* tackles the data gap on energy poverty and develops a Building Renovation Strategy to analyse barriers to building renovation.

Kosovo's* NECP outlines the plan to develop a National Strategy for Renovation of Buildings in accordance with Article 7 of the Law on Energy Efficiency (EED Article 4). Based on the NECP the strategy will analyse barriers to building renovation and outline policy measures to tackle those barriers, it will provide a long-term perspective to guide investment decisions and evaluate projected energy savings. Based on the recent information, Kosovo* has drafted the strategy and it is planned to be adopted and implemented soon.

There is no legal definition of energy poverty in Kosovo* yet. Amendments of the Energy Efficiency Law are planned in 2025 and they do include a legal definition of energy poverty. The data gap on energy poor households is big and tackling it is the key to further developing support schemes and measures for eradicating energy poverty. The NECP addresses energy poverty by planning a policy design for a consumption-independent support scheme for vulnerable consumers based on improved data collection and a yet to be developed definition of vulnerable consumers.

Kosovo* Energy Efficiency Fund (KEEF) has addressed energy poverty by supporting vulnerable households. In collaboration with municipalities the fund has financed the investment of 28 multi-apartment social buildings. KEEF plans to keep funding activities like this to eradicate energy poverty[14].

Kosovo* plans to organize energy efficiency consumer information programs that will educate citizens on how to use energy more efficiently in their homes and save money on energy bills. Even though aimed at all citizens, this measure could contribute to reducing energy poverty.

[14] Fondi i Kosovës për Efiçiencë të Energjisë. 2025. Kosovo Energy Efficiency Fund

In September 2024, a Program for the protection of vulnerable electricity consumers in Kosovo*. The program aims to provide direct support to vulnerable consumers in the electricity sector to have equal and affordable access to electricity by financially supporting the payment of electricity bills.

The EE1st principle is introduced in the NECP as part of the energy efficiency dimension, accounting for cost-efficient energy efficiency measures in shaping energy policy and making relevant investment decisions.

### Moldova has a plan for reducing energy poverty by 50% by 2030.

Moldova plans to develop a long-term renovation strategy to support the renovation of the national stock of residential and non-residential buildings. The strategy will include a set of financing, fiscal, and regulatory measures that will contribute to achieving the desired renovation rate. Some of the measures outlined as a part of the strategy are residential building refurbishment, further development of calculation methodology and minimum energy efficiency requirements, the introduction of energy certification of buildings, fully transposing the EPBD, and the creation of financial mechanisms to support building renovation.

Energy poverty is defined in the Law on Energy Efficiency as "*a situation in which the consumer lacks access to modern energy sources and technologies and/or has insufficient purchasing power for energy sources, particularly fuel for cooking, electricity and/or thermal energy, and/or lacks thermal comfort at home or in the building*."[15] Currently, Moldova provides social benefit compensation for the consumption of natural gas, electricity, and heat. Energy poverty will be combated by identifying consumers who are at risk of energy poverty, designing mechanisms and databases, assessing qualitative and quantitative aspects of energy vulnerability, and implementing measures to contribute to energy poverty reduction. Programs for thermal insulation of buildings in energy-poor communities will be established. The objective is to reduce energy poverty by 50% of the level of absolute poverty by 2030.

A National Energy Efficiency Information System will be created in Moldova which will collect, manage, and analyse data on the energy performance of buildings, appliances, vehicles, and other end-use sectors. It will help monitor energy savings and social outcomes, as well as identify opportunities for improving energy efficiency. The information in the information system will be transparent and accessible to various stakeholders, including consumers.

The Energy Efficiency dimension of the NECP implementation is based on the EE1st Principle. Energy poverty measures outlined in the NECP are under the Energy Efficiency therefore to some extent based on the EE1st Principle.

### Development of the Building Renovation Strategy will achieve legal and strategic preconditions for an effective "renovation wave" in Montenegro

[15] Parlicov, V., Vremis, M., Craievschi-Toarta, V., & Cepoi, E. United Nations Development Programme. 2022. Report on Energy Poverty Assessment and Support Mechanisms in the Republic of Moldova

Development of the Building Renovation Strategy and implementation of EPBD will together achieve legal and strategic preconditions for effective energy renovation in Montenegro. It is expected that the development will finish in September 2025. The strategy focuses on energy renovation of the national building stock and will help achieve legal and strategic preconditions for an effective "renovation wave".

In March 2025, Montenegro adopted a new Law on Energy which includes a definition of energy poverty and criteria based on which the poverty is determined. Energy poverty is defined as "*a state in which the household does not have access to basic energy services that provide decent standards of life and health, including adequate heating and cooling, hot water, lighting and energy to power household appliances*." The criteria to determine energy poverty are: a high share of household expenses for energy; a low level of total household income; and a low energy efficiency of residential buildings and household appliances and devices.

There is no specific strategy for the reduction of energy poverty and no long-term measures for alleviating energy poverty in Montenegro. Energy-poor households are protected from the disconnection from the electricity and gas network in the period from April to October by the Energy Act, and there are two measures aimed at directly subsidizing energy costs for vulnerable consumers. The draft NECP does not propose policy measures for the reduction of energy poverty but the need for long-term measures such as a plan for alleviating energy poverty and energy retrofitting of the buildings is recognized. Additionally, there is a need to define energy poverty reduction measures specific to three very diverse climate zones in Montenegro.

The EE1st Principle was not addressed in the draft NECP.

### North Macedonia is developing a Building Renovation Strategy and promotes building renovation as long-term measure for vulnerable customers

The Energy Efficiency Law stipulates the obligation to develop a Building Renovation Strategy for residential, public and commercial buildings for at least a 10-year period. The NECP introduces policy measures for renovation of buildings. For residential sector, the measure PM_EE2: Retrofitting of existing residential buildings envisages a 2% annual renovation rate. However, no specific targets for renovation of residential buildings occupied by the citizens in the risk of energy poverty are set.

The term "energy poverty" is not defined in legislation in North Macedonia, so the first objective is for this to be defined in the adequate laws and bylaws. Vulnerable customers are defined by the Energy Law. Namely, a vulnerable consumer is defined "*as a household: 1) that uses the guaranteed minimum assistance and makes a monetary allowance to cover part of the costs of energy consumption in the household in accordance with the Law on Social Protection; and 2) in which a person lives in a state of social risk (motherhood, illness, old age, injury and disability) to which the power supply and/or the right to use the network are granted under special conditions and in the manner specified in a separate supply rules for the type of energy*". The distinction is made between vulnerable electricity consumer, vulnerable natural gas consumer and vulnerable heat consumer, whereas for the first two maximal electricity/gas annual use is prescribed (3.600 kWh electricity and 700 $m^3$ natural gas), while for vulnerable

heat consumer such energy consumption threshold is not defined. There are no data on the number of vulnerable customers, therefore there is a need to establish a monitoring system.

In 2021, solar thermal collectors, heat pumps and windows were subsidized for these categories of customers for the first time.

In 2024 the government adopted a programme to support vulnerable customers. Short-term measures include protection from utility disconnections, minimum energy supply, and assistance for purchasing new high efficiency single split air conditioners for heating. Long-term measures focus on incentivising low energy consumption, retrofitting buildings, upgrading household appliances, and installing photovoltaic panels or solar-thermal collectors.

### Serbia has a goal to reduce energy poverty by 75% in 2030 with a set of measures aimed at building renovation.

The Long-term Strategy for Encouraging Investment in the Renovation of the National Building Fund of the Republic of Serbia until 2050 will provide a mix of policy, financing, fiscal, and regulatory measures to support energy renovation of the building stock. The aim is to define energy efficiency measures and packages of measures for the renovation of buildings, based on the characteristics of the building stock, defined reference buildings, and cost-optimal analyses. Currently, there is no specifically stated plan to address energy poverty in the strategy.

Serbia's ambitious goal of reducing energy poverty by 75% by 2030 compared to 2020 will be achieved through a set of financial, regulatory, and educational measures. Energy poverty is already defined in the Law on Energy and is marked as one of the key threats to the energy transition. The Law on Energy states that "*Energy poverty is a condition in which a household lacks access to basic energy services that ensure fundamental levels of a decent living and health standard. This includes adequate heating, hot water, cooling, lighting, and energy for powering household appliances. It is caused by a combination of factors such as unaffordable energy prices, insufficient disposable income, high energy costs, poor energy efficiency of residential units, and social status*."[16] A Coordination group for the reduction of energy poverty is formed.

The first step in combating energy poverty in Serbia is the preparation and adoption of the action plan for combating energy poverty that will provide a set of policies, measures, and quantified objectives to be introduced by 2030, as well as estimate impacts expected from the implementation of measures. Tools and methodology will be improved for better monitoring of energy-vulnerable households and to evaluate implemented policies and measures. Professionals will be trained in identifying energy poor households, avoidance of stigmatization, gender equality, etc.

A comprehensive list of measures for combating energy poverty defined in the NECP is focused on the financial support for energy rehabilitation of existing residential buildings that includes renewing the building envelope and technical systems. Energy poor households will be protected from disconnection from the electricity and gas grid in addition to the reduction of

[16] Narodna skupština Republike Srbije (The Serbian National Assembly). 2014. Zakon o energetici (Energy Law)

monthly obligations for certain quantities of electricity and gas, and financial support in the form of social tariffs and energy cards to cover energy needs. Facilitating the access of energy poor households to alternative energy sources such as district heating and natural gas networks is intended to reduce energy expenses. Renewable energy sources such as solar thermal systems, building renovation, and energy efficient house appliances will be promoted through subsidies and awareness-raising information campaigns.

The Serbian NECP recognizes the importance of awareness raising and information campaigns for the alleviation of energy poverty. Therefore, information campaigns, awareness raising, guidance, or training programs are planned to facilitate the implementation of policies and measures to alleviate energy poverty. Simplified energy audits will result in specialized energy advice for each vulnerable household, and smart meters will facilitate the provision of guidance and targeted advice.

Awareness-raising activities and one-stop-shops for all final consumers, with a focus on households, will be organized to educate consumers on energy efficiency measures and how to lower consumption in their households. One-stop-shops will include an option to provide financial support and undertake the implementation of energy efficiency measures on behalf of end-users.

The EE1st is mainly addressed in accordance with energy-efficient water supply, gas, and grid infrastructure addressing the development of their programs in compliance with the principle.

### Ukraine developed a Long-term Strategy for thermal modernization of buildings by 2050.

The Ministry of Community Development, Territories and Infrastructure of Ukraine developed a Long-Term Strategy for thermal modernization of buildings until 2050. The main goal of the strategy is to decarbonize the national building stock by 2050. Some of the targets of the strategy are: final energy consumption in the buildings sector be reduced by 15%; at least 36% of residential and public buildings meet the minimum energy efficiency requirements; and at least 10% of public buildings meeting the Net Zero Energy Buildings (NZEB) standard. Among other things, the strategy will also address energy poverty for the period 2024-2026. The measures it outlines are defining energy poverty and the criteria for it; determining the number of individuals below the poverty line; establishing medium and long-term goals for reducing energy poverty; and approval of comprehensive plans of measures to overcome energy poverty, including energy efficiency measures and subsidies.

Energy poverty still lacks a definition, methodology, and a clear list of measures to reduce it. The measures that the NECP proposes include subsidies for partial compensation of energy service costs, subsidies to compensate for the cost of consumed natural gas, and protection of vulnerable consumers regarding disconnection during critical periods. Ukraine has already transitioned from indirect subsidies to non-cash monetized subsidies for households to compensate for the cost of consumed services.

The overall plan for monitoring and overcoming energy poverty will legally define energy poverty, including quantitative and qualitative indicators that justify categorization, assess the level of poverty, and determine the desired level of reduction. Thermal modernization of buildings, energy efficiency, implementation of smart digital solutions, and information

campaigns are measures included in an overall plan for overcoming energy poverty. It is expected that the transformation of the energy sector will reduce energy poverty and achieve and maintain the average European indicator of 7,9%.

# 4 Current practices within the financial sector

The following section examines how various financial instruments and initiatives across countries are driving energy efficiency improvements in residential buildings while addressing energy poverty in the period from 2022 until 2025. It reviews **national** and **international funding and financing sources**, from **commercial bank loans** and **specialized energy efficiency funds** to **international support from organizations** such as the **EBRD's Green Economy Financing Facility (GEFF), European Investment Bank (EIB)**, and **World Bank (WB)**, aimed at promoting energy-saving renovations. By comparing practices in Albania, Bosnia and Herzegovina, Georgia, Kosovo*, Moldova, Montenegro, North Macedonia, Serbia, and Ukraine, this chapter highlights tailored approaches that blend public and private resources to reduce energy consumption, lower $CO_2$ emissions, and improve living conditions for energy-poor households.

| Specific targets for the reduction of energy poverty in a building renovation strategy in CPs | |
|---|---|
|  | **Relying on Green Economy Financing Facility (GEFF) loans, state budget, and municipal initiatives energy efficiency efforts in Albania are progressing, albeit constrained by the absence of a dedicated Energy Efficiency Fund.** |
|  | **Despite the residential sector's potential to transform the nation's energy landscape, current financial practices in Bosnia and Herzegovina fall short of fully harnessing energy efficiency as a key driver.** |
|  | **Leveraging GEFF loans and bank credit lines, home energy upgrades in Georgia are advancing, even as the absence of a dedicated Energy Efficiency Fund limits broader support.** |
|  | **Although the Energy Efficiency Fund (KEEF) offers initial backing, energy efficiency projects in Kosovo* are still in early stages.** |
|  | **Driven by targeted grants and the Residential Energy Efficiency Fund Program (REEFP), progress in reducing energy poverty in Moldova is evident, though integration challenges persist.** |
|  | **Supported by the Eco-Fund for Environmental Protection and GEFF, residential energy efficiency efforts in Montenegro are gaining momentum, even as uptake and implementation challenges remain.** |
|  | **Implementing GEFF loans alongside Habitat Macedonia's revolving and guarantee funds, North Macedonia sees progress in energy upgrades while being held back by the absence of a national Energy Efficiency Fund.** |

| Specific targets for the reduction of energy poverty in a building renovation strategy in CPs |
|---|
|  **Bolstered by state subsidies, international loans, and GEFF financing, Serbia continues to advance energy efficiency, although gaps remain due to the lack of a dedicated Energy Efficiency Fund.** |
|  **Amid war-related constraints, Ukraine's Energy Efficiency Fund has been pivotal in residential upgrades, yet redirected financing towards conflict mitigation limits its broader impact.** |

### Relying on GEFF loans, state budget, and municipal initiatives energy efficiency efforts in Albania are progressing, albeit constrained by the absence of a dedicated Energy Efficiency Fund.

Investments in energy efficiency are being driven by both the state budget and foreign financial aid, with a key emphasis on the building sector. Local banks are also contributing by offering credit lines for various energy efficiency measures, especially those aimed at improving the thermal insulation of private building envelopes.

The European Bank for Reconstruction and Development (EBRD) has introduced the **Green Economy Financing Facility (GEFF)** in Albania, which offers loans to homeowners for energy-efficient home improvements. These loans, channelled through local partner banks, are specifically designed to reduce energy consumption and lower $CO_2$ emissions, thereby contributing to a greener and more sustainable future. Below is the description of the most recent projects under the Western Balkans Green Economy Financing Facility III - REpower programme, aimed at financing eligible sub-borrowers in the privately owned residential dwellings or buildings and supporting eligible energy efficiency or renewable energy projects in the public sector for investments that promote renewable energy and energy efficiency under the Green Economy Transition (GET) approach:

1. **GEFF III - Intesa Sanpaolo Bank Albania**[17] project, approved on 02 Jul 2024 and currently disbursing funds, involves the provision of a senior unsecured loan of up to 3.0 million EUR to Intesa Sanpaolo Bank Albania (ISBA)[18].

2. **Western Balkans GEFF III - Union Bank**[19] project, approved on 27 Jun 2023 and currently in the repaying phase, provides a senior unsecured loan of up to 3.0 million EUR to Union Bank ShA (UB)[20].

[17] European Bank for Reconstruction and Development. 2023. GEFF III - Intesa Sanpaolo Bank Albania. Accessed 19 May 2025.
[18] The fourth largest bank in the country by total assets, which operates through 35 branches and employs 701 staff.
[19] European Bank for Reconstruction and Development. 2023. Western Balkans GEFF III - Union Bank. Accessed 19 May 2025.
[20] Union Bank ShA, a mid-size bank focusing on SME and retail lending, is the designated client for this initiative. As of YE2022, UB ranked as the eighth largest bank in Albania in terms of both assets and loan portfolio market share.

3. **Western Balkans GEFF II - PCBA**[21] project, approved on 12 Apr 2022 and now in the repaying phase, provides a senior unsecured loan of up to 3.0 million EUR to ProCredit Bank Albania (PCBA)[22].

Complementing this effort, at the end of 2022, the **European Investment Bank (EIB)** has provided a 2 million EUR technical assistance grant aimed at supporting the **development of affordable and energy-efficient housing in Tirana**.[23] The Bank will support the municipality's initiative to offer improved, energy-efficient housing for Tirana's most vulnerable residents. The project involves constructing new buildings and related infrastructure on an 86,600 m² site, designed to accommodate approximately 1,600 low- and middle-income households, nearly 6,500 people in total.[24]

**Partnerships and collaborative programs** further enhance these efforts and raise awareness of the energy transition. A notable example is the **Gender and Socially Just Energy Communities Project**[25]. The project seeks to advance renewable energy in Albania and boost citizen engagement in the energy transition while also promoting gender equality. It focuses on, among other groups, **low-income households**. Through **training courses and networking events**, participants will learn about the potential of citizen energy, including self-consumption and self-generation of renewable energy, to apply these strategies in their own activities. The objective is to empower them to drive the energy transition, secure their own energy supply, and ideally generate green jobs.

Additionally, it is important to note that there is currently **no designated energy efficiency fund in Albania**. The revision of the Energy Efficiency Law is currently in progress and is expected to introduce new provisions aimed at establishing the fund.

### In Bosnia and Herzegovina, current financial practices still fall short of fully harnessing energy efficiency in the residential sector as a key driver for transforming the nation's energy landscape.

Investments in energy efficiency are being driven by energy efficiency and environmental fund in each of the entity, public initiatives from Government of Brčko District and foreign financial aid.

**Public initiatives** by the **Environmental Fund of the Federation of Bosnia and Herzegovina**, such as the 2024[26] call for energy efficiency measures in residential buildings, which received EU budget support of 4.46 million BAM (2.28 million EUR), demonstrate a strong commitment to the energy transition and reducing energy poverty. The 2024 public call

[21] European Bank for Reconstruction and Development. 2022. Western Balkans GEFF II – PCBA. Accessed 19 February 2025. Accessed 21 May 2025
[22] PCBA, a subsidiary of ProCredit Holding and a key player in Albania's SME-oriented banking sector.
[23] Energy Community. 2024. Albania Annual Implementation Report
[24] Gordana Kovacevic. 2022. Albania: EIB provides a €2 million technical assistance grant to support affordable housing in Tirana. Accessed 20 May 2025
[25] Project costs: Total volume: 174,705 euros, funding from the Deutsche Bundesstiftung Umwelt (DBU): 121,905 euros; Source: Deutsche Bundesstiftung Umwelt. 2024. Gender and socially just energy communities in Albania. Accessed 20 May 2025
[26] Fond za zaštitu okoliša Federacije BiH. 2024. Public call for allocation of funds from EU budget support for the implementation of energy efficiency measures in residential buildings. Accessed 20 May 2025

allocates funds specifically to projects that upgrade the energy performance of existing residential properties. Eligible measures include thermal insulation of external walls, roofs, and floors, replacement of outdated windows and doors, and improvements to heating systems, especially in buildings not connected to a functional district heating network. By capping the maximum grant at 50% of the total investment (up to 5,000 BAM, or 2,557 EUR (including VAT)), the call underscores the importance of channelling EU funds into initiatives that not only reduce energy consumption but also directly support vulnerable households.

Going forward, the **Fund for Environmental Protection and Energy Efficiency of the Republic of Srpska** issued its final decision on selecting beneficiaries for EU budget support aimed at implementing energy efficiency measures in residential buildings for 2024.[27] A total of 672 beneficiaries were deemed eligible to access the funds, with approximately 3 million BAM (1.6 million EUR) allocated for improvements such as thermal insulation and joinery replacement. Awarded amounts reached up to 5,000 BAM (2,557 EUR, including VAT) per beneficiary for these measures.

Additionally, the **Government of Brčko District** has published the results of the **2024 public call**[28] for EU budget support funds, totalling approximately 95,590 EUR.[29] These funds are intended to help **private homeowners** implement energy efficiency measures. Applicants can receive non-refundable grants covering up to 50% of the total investment, with a maximum cap of 5,000 BAM, or 2,557 EUR (including VAT). Eligible measures include a variety of energy efficiency projects, such as installing thermal insulation, replacing external joinery, installing heat pumps, and other improvements designed to reduce energy consumption in residential buildings.

As part of the project implemented by Caritas Switzerland and the Center for Ecology and Energy, titled "**Innovations in Energy Efficiency and Renewable Energy for Better Adaptation to Climate Change and Poverty Reduction**," strategic documents addressing energy poverty[30] were developed for several municipalities and cities in Bosnia and Herzegovina, including Tuzla, Gradačac, Gračanica, Doboj Istok, Kalesija, Srebrenik, Teočak, and Čelić. A brief description of the measures and activities proposed, along with the estimated funds required for each municipality and city is provided in Annex A 1.

The European Bank for Reconstruction and Development (EBRD) has introduced the **Green Economy Financing Facility (GEFF)** in Bosnia and Herzegovina, offering predominately loans to projects that encourage the competitiveness of small and medium-sized enterprises (SMEs), support their transition to a green economy (GET technologies), and increase their awareness and knowledge.

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[27] The document is issued under the authority of the Management Board decision, No. 1-5.2/24 dated 29.7.2024.; Source: Environmental Protection and Energy Efficiency Fund of the Republic of Serbia. 2024. Decision on the Selection of Beneficiaries of the Fund's Resources under the Public Call for Allocation of Funds from the European Union Budget Support for Implementation of Energy Efficiency Measures in Residential Buildings for 2024. Accessed 20 May 2025

[28] Government of Brčko District of BiH. 2025. Public Call for the Allocation of Capital Grants to Individuals for the Implementation of Energy Efficiency Measures in Residential Buildings for 2025. Accessed 20 May 2025

[29] Avaz. 2024. U Brčkom raspisan poziv za sredstva iz budžetske podrške EU za mjere energijske efikasnosti. Accessed 20 May 2025.

[30] Strategy for Reducing Energy Poverty.

Nevertheless, a small number of loans are **offered to homeowners for energy-efficient home** improvements. Below is the description of the most recent projects under the Western Balkans Green Economy Financing Facility II and III - REpower programme, aimed at financing gender-responsive on-lending to eligible sub-borrowers in the residential sector, including individual residents, housing collectives, housing management companies, service providers, and companies involved in green technologies, materials, and construction, for investments that promote residential renewable energy and energy efficiency under the Green Economy Transition (GET) approach:

4. **GEFF III REPower - Addiko Bank Sarajevo**[31] project approved on 07 May 2024 provides a senior secured loan of 2 million EUR to Addiko Bank Sarajevo (ABSA)[32].

5. **GEFF III REPower - Mikrofin**[33] project approved on 02 Apr 2024 and currently in the repaying phase, provides a senior unsecured loan of up to 2 million EUR.

6. **GEFF III REPower - Partner**[34] project approved on 08 Oct 2024 provides a senior unsecured loan of up to 4 million EUR. The client for this project is Partner Mikrokreditna Fondacija Tuzla[35].

7. **GEFF III REPower - ProCredit Bank**[36] project approved on 07 May 2024 provides a senior unsecured loan of up to 1 million EUR to ProCredit Bank dd BiH (PCBiH)[37].

8. **GEFF III REPower - Sparkasse Bank**[38] project approved on 05 Mar 2024 provides a senior unsecured loan of up to 2 million EUR to Sparkasse Bank d.d. BiH (SPKB)[39].

[31] European Bank for Reconstruction and Development. 2024. GEFF III REPower – Addiko Bank Sarajevo. Accessed 20 May 2025.
[32] Addiko Bank Sarajevo, a universal bank operating in Bosnia and Herzegovina with 28 branches and serving SME and retail clients, is the 14th largest bank in the country with a 3% market share (Q3 2023).
[33] European Bank for Reconstruction and Development. 2024. GEFF III REPower – Mikrofin. Accessed 20 May 2025
[34] European Bank for Reconstruction and Development. 2024. GEFF III REPower – Partner. Accessed 20 May 2025.
[35] The third largest non-deposit taking microfinance institution in Bosnia and Herzegovina, which holds a 16.5% market share by total assets as of Q4 2023.
[36] European Bank for Reconstruction and Development. 2024. GEFF III REPower – ProCredit Bank. Accessed 20 May 2025.
[37] SME-oriented commercial bank in Bosnia and Herzegovina, holding modest market shares of 3.1% in assets, 3.3% in net loan portfolio, and 2.8% in deposits as of end-Q3 2023.
[38] European Bank for Reconstruction and Development. 2024. GEFF III REPower – Sparkasse Bank. Accessed 20 May 2025.
[39] Sparkasse Bank BiH, a mid-sized universal bank with a network of 38 branches and 496 employees, is a key player in the national market, ranking as the sixth largest lender in the country by assets (with a 5.8% market share) and by loan portfolio (6.6% market share as of 3Q23).

9. **GEFF III REPower - UniCredit Bank Mostar**[40] project approved on 23 Jan 2024 provides a senior unsecured loan of up to 7 million EUR to UniCredit Bank d.d. Mostar (UCM)[41].

10. **Western Balkans GEFF II - MiBospo**[42] project approved on 07 Jun 2022 provides a senior unsecured loan of up to 1.0 million EUR to Mikrokreditna Fondacija Mi-Bospo Tuzla (MiBospo)[43].

### In Georgia, by leveraging GEFF loans and bank credit lines, home energy upgrades are advancing, even as the absence of a dedicated Energy Efficiency Fund limits broader support.

In Georgia, **residential energy renovations are primarily funded** through the **EBRD** and its **partner banks**. The GEFF for Georgia, a dedicated credit line launched in 2019 with a total volume of 50 million EUR and co-financed by the Green Climate Fund and Austria, provides financing for energy-efficient upgrades in both homes and businesses. This initiative supports investments that boost energy efficiency and promote climate-friendly projects. Along with its predecessor, the Energocredit program, GEFF has already facilitated green investments totalling over 42 million EUR, enabling energy upgrades in more than 29,000 households.[44]

Homeowners, including individual apartment owners or homeowner associations of multi-flat buildings, can obtain **low-interest loans** from **local banks** to fund eligible green renovations. Typical upgrades include insulation of walls and roofs, installation of efficient double-glazed windows and doors, LED lighting, modern heating and cooling systems, solar panels, and heat pumps. GEFF further provides technical assistance and pre-approved technology lists to streamline these projects. Nevertheless, **research shows that local banks**, such as JSC TBC Bank[45], the second-largest bank in Georgia[46], **primarily fund eligible businesses** by enhancing energy performance through the installation of high-performing, energy-efficient, and renewable energy technologies.

Between 2022 and 2025, GEFF offered loans primarily aimed at enhancing SME competitiveness by increasing access to financing. In addition, the facility has contributed to the competitiveness of financial institutions by fostering innovation in strategies, products,

[40] European Bank for Reconstruction and Development. 2024. GEFF III REPower - UniCredit Bank Mostar. Accessed 20 May 2025.
[41] UniCredit Bank d.d. Mostar is the largest universal commercial bank operating in Bosnia and Herzegovina, holding a 17.8% market share by total assets as of YE2022. The bank, which operates through 70 branches and employs 1,181 staff, is 99.3% owned by Zagrebačka banka d.d..
[42] European Bank for Reconstruction and Development. 2024. Western Balkans GEFF II MiBospo. Accessed 20 May 2025.
[43] MiBospo is a specialized microfinance institution focused on providing loans primarily to female borrowers, women entrepreneurs, and agro clients. At YE2021, MiBospo is the 4th largest MFI in Bosnia and Herzegovina by total assets, holding a 7% market share.
[44] EBRD Green Economy Financing Facility. EBRD and partners deepen green finance in Georgia. Accessed 20 May 2025.
[45] TBC Bank. Official website. Accessed 20 May 2025.
[46] Market share in total loans 39.5% as of 31 Dec 2022; Source: TBC Bank. Management Report and Financial Statements 2023. Accessed 20 May 2025.

processes, and marketing related to SME lending, while also promoting sustainable lending practices that strengthen the resilience of the financial system.

Additionally, in 2023, Georgia introduced new legal rules and standardized contract templates to support a **financing method** called **energy performance contracting**[47]. This method allows companies to upgrade buildings with energy-saving improvements and get paid back through the resulting reductions in energy costs. Essentially, by setting up these by-laws and model contracts, Georgia has created a legal framework that makes it easier and more secure for both service providers and building owners to engage in projects that improve energy efficiency, with the energy savings helping to cover the costs over time.[48]

Additionally, it is important to note that there is currently **no designated energy efficiency fund in Georgia**.

### Although the Kosovo* Energy Efficiency Fund (KEEF) offers initial backing, energy efficiency projects in Kosovo* are still in early stages.

The Kosovo* Energy Efficiency Fund (KEEF) was established as an independent, autonomous, and stable institution with the approval of the Law on Energy Efficiency (No. 06 / L-079).[49] As per the available data, the KEEF announced for the first time in 2023 a **Public Call for the implementation of the Emergency project *Implementation of Energy Efficiency Measures for Individual Residential Houses***[50] and for **Social Multi-Residential Buildings**[51], and **second call in August 2024**[52]. These projects, part of the **Emergency Package for Energy**, are financed by the EU under the **Instrument for Pre-Accession Assistance (IPA) program** and coordinated by the **Government of the Republic of Kosovo* (GRK)**, which has approved an Action Plan that delegates implementation to KEEF. These initiatives, totalling 10 million EUR each, are designed to boost energy savings and enhance the well-being of **residents in individual residential houses** and **multi-residential social buildings** owned by municipalities. This will be the first time a local institution has implemented such measures in the residential sector in Kosovo*. Under a co-financing model, KEEF will contribute 90% of the investment through non-refundable funds, while the municipalities are expected to cover the remaining 10%. KEEF will provide a subsidy covering 45% of the investment costs, with an enhanced rate of 50% if the house is owned or co-owned by a woman, subject to a maximum limit of 5,500 EUR per project.

[47] Energy performance contracting is a method often used by Energy Service Companies (ESCOs) where the implementation and financing of energy efficiency improvements are paid for through the cost savings achieved over time.
[48] Energy Community Secretariat. 2024. Georgia Annual Implementation Report.
[49] Fondi për Kursimin e Energjisë në Kosovë (Kosovo Energy Fund). Official Website. About Us. Accessed 20 May 2025.
[50] Fondi për Kursimin e Energjisë në Kosovë (Kosovo Energy Fund). Public Call for Implementation of Energy Efficiency Measures for Individual Residential Houses.
[51] The Kosovo Energy Efficiency Fund has signed the first agreements with the beneficiary municipalities for the project "Implementation of Energy Efficiency Measures for Social Multi-Residential Buildings"; Source: Fondi për Kursimin e Energjisë në Kosovë (Kosovo Energy Fund). News. Accessed 20 May 2025
[52] Fondi për Kursimin e Energjisë në Kosovë (Kosovo Energy Fund). 2024. Public Call for Implementation of Energy Efficiency Measures for Individual Residential Houses.

Nineteen municipalities (covering 29 multi-apartment buildings with about 700 low-income families) are expected to benefit from the Social Multi-Residential Buildings project. Renovation measures to be implemented through the project include thermal insulation of building envelopes (walls and roofs), replacement of windows and main doors, installation of efficient heating systems (air conditioner heat pumps) for each apartment, upgrades to building entrances and intercom systems, as well as fire protection and smoke detector installations. Implementation is underway in phases – by late 2024, FKEE had signed agreements with 13 municipalities (covering 28 buildings and 785 families) to begin works, with additional towns to follow.[53]

In Kosovo*, the Ministry of Economy has implemented several energy efficiency programs targeting, household consumers and micro, small, and medium-sized enterprises (MSMEs). In 2022, energy efficiency subsidies for households were provided through a government-financed program focused on heating-related efficiency improvements. With a total investment of 5 million EUR supported by the Republic of Kosovo* budget (RBK), the program successfully reached 9,000 beneficiaries. Building on this, the Ministry launched a larger initiative under the EU Energy Support Package for the 2023-2025 period. This ongoing program, funded by the European Union, aims to deliver both energy efficiency and renewable energy measures. It allocates 13.8 million EUR for household consumers and 250,000 EUR for MSMEs, with an expected reach of 32,782 household beneficiaries and 154 MSMEs. These initiatives represent a significant step forward in reducing energy consumption, enhancing energy affordability, and supporting the green transition in Kosovo*.

Complementing these measures, the **EBRD's Green Economy Financing Facility (GEFF)** offers financing predominantly to projects that bolster the competitiveness of small and medium-sized enterprises (SMEs), support their transition to a green economy through GET technologies, and enhance their awareness and knowledge in Kosovo*. In addition to this, a selection of projects that provide financing to privately owned residential dwellings, GET-eligible High Energy Performance Residential Buildings (HPRBs), and eligible energy efficiency and/or renewable energy projects in the public sector can be found below:

1. **Western Balkans GEFF III - KRK**[54] project approved on 04 Mar 2025 involves a senior unsecured loan of up to 3.5 million EUR provided to Kreditimi Rural i Kosoves LLC (KRK)[55].

[53] Ndertimi Media. 2023. InfrastrukturëHapet thirrja për përfitim në masa të efiçiencës së energjisë në ndërtesat shumë-banesore sociale. Accessed 20 May 2025. and Fondi për Kursimin e Energjisë në Kosovë (Kosovo Energy Fund). 2025. FKEE hap aplikimin për subvencionim të masave të efiçiencës së energjisë për shtëpi të banimit. Accessed 20 May 2025.
[54] European Bank for Reconstruction and Development (EBRD). 2025. Western Balkans GEFF III – KRK. Accessed 20 May 2025.
[55] KRK is the third largest microfinance institution in Kosovo, serving almost 26,000 clients across 29 branches with a dedicated team of 287 employees.

2. **Western Balkans GEFF III - NLB Pristina**[56] project approved on 15 Oct 2024 consists of a senior unsecured loan of up to 5 million EUR provided to NLB Banka sh.a. (NLB Pristina)[57]

3. **Western Balkans GEFF III - ProCredit Kosovo**[58] project was approved on 09 July 2024 and involves a senior unsecured loan of up to 5 million EUR provided to ProCredit Bank Kosovo (PCBK)[59].

4. **Western Balkans GEFF III - Raiffeisen Bank Kosovo**[60] project was approved on 06 Aug 2024 and involves a senior unsecured loan of up to 3.0 million EUR provided to Raiffeisen Bank Kosovo (RBKO)[61].

5. **Western Balkans GEFF III - Banka per Biznes**[62] project was approved on 19 Mar 2024 and involves a senior unsecured loan of up to 4.0 million EUR and is implemented by Banka per Biznes, Sh.A. (BpB)[63].

### Driven by targeted grants and the Residential Energy Efficiency Fund Program (REEFP), progress in reducing energy poverty in Moldova is evident, though integration challenges persist.

Moldova's National Energy and Climate Plan (NECP) emphasizes an EE1st approach. This principle is reflected in two national initiatives, the **Residential Energy Efficiency Fund Program (REEFP)**[64] and the **Home Appliances Voucher Program**[65]. These programs are designed to both modernize building stock and directly address energy poverty. Financial practices under these programs prioritize energy efficiency improvements as a first step toward reducing energy consumption and costs.

The **Residential Energy Efficiency Fund Program (REEFP)** was approved on April 10, 2024, and is expected to mobilize approximately 1.4 billion lei (283 million EUR) between 2024 and 2027. Managed by the National Center for Sustainable Energy (CNED), the program's

[56] European Bank for Reconstruction and Development. 2024. Western Balkans GEFF III – NLB Pristina.
[57] NLB Pristina is the second largest commercial bank in Kosovo with a market share of 16.9% by total assets and 17.5% by net loans as of YE 2023.
[58] European Bank for Reconstruction and Development (EBRD). 2024. Western Balkans GEFF III - ProCredit Kosovo. Accessed 20 May 2025.
[59] PCBK, a subsidiary of ProCredit Holding, is the 3rd largest commercial bank in Kosovo with a market share of 15.3% in terms of net loans and the 4th largest bank in terms of total assets with a 15% market share as of YE 2023.
[60] European Bank for Reconstruction and Development (EBRD). 2024. Western Balkans GEFF III - Raiffeisen Bank Kosovo. Accessed 20 May 2025.
[61] RBKO, a subsidiary of Raiffeisen Bank International, is the largest commercial bank in Kosovo with EUR 1.4 billion in total assets as of YE2023.
[62] Development (EBRD). 2024. Western Balkans GEFF III - Banka per Biznes. Accessed 20 May 2025.
[63] BpB, established in 2001 is the 7th largest bank in Kosovo among 11 operating in the market, with a market share of 6.7% by total assets and 6.8% by net loans as of YE 2023.
[64] National Center for Sustainable Energy (Centrul Național pentru Energie Durabilă – CNED). Residential Energy Efficiency Fund Program (REEFP). Accessed 20 May 2025.
[65] Centrul Național pentru Energie Durabilă – CNED (National Center for Sustainable Energy). EcoVoucher Program. Accessed 20 May 2025.

budget comprises funds from energy efficiency obligations (2024-2026), grants and donations from development partners and international organizations, and resources from the **Energy Vulnerability Reduction Fund**. The primary beneficiaries of the program are Condominium Owners' Associations, with at least 50% of the renovated heated surfaces prioritized for vulnerable households facing energy poverty. Up to 70% of the investment required for thermal renovations will be covered by grants, while residents will contribute the remaining 30%. The program supports a variety of renovation projects, including the insulation of facades, improvements to roofs, ceilings, and technical floors, basement renovations, replacement of outdated joinery, modernization of traditional vertical heating distribution systems into more efficient horizontal ones with individual meters for each apartment, enhanced hot water delivery systems, and upgrades in lighting and ventilation.[66]

The **Home Appliances Voucher Program** is an ambitious national initiative aimed at replacing outdated appliances with new, energy-efficient models. It is specifically designed to assist vulnerable consumers by providing them with the means to acquire modern appliances that consume less energy, thereby reducing utility costs and benefiting the environment. Through this program, **beneficiaries are granted vouchers that can cover up to 70% of the cost of new appliances**. In addition to replacing old and inefficient devices, the initiative promotes the adoption of advanced technological solutions that are more sustainable and environmentally friendly.[67]

The European Commission and the EBRD signed a statement of intention for establishing a programme to reduce the cost of energy efficiency renovations for residential buildings in the Republic of Moldova in 2024.The European Union will contribute 9,5 million EUR in grants in support of credit lines provided under the EBRD Green Economy Financing Facility in residential sector (Residential GEFF). The **Residential GEFF Moldova**[68], is designed to provide up to 40 million EUR to local Partner Financial Institutions (PFIs). This joint initiative is designed to encourage Moldovan apartment and homeowners to undertake energy efficiency renovations that lower their energy bills, with participating banks providing loans for investments in upgrades such as insulation, heat pumps, and solar panels. This joint programme complements the Residential Energy Efficiency Fund, specifically dedicated to vulnerable families.[69]

### Supported by the Eco-Fund for Environmental Protection and GEFF, residential energy efficiency efforts in Montenegro are gaining momentum, even as uptake and implementation challenges remain.

The **Eco-Fun**d for **Environmental Protection** in **Montenegro** has been financing programs and projects that promote environmental protection, sustainable resource use, energy efficiency, and renewable energy since 2019. This funding is available to households, individuals providing catering services in homes, rural households, NGOs, public sector tenders, and companies at both state and local levels. One such opportunity is the **Public Call for Co-Financing Measures to Improve Energy Characteristics of the Envelope of**

[66] Ministry of Energy of the Republic of Moldova. 2024. Financing Residential Energy Efficiency Projects in Moldova: Opportunities and Challenges Discussed in Chisinau. Accessed 20 May 2025.
[67] Centrul Național pentru Energie Durabilă – CNED (National Center for Sustainable Energy). EcoVoucher Program. Accessed 20 May 2025.
[68] European Bank for Reconstruction and Development (EBRD). Residential GEFF Moldova. Accessed 20 May 2025
[69] Delegation of the European Union to the Republic of Moldova. 2024. European Union stepping up support to energy efficiency in the residential sector of the Republic of Moldova. Accessed 20 May 2025

**Collective Residential Buildings in the Municipality of Pljevlja** from August 2024.[70] This public call invites eligible residential communities in the Municipality of Pljevlja to apply for non-refundable co-financing to improve the energy performance of multi-family residential buildings. The program focuses on enhancing the building envelope through the installation of external thermal insulation and energy-efficient façade windows and doors, with the aim of reducing energy consumption, lowering energy costs, and improving indoor comfort while contributing to lower greenhouse gas emissions and better urban air quality. The total budget allocated for this measure is 1.1 million EUR, with a level of incentive set at 85% of the approved project costs. Applications must be submitted online via the Eco-Fund portal and include comprehensive documentation such as proof of property legality, technical offers from qualified contractors, and a resolution from the homeowners' assembly authorizing the work. The evaluation process involves both administrative and technical assessments, and successful applicants will enter into a trilateral agreement that outlines financing terms, execution schedules (with a maximum implementation period of 12 months, extendable only under force majeure), and conditions for monitoring and reporting.

Additionally, a total of 8.8 million EUR has been allocated to implement the Program for Incentivizing Energy Efficiency in Households. Of this amount, 8.0 million EUR comes from the European Commission's Instrument for Pre-Accession Assistance (IPA III) Direct Budget Support package to Montenegro aimed at mitigating the energy crisis. An additional 300,000 EUR is provided by the Municipality of Pljevlja, and 500,000 EUR comes from the Eco Fund, which is responsible for managing and executing the program.

Complementing these measures, the EBRD's **Green Economy Financing Facility (GEFF)** offers financing predominantly to projects that bolster the competitiveness of small and medium-sized enterprises (SMEs), support their transition to a green economy through GET technologies, and enhance their awareness and knowledge in Montenegro. In addition to this, a selection of projects that provide financing to privately owned residential dwellings, GET-eligible High Energy Performance Residential Buildings (HPRBs), and eligible energy efficiency and/or renewable energy projects in the public sector can be found below, along with other financing initiatives:

1. **Hipotekarna Banka - Mortgage Line**[71] project approved on 11 Sep 2024 is a financing initiative in Montenegro, designed to bolster the local mortgage lending segment and improve housing conditions for private individuals. The project involves a senior secured loan of up to 10 million EUR, disbursed in two equal tranches, which will be used by Hipotekarna Banka AD Podgorica (HB)[72] to provide long-term residential mortgage financing.

[70] Eko Fond. 2024. Javni konkurs za sufinansiranje mjera na unapređenju energetskih karakteristika omotača kolektivnih stambenih zgrada u opštini Pljevlja. Accessed 20 May 2025.
[71] European Bank for Reconstruction and Development (EBRD). Hipotekarna Banka - Mortgage Line. Accessed 20 May 2025
[72] Hipotekarna Banka AD Podgorica is the 3rd largest bank in Montenegro in terms of assets and deposits with market share of 14% and 4th by net loans with 7% market share at end-2023.

2. **WBGEFF III REPower - CKB**[73] project approved on 22 Oct 2024 provides a senior unsecured loan of up to 5 million EUR to Crnogorska Komercijalna Banka (CKB)[74] in two tranches (2 million EUR and 3 million EUR).

3. **Western Balkans GEFF II - NLBP**[75] project approved on 13 Dec 2022 provides a senior unsecured loan of up to 2 million EUR to NLB Banka AD Podgorica[76] for on-lending to the residential sector.

### Implementing GEFF loans alongside Habitat Macedonia's revolving and guarantee funds, North Macedonia sees progress in energy upgrades while being held back by the absence of a national Energy Efficiency Fund.

In North Macedonia there are three crucial financial products that are available to households to finance residential energy efficiency upgrades: **EBRD Green Economy Financing Facility (GEFF)**, **Habitat Macedonia's Residential Energy Efficiency Revolving Fund (REERF)** and **Residential Energy Efficiency Guarantee Fund (REEGF)**.

The **EBRD Green Economy Financing Facility (GEFF)** in Western Balkans provides finance for green economy investments in the residential sector as well as to businesses who provide energy efficiency and renewable energy products and services to households. Additionally, there is no mention of energy-poor households as borrowers that are particularly targeted under this instrument.

The **GEFF** in North Macedonia is predominately offering loans to projects that encourage the competitiveness of small and medium-sized enterprises (SMEs), support their transition to a green economy (GET technologies), and increase their awareness and knowledge.

Nevertheless, small number of loans is offered to homeowners for energy-efficient home improvements. Below is the description of the most recent projects under the Western Balkans Green Economy Financing Facility I, II and III – REpower programme, aimed at financing projects that upgrade buildings with modern, high-performance energy efficiency technologies under the Green Economy Transition (GET) approach:

1. **GEFF - Western Balkans - Komercijalna Banka Skopje II**[77] project approved on 01 Feb 2022 provided a senior unsecured loan of 1 million EUR in a single tranche to Komercijalna Banka AD Skopje[78].

[73] European Bank for Reconstruction and Development (EBRD). 2024. WBGEFF III REPower - CKB. Accessed 20 May 2025
[74] Crnogorska Komercijalna Banka, a fully owned subsidiary of OTP Bank Nyrt, is the largest bank in Montenegro. It currently holds a market share of 26% by total assets (32% in terms of net loans).
[75] European Bank for Reconstruction and Development (EBRD). 2022. Western Balkans GEFF II – NLBP. Accessed 20 May 2025
[76] NLBP is the second largest universal bank in Montenegro with total assets of 772 million EUR as of 1Q 2022 (market share of 14.1%) owned by NLB dd Ljubljana.
[77] Bank for Reconstruction and Development (EBRD). 2022. GEFF - Western Balkans - Komercijalna Banka Skopje II. Accessed 20 May 2025
[78] KB is the largest bank in the Republic of North Macedonia with assets of 1.9 billion EUR, and a market share of 22.9% as of end-2020.

2. **Western Balkans GEFF II - ProCredit Bank Macedonia II**[79] project approved on 04 Jul 2023 provided a senior unsecured loan of up to 1 million EUR to Procredit Bank AD Skopje (PCBM)[80].

3. **Western Balkans GEFF II - Sparkasse Bank AD Skopje II**[81] project approved on 27 Jun 2023 provides a senior unsecured loan of up to 1.0 million EUR to Sparkasse Bank AD Skopje[82].

4. **Western Balkans GEFF III - Komercijalna Banka Skopje**[83] project approved on 28 Feb 2023 provided a senior unsecured loan of up to 1.5 million EUR in one tranche to Komercijalna Banka AD Skopje.

5. **Western Balkans GEFF III - Komercijalna Banka Skopje II**[84] project approved on 18 Jun 2024 provides a senior unsecured loan of up to 3.5 million EUR to Komercijalna Banka AD Skopje.

6. **Western Balkans GEFF III - NLB Skopje**[85] project approved on 05 Nov 2024 provides a senior unsecured loan of up to 4 million EUR to NLB Banka AD Skopje[86]

7. **Western Balkans GEFF III - ProCredit Bank Macedonia**[87] project approved on 22 Nov 2022 project provided a senior unsecured loan of up to 1.5 million EUR in one tranche to ProCredit Bank AD Skopje[88]

[79] European Bank for Reconstruction and Development (EBRD). 2023. Western Balkans GEFF II - ProCredit Bank Macedonia II. Accessed 20 May 2025
[80] 6th largest bank in North Macedonia, to support on-lending for green investments in the residential sector with assets of 685 million EUR and a market share of 6.2% by total assets, 7.1% by net loans and 6.0% by customer deposits (YE2022).
[81] European Bank for Reconstruction and Development (EBRD). 2023. Western Balkans GEFF II - Sparkasse Bank AD Skopje II. Accessed 20 May 2025
[82] SBS is a universal commercial bank and the largest bank in North Macedonia, with 12.1% market share by total assets. It is 96.6% owned by Steiermarkische Bank und Sparkassen AG, Austria.
[83] European Bank for Reconstruction and Development (EBRD). 2023. Western Balkans GEFF III - Komercijalna Banka Skopje. Accessed 20 May 2025
[84] European Bank for Reconstruction and Development (EBRD). 2023. Western Balkans GEFF III – Komercijalna Banka Skopje II. Accessed 20 May 2025
[85] European Bank for Reconstruction and Development (EBRD). 2024. Western Balkans GEFF III – NLB Skopje. Accessed 20 May 2025.
[86] LB SK is a universal commercial bank and the 3rd largest bank on the market with a 15.6% market share by total assets, 17.7% by gross loan portfolio and 17.1% by customer deposits as of YE2023.
[87] European Bank for Reconstruction and Development (EBRD). 2022. Western Balkans GEFF III – ProCredit Bank Macedonia. Accessed 20 May 2025
[88] PCBM is a universal commercial bank, currently the 6th largest on the Macedonian market, with participation of 6.2% in terms of total assets and 7.5% in terms of customer loans as of end-2021.

8. **Western Balkans GEFF III - ProCredit Bank Macedonia II**[89] project approved on 09 Jul 2024 provides a senior unsecured loan of up to 4 million EUR to ProCredit Bank AD Skopje.

9. **Western Balkans GEFF III - Sparkasse Bank AD Skopje**[90] project approved on 08 Mar 2023 provides a senior unsecured loan of up to 4 million EUR to Sparkasse Bank Makedonija AD Skopje (SBM)[91].

10. **Western Balkans GEFF III - Sparkasse Bank AD Skopje II**[92] project approved on 25 Jun 2024 provides a senior unsecured loan of up to 4 million EUR to Sparkasse Bank AD Skopje[93].

**Habitat Macedonia's Residential Energy Efficiency Revolving Fund (REERF)** provides housing finance for low-income households intending to undertake EE upgrades. Habitat Macedonia's REERF is, on the other hand targeting low-income households (income level up to 75% of the gross national income (GNI) per capita per household member) and includes five different financing models:

- Affordable loans to individual homeowners, including owners of apartments in multi-family apartment buildings intending to join their funds and undertake Energy Efficiency (EE) intervention.

- Loans to homeowner associations intending to undertake EE intervention on their multi-family apartment building.

- Loans to companies licensed for residential building management and maintenance (housing management companies), intending to undertake EE intervention on the multi-family apartment buildings under their management, after reaching an agreement with the homeowners.

- Loans to specialized construction companies, intending to undertake EE intervention on the multi-family apartment building, after reaching an agreement with the homeowners.

- Specialized Residential Energy Efficiency (REE) loans developed in partnership with micro-finance institutions (MFIs).

[89] European Bank for Reconstruction and Development (EBRD). 2023. Western Balkans GEFF II - ProCredit Bank Macedonia II. Accessed 20 May 2025
[90] European Bank for Reconstruction and Development (EBRD). 2024. Western Balkans GEFF III – Komercijalna Banka Skopje. Accessed 20 May 2025
[91] SBM is a universal commercial bank and the 4th largest bank in North Macedonia, with 11.4% market share by total assets. It is 95.7% owned by Steiermarkische Bank und Sparkassen AG, Austria, which also acquired Ohridska Banka (OB, another client of the Bank) from Societe Generale and merged it into SBM in July 2021.
[92] European Bank for Reconstruction and Development (EBRD). 2024. Western Balkans GEFF III – Sparkasse Bank AD Skopje II. Accessed 20 May 2025.
[93] SBS is a universal commercial bank and the 5th largest bank in North Macedonia, with 12.6% market share by total assets as at YE 2023.

Habitat Macedonia has also developed the **Residential Energy Efficiency Guarantee Fund (REEGF)** as a demonstration project aimed at providing a partial credit guarantee that strengthens a financial institution's ability to disburse loans supporting residential energy efficiency. Under this initiative, the guaranteed party is a financial institution that is required to make qualifying loans to qualifying borrowers for qualifying projects. Qualifying loans refer to those made to borrowers that meet the necessary criteria for residential energy efficiency investments. In this context, qualifying borrowers are either registered homeowner associations or residential building management companies that intend to install energy efficiency equipment or technology in multi-family apartment buildings. The projects covered under this guarantee include interventions such as the installation of thermal insulation on roofs and façades, the replacement of windows and external doors, and the upgrading of heating equipment. Additionally, the maximum cumulative principal amount of qualifying loans made to any one qualifying borrower is set at the 25,000 USD. The guarantee itself covers 70% of the amount of any qualifying loan disbursed to registered homeowner associations and 50% of the amount of any qualifying loan disbursed to residential building management companies. This partial guarantee makes banks more confident in lending for EE projects, ultimately helping to improve the energy efficiency of residential buildings.

Additionally, **North Macedonia's government** has introduced **targeted subsidy schemes** to **encourage residential EE** and **renewable energy**. In 2023, the Ministry of Economy launched four public calls for household investments: (1) replacing doors/windows with insulated ones, (2) installing solar PV panels, (3) installing solar thermal collectors, and (4) switching heating systems from wood/coal to natural gas. About 80 million MKD (1.3 million EUR) was allocated to these measures in total. Households could receive rebates such as 50% of the cost for new windows/doors (up to 20,000 MKD ≈ 325 EUR) or 30% of the cost for solar water heaters (up to 15,000 MKD ≈ 244 EUR). Additionally, for connecting to natural gas, the subsidy covered up to 70% of costs (capped at 25,000 MKD ≈ 400 EUR) to incentivize cleaner heating. These programs were expected to reach a few thousand households (e.g. ~1,200 homes for window upgrades, ~1,000 for solar water heaters).[94]

Lastly, in October 2023, amendments to the Law on the **Development Bank of RS Macedonia** were approved, thereby **setting the legal framework for establishing a Fund within the Bank**. However, the legal and regulatory framework required to operationalize the Fund is **yet to be adopted**.

### Bolstered by state subsidies, international loans, and GEFF financing, Serbia continues to advance energy efficiency, although gaps remain due to the lack of a dedicated Energy Efficiency Fund.

Financing for energy efficiency measures in Serbia is supported by a mix of state budget allocations and international loans, such as those provided by the World Bank and EBRD, which supplement domestic funding for both private and public sector projects.

The **GrCF2 W2 – Public ESCO Serbia**[95] project with **EBRD** support, approved on 20 November 2024, is a nationwide initiative aimed at the energy rehabilitation of multi-family residential buildings connected to the district heating system in Belgrade. The project, which

[94] and Spasić, V. 2023. North Macedonia to subsidize households to switch to natural gas for heating. Accessed 20 May 2025. and EnerCEE. 2023. Support schemes – Energy Country Profile: North Macedonia. Accessed 20 May 2025

[95] European Bank for Reconstruction and Development (EBRD). 2023. GrCF2 W2 – Public ESCO Serbia. Accessed 20 May 2025.

involves the Ministry of Mining and Energy, the City of Belgrade, local communal enterprises, and the EBRD, seeks to implement key energy efficiency measures, such as insulation upgrades, installation of thermostatic valves, and heat cost allocators, to achieve over 35% energy savings. This transformation will enable a shift from lump-sum to consumption-based billing and contribute to significant $CO_2$ emissions reductions, ultimately improving air quality across up to 15 local self-governments. The overall project cost is estimated at up to 62.5 million EUR, with the Republic of Serbia allocating up to 50 million EUR for credit facilities financed by the EBRD, and an additional investment grant of up to 12.5 million EUR. Local Governments (LGs) were pre-selected based on an expression of interest launched in 2022, and these LGs will then issue public calls for applications for Homeowners Associations (HOAs) using predefined evaluation criteria.

The **Scaling-Up Residential Clean Energy (SURCE) Project**[96] with **World Bank** support is designed to boost clean energy and energy efficiency investments in Serbia's residential sector—particularly benefiting lower-income households. It focuses on reducing energy consumption and carbon emissions while improving air quality and heating comfort. The project is structured around two main components:

- Direct Investments: Providing partial grants for energy efficiency upgrades, sustainable heating solutions, and rooftop solar photovoltaic systems.
- Market Support: Developing scalable financing mechanisms, capacity building, awareness campaigns, and technical studies to remove market barriers.

The project has a total cost of 145 million USD, including a 50 million USD commitment from the World Bank. It aims to improve energy performance for approximately 25,000 households over the period of five years[97] by providing **special social inclusion grants** for the **most vulnerable citizens**. In addition, the project is expected to result in a shift from polluting fossil fuels such as coal and wood to cleaner energy sources, add an estimated 4MW of renewable energy capacity, and significantly reduce air pollution, particularly PM2.5 emissions during winter.

The discussion with different stakeholders in Serbia additionally highlighted the potential role of **Energy Service Companies (ESCOs)** in Serbia. ESCOs are intended to finance, implement, and manage energy efficiency projects, with the costs repaid through the savings generated by these improvements. In theory, ESCOs offer a win–win situation by reducing the upfront financial burden on households and businesses while enabling investors to recoup their costs over time. However, the ESCO market in Serbia is still underdeveloped. Instead of a robust private sector ESCO market, **district heating companies and other public or semi-public entities are stepping** in to fill this role.

Additionally, the European Bank for Reconstruction and Development (EBRD), in cooperation with the Ministry of Mining and Energy of Serbia, is actively engaging district heating companies and homeowner associations through the Public ESCO model to advance residential energy efficiency. The initiative aims to rehabilitate the most energy-inefficient buildings connected to district heating systems in 16 Serbian cities and municipalities. Homeowner associations can access subsidies covering up to 50% of the costs for thermal

[96] World Bank. 2023. Scaling-Up Residential Clean Energy (SUCRE) Project. and World Bank. 2022. Serbia to Bring Clean Energy Solutions to Households, with World Bank Support. Accessed 20 May 2025.
[97] Project is running from 2022 until 2027.

insulation of external walls and equipment to enable consumption-based billing. The remaining amount is repaid in monthly instalments via the heating bill, making the scheme accessible to a broad base of citizens. The 64.5 million EUR project, co-financed by a 50 million EUR EBRD loan and donor funds, is expected to support the renovation of over 500 residential buildings covering approximately one million square meters. Support is also provided for energy audits, technical documentation, permitting, and access to financing. This program not only helps residents reduce their heating and cooling bills but also fosters a shift toward more efficient and demand-responsive district heating systems, reinforcing Serbia's broader energy transition goals.[98]

Complementing previously mentioned measures, the **EBRD's Green Economy Financing Facility (GEFF)** offers financing predominantly to projects that bolster the competitiveness of small and medium-sized enterprises (SMEs), support their transition to a green economy through GET technologies, and enhance their awareness and knowledge in Serbia. In addition to this, a selection of projects that provide financing to privately owned residential dwellings, GET-eligible High Energy Performance Residential Buildings (HPRBs), and eligible energy efficiency and/or renewable energy projects in the public sector can be found below:

1. **GEFF III REPower - UniCredit Bank Serbia**[99] project approved on 28 May 2024 is designed to mobilize mid-term financing to support green economy investments in Serbia's residential sector, by providing a senior unsecured loan of up to 5 million EUR[100] to UniCredit Bank Serbia[101].

2. **Western Balkans GEFF III - Erste Bank Serbia**[102] project approved on 04 Dec 2024 provides a senior unsecured loan of up to 1.2 billion RSD (approximately 10 million EUR) to Erste Bank Serbia (EBS)[103]

3. **Western Balkans GEFF III - 3 Banka**[104] project approved on 29 Nov 2022 provides a senior multicurrency unsecured loan of up to 10 million EUR to 3 Banka[105] for on-lending to the residential sector in Serbia. It is the first WB GEFF III loan for 3 Banka, enabling the bank to promote green economy investments in the country.

[98] Spasić, V. 2023. Serbia to extend deadlines for energy renovation subsidies for residential buildings. Accessed 20 May 2025.
[99] European Bank for Reconstruction and Development (EBRD). 2024. GEFF III REPower – UniCredit Bank Serbia. Accessed 20 May 2025.
[100] 590,000,000 RSD.
[101] UCB is the fourth largest bank in Serbia (measured by total assets as per 4Q2023) with 10.7% market share and a strong foothold in the corporate sector and an increasing focus on the retail sector. UCB is 100% owned by UniCredit Spa, Italy.
[102] European Bank for Reconstruction and Development (EBRD). 2024. Western Balkans GEFF III – Erste Bank Serbia. Accessed 20 May 2025
[103] Mid-sized bank with a market share of 6.3% in Serbia. EBS is a subsidiary of Erste Group, one of the leading banking groups in Central and Eastern Europe.
[104] European Bank for Reconstruction and Development (EBRD). 2022. Western Balkans GEFF III – 3 Banka. Accessed 20 May 2025
[105] 3 Banka AD, based in Novi Sad, focuses primarily on micro lending to agricultural households, rural entrepreneurs, and retail clients. With total assets of 201 million EUR and a loan book of 162.1 million EUR as of 3Q22, 3 Banka serves over 70,000 clients through a network of 4 branches and 34 credit offices, predominantly in rural areas.

4. **Western Balkans GEFF III - NLB Komercijalna banka**[106] project approved on 22 Oct 2024 provides a senior unsecured loan of up to 586 million RSD (approximately 5 million EUR) to NLB Komercijalna banka[107].

Additionally, there is **no designated energy efficiency fund in Serbia** which would be a focal point and play a crucial role in this ecosystem by supporting initiatives aimed at reducing energy consumption and alleviating energy poverty.

### Amid war-related constraints, Ukraine's Energy Efficiency Fund has been pivotal in residential upgrades, yet redirected financing towards conflict mitigation limits its broader impact.

The **Energy Efficiency Fund (EEF)** in Ukraine operates in full alignment with the National Action Plan for Energy Efficiency and key international commitments—including the Paris Agreement, the EU acquis communautaire, and the Energy Community Agreement. This ensures Ukraine meets its global obligations on energy efficiency and carbon dioxide reduction.

Since 2019, the EEF has implemented the **ENERGODIM Program** to support homeowners' associations (HOAs) in upgrading residential buildings. Under this program, HOAs can receive partial reimbursement, ranging from 40% to 70%, for energy efficiency measures such as:

- Installing individual heating plants.
- Balancing the building's hydraulic system.
- Insulating pipelines in unheated areas.
- Enhancing thermal insulation of walls, roofs, and basement floors.
- Replacing doors and windows in common areas.

This program is carried out in cooperation with international partners like the International Finance Corporation (IFC) and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, and it leverages best European practices in thermal modernization.

Following the onset of the full-scale war in Ukraine, the EEF expanded its portfolio by launching the **VidnovyDIM Program** on November 21, 2022. This initiative targets the reconstruction of residential buildings damaged by the Russian aggression on Ukraine. Financed by the European Union, VidnovyDIM offers non-refundable grants to HOAs for restoring buildings. Key features of the program include:

- Full reimbursement (100%) of the costs of work and materials.

[106] European Bank for Reconstruction and Development (EBRD). 2024. Western Balkans GEFF III – NLB Komercijalna banka. Accessed 20 May 2025

[107] NLB Komercijalna banka, a key player in the Serbian banking sector with a 9.9% market share and a strong backing from its parent company in Ljubljana, is tasked with implementing this innovative green finance instrument.

- Disbursement in two tranches: the first covering 70% and the second 30% of the total grant, which is capped at 7.2 million UAH[108] per restoration object.

**GreenDIM program**, aims to increase the use of renewable energy in domestic electricity and heating systems while implementing measures to enhance energy efficiency and strengthen energy security in the residential sector. Eligible participants include Homeowners Associations (HOAs), established and functioning under the Law of Ukraine "On the Association of Co-owners of an Apartment Building" (dated November 29, 2001, No. 2866-III), and Construction and Housing Cooperatives (CHCs), formed in accordance with the Law of Ukraine "On Cooperation" (dated July 10, 2003, No. 1087-IV), representing co-owners of apartment buildings. These participants can benefit from the GreenDIM program, which offers **reimbursement of 70% of the costs** for equipment and materials used to **install heat pumps** and **solar power systems** in condominiums and housing cooperatives.

In addition to these initiatives, it is important to mention Ukraine's highly successful **pre-war warm loans program**, which is aimed at boosting energy efficiency in private homes. More than 2,000 Ukrainian families have already benefited from the program in 2021, demonstrating its wide appeal and effectiveness. During the first week of the program, homeowners took out nearly 33 million UAH (about 894,000 EUR) in loans, followed by an additional 50 million UAH (approximately 1,355,000 EUR) in the second week, demonstrating rapid participation in the initiative.

Banks have issued a total of 83.8 million UAH (2,272,000 EUR) in warm loans, with the overwhelming majority—82 million UAH (2,222,000 EUR)—being allocated for energy efficiency measures in private residences, while 1.8 million UAH (48,800 EUR) was dedicated to solid fuel boilers. The program also provides significant state support by offering partial compensation for these loans, covering between 20% and 35% of the loan amount, which helps reduce utility bills and improves living conditions for households. Major financial institutions, including Oschadbank and Ukrgasbank, are responsible for providing these loans, and the initiative is overseen by the State Agency for Energy Efficiency and Energy Saving.[109]

In 2024, the **State Fund for Decarbonisation and Energy Efficiency Transformation** was established on the **initiative** of the **State Agency on Energy Efficiency and Energy Saving**, marking the **first state revolving mechanism** designed to **finance energy efficiency** and **decarbonisation projects**. This Fund supports a range of initiatives, including projects for households, utilities, public buildings, and micro, small, and medium-sized businesses, as well as the introduction of energy services and the development of decentralised energy production and storage systems. It provides preferential loans in UAH with an interest rate of 9% per annum, while national producers participating in the "Made in Ukraine" program benefit from a reduced rate of 7% per annum. The loans range from 120,000 UAH (3,333 EUR) to 25 million UAH (694,444 EUR) and offer terms of 1 to 10 years.[110] [111]

The **EBRD** and the **Eastern Europe Energy Efficiency and Environment Partnership (E5P)** have played a pivotal role in helping more than 43,000 Ukrainian households become

[108] Approximately 159.727 EUR.
[109] Ukrinform. 2021. More than 2,000 Ukrainian families take advantage of 'warm loans' program this year. Accessed 20 May 2025.
[110] Ukrainian Institute for Renewable Energy and Energy Efficiency (UIREE). 2024. Decarbonization Fund launched in Ukraine. Accessed 20 May 2025.
[111] Cabinet of Ministers of Ukraine. 2023. Special fund for energy efficiency projects to be launched in Ukraine from 2024. Accessed 20 May 2025.

more energy efficient, with financing further supported by donor contributions from Sweden. Under the **Ukraine Residential Energy Efficiency Financing Facility**, commonly known as **IQ** energy, over 1.5 billion UAH (about 48 million EUR) was invested in energy-efficient home improvements by households using loans from local partner banks. The facility operated from April 2016 until September 2020 and was specifically designed to promote energy efficiency investments in Ukraine's residential sector, which accounts for over a third of the country's energy consumption. IQ energy followed the model of the EBRD's Green Economy Financing Facility (GEFF), operating through a network of more than 145 local financial institutions across 27 countries, and was supported by over 4 billion EUR in EBRD finance for 190,000 clients. These projects have collectively led to annual $CO_2$ emission reductions of almost 8.6 million tons. Moreover, the E5P, a 200 million EUR multi-donor fund managed by the EBRD, provided crucial grant funding of EUR 15 million to support IQ energy. With the European Union as its largest contributor, E5P complements energy efficiency loans provided by various international institutions including the European Investment Bank, KfW, the Nordic Environment Finance Corporation, and the World Bank Group. Notably, the EBRD remains the largest international financial investor in Ukraine, having made a cumulative commitment of almost 15 billion EUR through 466 projects in the country.[112]

Between 2022 and 2025, the **EBRD's GEFF** in Ukraine has been providing financing to projects that: (i) stimulate the development of the war insurance market in Ukraine; (ii) support lending to Ukrainian private companies in primary and secondary agriculture, as well as other key sectors (including food processing, retail, and logistics) with the aim of sustaining livelihoods; and (iii) offer liquidity support to help offset temporary revenue losses and additional expenses resulting from the ongoing conflict in Ukraine.

In addition, the **implementation of the ESCO mechanism** continues in Ukraine. The ESCO mechanism is an additional tool for financing energy efficiency projects, where energy efficiency measures are implemented by energy service companies (ESCOs), both Ukrainian and foreign, for their own or borrowed funds under an energy service agreement. The essence of the energy service concept is that energy efficiency measures in buildings of public institutions (schools, kindergartens, hospitals, universities, etc.) are implemented by private investors - energy service companies (ESCOs), and payment is made solely from savings (reduction of utility and energy consumption costs) achieved as a result of energy efficiency measures.Taking into account the needs of communities for reconstruction, the State Agency on Energy Efficiency and Energy Saving of Ukraine is actively promoting the development of the energy service market, which will allow modernization of numerous schools, kindergartens, hospitals and other budgetary institutions by attracting private investment without spending budget funds. The implementation of ESCO projects and their multiplication in communities will help create high-quality living conditions: modernize buildings based on the most advanced technologies, save money on energy bills, and attract significant investments in the regional economy.

# 5 Challenges, gaps, and recommendations for enhancing the role of the financial sector in

[112] European Bank for Reconstruction and Development (EBRD). 2020. EBRD and EU help 43,000 households in Ukraine become more energy efficient. Accessed 20 May 2025. and Eastern Europe Energy Efficiency and Environment Partnership. EPC in Public Buildings in Kyiv COMPLETED. Accessed 20 May 2025.

## advancing building renovations and alleviating energy poverty.

The EE1st principle calls for prioritizing energy-saving measures whenever making policy, investment, or financing decisions in the energy sector. For Contracting Parties (CP) putting EE1st into practice in the financial sector is crucial for scaling up building renovations and tackling energy poverty. However, each country faces unique challenges and gaps in financing residential energy efficiency. This section analyses the key financial-sector challenges and gaps impeding EE1st integration for each country and offers practical recommendations. A summary comparison table is provided in Table 2 below.

**While policies and programs for energy efficiency are beginning to take root, the involvement of the financial sector is the essential linchpin for scaling up the EE1st principle, a common theme echoed by all contracting parties.**

Each country has **distinct circumstances**, yet **several cross-cutting insights** can be drawn:

**Blending Public and Private Finance:** A combined approach that uses public funds, grants and subsidies, to attract private capital through commercial bank loans and microfinance reduces risks and costs for end users, as demonstrated by programs such as EBRD's GEFF, Ukraine's EEF, Moldova's new program, and Serbia's model of grants with bank loans, and expanding these blended financing models will directly accelerate renovations.

**Targeting Energy Poverty:** It is imperative that financing mechanisms include provisions for the poorest. Energy efficiency can dramatically reduce energy bills and improve living conditions, but only if low-income households can participate. Best practices include high grant fractions for vulnerable groups, utility obligations prioritizing the poor (per EU examples) and integrating EE upgrades into social assistance programs.

**Institutional Capacity and Coordination:** All CPs will benefit from establishing dedicated institutions or programs for residential energy efficiency – whether it is a national fund, agency, a ministry directorate, or a public ESCO. Such institutions can coordinate donors, standardize processes, and provide technical support. The Energy Community can be a valuable platform for sharing experiences among these countries, given many are contracting parties, to avoid reinventing the wheel and adopt proven solutions more quickly.

**Bank Engagement and Green Products:** The role of banks is crucial – they are the channels through which most households will receive financing. Training bank staff, developing easy loan application procedures, perhaps offering risk-sharing (as with guarantees) to comfort banks, all will increase their willingness to lend for EE. Additionally, banks are very responsive to clear government signals (eg, when grant programs are announced, banks often start marketing complementary loans). Over time, green lending should become a standard part of banking, not something niche. Regulators and central banks can help by treating energy efficiency loans favourably in regulations and encouraging green bonds or inclusion of EE in lending portfolios.

**Innovative Mechanisms:** Beyond traditional loans and grants, innovations like on-bill financing, Energy Service Companies, and energy efficiency obligations on utilities represent the next frontier. Adopting these will fill gaps that current mechanisms might not reach (for example, on-bill can reach those hesitant to take bank loans). Importantly, these mechanisms often leverage existing structures (for example utility billing), thus integrating EE investment into familiar systems for consumers.

**Best Practice Adaptation:** Throughout our discussion with different stakeholders, numerous best practices from around the world have emerged that could be adapted to local contexts. For instance, Lithuania's revolving fund for apartment renovations[113], Germany's KfW loans with state subsidy[114], the UK's supplier obligation focusing on fuel-poor homes[115], US/Canada on-bill financing models[116], and EU's use of structural funds for EE grants are all relevant. The countries in question can pick elements that suit their legal frameworks and market maturity. Pilot projects can help localize these models and build confidence before scaling up.

**Monitoring and Multiple Benefits:** As these programs roll out, it's crucial to monitor results – energy savings achieved, default rates on loans, improvement in comfort, reduction in arrears on energy bills, etc. Often, demonstrating multiple benefits (like health improvements from better heating, job creation in renovation industries, reduced import of fuels) helps secure ongoing political and financial support for efficiency programs. This evidence will also encourage banks – if data shows EE loans perform well (e.g., low default because people prioritize them due to bill savings), banks will be more inclined to expand such lending.

In conclusion, **integrating the EE1st principle into financial sector practices is not a one-time action but an evolving process**. It involves building an ecosystem where policies, public funds, private banks, utilities, and consumers all play their part. **The countries discussed are at different stages of this journey, but all are moving in the same direction – recognizing that investing in energy efficiency yields high returns for economies and societies.** By addressing the challenges and gaps with the tailored recommendations provided, each country can significantly boost building renovations, cut energy waste, and reduce energy poverty. This will not only help households save money and improve comfort, but also contribute to broader goals like energy security, economic development (through job creation in construction and manufacturing), and environmental protection (by lowering emissions). In essence, making energy efficiency the "first fuel" is a win-win, and the financial sector's active participation makes that possible on a large scale.

[113] Jessica II Fund for Multi-apartment Building Modernisation; Sources: Housing Evolutions. 2024. JESSICA II Fund for Multi-apartment Building Modernisation. Accessed 20 May 2025; EPATEE. [Lithuania] Renovation Programme with EU Funding.
[114] The KfW subsidy programme is a government-backed initiative in Germany designed to provide financial support to homebuyers. It offers low-interest loans and grants for energy-efficient homes, sustainable housing, and first-time homebuyers, making homeownership more affordable.
[115] Department of Energy Security and Net Zero. 2025. Review of the Fuel Poverty Strategy: consultation document. Accessed 20 May 2025.
[116] Local Clean Energy Alliance of the Bay Area. State On-Bill Financing and PAYS Programs. Accessed 20 May 2025 and EnergyHub. Clean Energy Financing Programs Canada (Updated 2024). Accessed 20 May 2025.

**Table 2 Challenges, gaps and recommendations for enhancing the role of the financial sector in advancing building renovations and alleviating energy poverty**

| Country | Key Financial Sector Challenges | Gaps in Current Financing | Recommendations |
|---|---|---|---|
| **Albania** | • Limited bank lending for EE projects; banks favour "bankable" clients over low-income or multi-apartment building homeowners' associations (HOA) projects.<br>• Low awareness of EE benefits among lenders and consumers. | • ***Residential EE financing underdeveloped:*** No dedicated EE fund or large-scale subsidy program; reliance on donor-supported GEFF lines that mostly serve creditworthy borrowers.<br>• ***Energy poverty:*** No targeted financial support for poorest households to invest in EE (grants or subsidized loans are lacking). | • **Establishment of national EE fund.**<br>• **Credit enhancements:** Establish risk-sharing or interest-rate subsidy schemes to encourage banks to lend for home retrofits, especially for HOAs and low-income households.<br>• **Public grant programs, develop green mortgages & PACE:** Scale up public grant programs and include energy-poor households with higher grant fractions. Encourage banks to offer green mortgages (e.g. slightly lower rates or higher loan-to-value for energy-efficient homes). Explore Property Assessed Clean Energy (PACE)[117] loans via municipalities, as Albania shows potential in this area.<br>• **Aggregator / ESCO approach:** The development of the energy service (ESCO) market model is ongoing.[118] The developing model *needs to* |

[117] PACE financing is a mechanism that helps property owners fund energy efficiency, renewable energy, and other clean energy upgrades without paying the full cost upfront. PACE loans are typically provided by local or state governments (or approved private lenders) and are repaid through an assessment added to the property tax bill. This means the loan is attached to the property rather than the individual. One of the many advantages is that homeowners and commercial property owners can immediately implement energy improvements without the barrier of large upfront expenditures.

[118] Specialized companies, Energy Service Companies or ESCOs or groups (aggregators) take the lead in planning, supplying, and executing projects that improve energy efficiency. They also provide a guarantee that the interventions will achieve a specified level of energy savings. This guarantee helps secure financing and builds trust in the project's outcomes. The ESCO might fund the project themselves and then recover their costs over time from the savings achieved, but only if the project meets the agreed-upon performance targets.

| Country | Key Financial Sector Challenges | Gaps in Current Financing | Recommendations |
|---|---|---|---|
| | | | *target energy-poor households with higher grant percentages.* |
| **Bosnia and Herzegovina** | • Commercial banks perceive EE loans (especially to HOAs) as risky due to legal and repayment uncertainties.<br>• Low energy prices (due to subsidies) reduce incentive for EE investments. | • ***Financing gaps:*** Lack of financial resources, Fund's budget is relatively small.<br>• ***Energy poverty:*** No tailored financial products for multifamily building retrofits, and insufficient targeted support for energy-poor households. Many low-income households cannot afford upfront costs; current financing schemes do not target them (no sizable grant program for vulnerable households). | • **Energy Efficiency Obligation (EEO) scheme:** Implement an EEO scheme[119] for utilities to drive investments, ensuring **energy-poor households** are prioritized within the scheme (as done in some EU countries). This can mobilize utility funds for home insulation and efficient heating for vulnerable groups.<br>• **On-bill financing:** Develop on-bill financing schemes[120] that allow repayments via utility bills. Leverage utility billing (especially district heating companies in cities) to offer on-bill EE loan repayments. This can make repayment convenient and lower default risk, as seen in other countries' utility finance programs.<br>• **Aggregator / ESCO approach:** Develop an aggregator (or support ESCOs)[121] to bundle multi-apartment building projects and arrange |

[119] This energy efficiency scheme is a structured approach to drive energy savings among consumers by placing responsibilities on private entities (usually utilities such as electricity, gas or district heating providers). Utilities or similar companies are legally required to support and promote energy efficiency measures among their customers. This shifts part of the energy savings responsibility to the service providers. The support provided by these entities can come as grants, technical assistance, loans, or financial help specifically aimed at energy service companies (ESCOs), which specialize in designing and implementing energy efficiency projects. This variety helps ensure that both direct consumers and the companies implementing energy-saving projects have the necessary resources.

[120] On-bill financing schemes allow consumers to pay for energy efficiency improvements directly through their energy bills. The cost of installing energy efficiency measures is added to the consumer's regular utility bill. This means that instead of paying upfront, the cost is spread out over time. The financing can be provided by the utility itself—often accessing low-cost public funds—or by third-party financial institutions. This flexibility helps widen access to funding for these energy efficiency measures.

[121] The energy efficiency laws in both entities and the Brčko District acknowledge the significance of energy service companies (ESCOs) and energy performance contracting.
However, the lack of supplementary secondary legislation and model ESCO contract are limiting implementation.

| Country | Key Financial Sector Challenges | Gaps in Current Financing | Recommendations |
|---|---|---|---|
| | | | financing. This entity can assist HOAs with technical analysis and loan applications, overcoming individual capacity limits. Best practice: models of municipal or donor-supported aggregators in Eastern Europe (e.g. Lithuanian renovation agency) could be adapted. |
| **Georgia** | • Commercial banks have participated in donor-funded green finance (e.g. EBRD Energocredit/GEFF), but without concessional[122] support they have little incentive to scale up EE lending to households[123]<br>• Energy efficiency is a relatively new policy focus with low public and market awareness.<br>• No dedicated national EE financing scheme for homes; the financial sector doesn't systematically consider EE benefits (e.g. energy cost savings are not factored into mortgage affordability assessments). | • ***Financing gaps***: No national dedicated residential EE program; reliance on donor backed International Financial Institutions (IFI) credit lines that mainly target middle/high-income urban areas.<br>• ***Energy poverty:*** A large portion of Georgian households limit their energy use (42.10% heat only one small room in winter)[124] due to cost and poorly insulated homes. Current financing mechanisms do not serve these households, there are **no affordable loan programs** to help low-income families invest in insulation, efficient heating, etc. | • **Public EE fund or incentives:** Establish a national residential EE incentive program – for example, a grant scheme for home retrofits focusing on rural and low-income households (similar to Moldova's and Ukraine's programs). Even a 30-50% grant for insulation or efficient boilers can stimulate bank co-financing. Best practice: Ukraine's pre-war "Warm Loans" program combined government rebates with bank loans, and later the Energy Efficiency Fund provided grants to HOAs. Georgia can adapt these models, working with local banks and possibly utility companies to reach customers.<br>• **Model contracts for energy performance contracting:** While the by-laws and model contracts adopted establish a strong legal foundation for energy performance contracting, it is crucial to translate this framework into real market actions. The aim is to go beyond just setting the rules, ESCOs |

[122] A loan made on more favourable terms than the borrower could obtain in the marketplace. The concessional terms such as an interest rate below the market rate.
[123] Caucasus Business Week (CBW). EBRD and Partners Deepen Green Finance in Georgia with 54 Million Investment. Accessed 20 May 2025.
[124] NECP.

| Country | Key Financial Sector Challenges | Gaps in Current Financing | Recommendations |
|---|---|---|---|
| | | | and similar entities must actively partner with building owners to implement energy efficiency measures, ensuring that the projected energy savings effectively offset the investment costs.<br>• **Green financing expansion:** Leverage the success of donor-backed programs (over 29,000 households received 42 million USD in green loans via local banks under EBRD's Energocredit/GEFF). Work with IFIs to extend such credit lines with modest grants for energy savings, ensuring banks offer longer tenors and lower rates for EE projects. The Green Climate Fund-supported facility in Georgia is a good model to continue.[125] |
| **Kosovo*** | • Commercial banks in Kosovo* have mainly engaged in energy efficiency lending through donor-funded credit lines (e.g. EBRD's Green Economy Financing Facility, GEFF). Without concessional support (grants or interest subsidies), local banks have little motivation to offer EE loans to households at scale.[126] | • ***Financing gaps:***<br>KEEF's current household subsidy scheme, while highly popular, reaches only a fraction of the demand – thousands of eligible homeowners are waitlisted due to limited funds. Once the 10 million EUR EU grant is fully disbursed, additional funding will be needed to continue or expand this program.<br>• ***Energy poverty:***<br>While social housing is being addressed with near-full subsidies, many low-income families in private dwellings may still not afford 45–50% of retrofit costs. Targeted support (e.g. higher grant percentages or | • **Leverage Commercial Finance with Guarantees:**<br>To supplement public funding, Kosovo* can encourage local banks to scale up green lending for residential EE. Programs like GEFF already demonstrate banks' willingness when incentives are in place. KEEF could play a role by offering credit enhancement (guarantees or interest buy-downs) to encourage loans to higher-risk segments (e.g. lower-income homeowners). The Kosovo Credit Guarantee Fund (KCGF)[127] might also expand to cover household EE loans, mitigating banks' risk. By blending moderate |

[125] International Finance Corporation (IFC). 2020. An Energy-Efficiency Program in Ukraine Heats Up. Accessed 20 May 2025.
[126] Balkan Green Energy News. 2021. GGF Impact Stories: Raising awareness of household energy efficiency benefits in Kosovo. Accessed 20 May 2025.
[127] Kosovo Credit Guarantee Fund (KCGF). Accessed 20 May 2025

| Country | Key Financial Sector Challenges | Gaps in Current Financing | Recommendations |
|---|---|---|---|
| | | separate programs) may be required to reach the poorest homeowners (for example, those on social assistance or in remote areas) who might otherwise be left behind. | loans with grants, more capital can flow into home upgrades than grants alone.<br>• **Model contracts for energy performance contracting:** While the regulations concerning energy-efficient<br>public procurement, ESCOs, and energy performance and<br>supply contracts have been aligned with the EU acquis., it is crucial to translate this framework into real market actions. The aim is to go beyond just setting the rules, ESCOs and similar entities must actively partner with building owners to implement energy efficiency measures, ensuring that the projected energy savings effectively offset the investment costs. |
| **Moldova** | • Underdeveloped banking products for EE, local banks historically saw residential EE loans as high-risk (low-income population, unpredictable savings).<br>• Previously limited government financing for residential EE; heavy reliance on donors for any EE projects.<br>• High poverty and energy-vulnerability make market-based solutions difficult without subsidies. | • ***Financing gaps:*** Absence of a large-scale, ongoing residential EE program until recently[128]; reliance on time-bound donor initiatives.<br>Until recently, no large-scale financing program for home energy retrofits.<br>Commercial loans are largely inaccessible to most households due to high interest and short tenors.<br>• ***Energy poverty:*** *N*o sustained program exists to help energy poor households invest in EE. Upfront costs for insulation or | • **Public-private co-financing:** Engage commercial banks to finance the remaining share of retrofit costs. For example, banks can offer loans to cover homeowners' 30–50% contribution, backed by a guarantee mechanism from government (as suggested by the Association of Moldovan Banks).[129] In this way, credit risk would reduce encouraging banks to lend to HOAs and homeowners.<br>• **Leverage international programs:** Continue collaborating with EU and IFIs (e.g. EBRD's credit lines) to bring in capital and |

[128] Ministry of Energy of the Republic of Moldova. 2024. Financing Residential Energy Efficiency Projects in Moldova: Opportunities and Challenges. Accessed 20 May 2025
[129] Ministry of Energy of the Republic of Moldova. 2024. Financing Residential Energy Efficiency Projects in Moldova: Opportunities and Challenges. Accessed 20 May 2025

| Country | Key Financial Sector Challenges | Gaps in Current Financing | Recommendations |
|---|---|---|---|
| | | efficient heating are prohibitive; social assistance covered energy bills but not efficiency improvements. Lack of tailored financing for multifamily renovations and inadequate targeting of energy-poor households. | technical expertise. The new EU-EBRD program for Moldovan homeowners[130] can complement FEERM by reducing borrowing costs. Ensure these programs coordinate with the national fund to avoid overlaps and maximize reach, especially in rural areas.<br>• **Energy Efficiency Obligation schemes:** In December 2023, the Government approved a programme for the implementation of the Energy Efficiency Obligation Scheme for 2024-2026, which is designed to fund energy efficiency projects in residential buildings. It is crucial to translate this framework into real market actions by ensuring that the mechanisms established within the scheme actively drive investment and measurable improvements in energy efficiency. |
| **Montenegro** | • Small market with limited green finance products.<br>• Banks have not prioritized EE lending and homeowners lack tailored financing options.<br>• Households rely on wood/coal heating, and awareness of EE benefits is low.<br>• Institutional framework exists (Eco Fund, IDF), but capacity to finance residential projects at scale is limited. | • ***Financing gaps:*** The Eco Fund is underutilized for residential EE, there is no comprehensive financing solution available for large-scale retrofits, which limits the market's ability to fully implement energy efficiency improvements in residential buildings.<br>• Absence of specialized products (green mortgages) for both single-family and multi-family buildings. | • **Leverage Eco Fund and IDF:** Expand the Eco Fund's role to offer dedicated, concessional loans for residential EE retrofits. The state Investment-Development Fund (IDF)[131] can co-finance these loans or provide guarantees, making EE investments more accessible.<br>• **Green mortgages:** Introduce green |

[130] EU Neighbours East. 2024. EU and EBRD Launch New Programme to Reduce the Cost of Energy Efficiency Renovations in Residential Sector in Moldova. Accessed 20 May 2025

[131] The IDF was created to drive and accelerate Montenegro's economic growth, particularly during challenging financial periods. The Fund's targets in financing are designed to support critical areas of Montenegro's economy, from enterprise growth and infrastructure to privatization and sustainable development, ensuring that resources are efficiently allocated to stimulate long-term economic progress.

| Country | Key Financial Sector Challenges | Gaps in Current Financing | Recommendations |
|---|---|---|---|
| | | • ***Energy poverty:*** Significant share of population uses inefficient heating (leading to high bills and pollution). Few financial mechanisms target poor households or rural homes (no dedicated subsidy scheme for home insulation/heating for the vulnerable). | mortgage products[132], possibly backed by partial credit guarantees to reduce risk. Ultimately, this approach would complement existing funds, such as the Eco Fund and IDF, by offering a comprehensive and accessible financing mechanism that encourages widespread adoption of energy efficiency measures in residential buildings.<br>• **Support for low-income homes:** Use a portion of Eco Fund resources for grants or zero-interest loans to low-income households for heating and insulation upgrades. For example, offer 50–70% grants for basic insulation or efficient stoves, inspired by programs in Serbia (top-up grants for vulnerable households).<br>***Aggregator/ESCO approach:*** ESCO contracts and an enabling framework are incorporated in the Law on Efficient Use of Energy. Nex step is to translate this framework into real market actions. |
| **North Macedonia** | • There is no single national residential EE fund which is fully operational, but a combination of donor credit lines (GEFF), NGO-driven financing (Habitat), and government incentive schemes. | • ***Financing gaps:*** There is no sustained national grant or rebate program for residential EE (operational national energy efficiency fund), and the country relies on donor and IFI credit lines to fill the gap. Programs like the EBRD's Western Balkans | • **Public EE fund or incentives:** Expand the scope and scale of existing products like REERF and REEGF to cover a larger share of the residential market by establishing a national energy efficiency fund or program. |

[132] The concept of enhancing green mortgages involves creating a supportive environment for mortgage lenders to offer more favourable terms for energy-efficient homes and renovations. The goal is to build a robust market among mortgage lenders where preferential terms are available for energy-efficient properties. This is achieved by using credit enhancement tools, providing additional capital, and implementing supportive regulations and standardized criteria. A green mortgage typically means that the lender offers better terms for purchasing or renovating an energy-efficient home. These benefits might include lower interest rates, and/or financial incentives such as cashback.

| Country | Key Financial Sector Challenges | Gaps in Current Financing | Recommendations |
|---|---|---|---|
| | • Although innovative financial products exist (e.g., Habitat Macedonia's REERF and REEGF), the market remains segmented and not fully integrated into a national EE strategy. | GEFF have provided funding to local banks for green loans, but these predominantly reach creditworthy borrowers in urban areas.<br>• ***Energy poverty:*** Current financing mechanisms do not adequately serve low-income or vulnerable households. Banks typically consider such clients too risky, and there are no subsidized loan programs or grant schemes specifically targeting poor households for energy efficiency. As a result, those who would benefit most from insulation, efficient heating stoves, or new windows – in terms of reduced energy bills and improved comfort – are the least able to obtain financing for them. International experience suggests that for energy-poor households, near-full grants are often required (since loans are not viable). | • **Expand green financing and lower the cost of EE credit:** Extend and enhance green credit lines for residential efficiency, ensuring they cater to a wider audience. The success of the initial GEFF loans in North Macedonia (which were in such high demand that additional loans were issued and included a 20% grant incentive)[133] shows that combining affordable financing with grants drives uptake.<br>• **Leverage and target IFI programs for the most in-need:** Ensure that the design of expanded credit lines or financing facilities includes components specifically for low-income households and high-priority renovations. For example, the next phase of the GEFF or a similar facility could reserve a portion of funds exclusively for affordable housing or introduce a higher grant percentage for poorer borrowers. North Macedonia's Development Bank (which will manage the EE Fund)[134] should seek technical support to craft financial instruments that blend loans, guarantees, and grants in a way that addresses the needs of the energy poor.<br>• **Pilot on-bill financing and HOA aggregator models:** North Macedonia is well-positioned to pilot innovative financing mechanisms such as on-bill financing and |

[133] EBRD Green Economy Financing Facility. 2022. EBRD to Boost Energy Efficiency in North Macedonia. Accessed 20 May 2025
[134] CEE Bankwatch Network. 2024. A Well-Designed National Energy Efficiency Fund in North Macedonia Will Enable Long-Term Energy Savings in the Residential and Public Sectors. Accessed 20 May 2025.

| Country | Key Financial Sector Challenges | Gaps in Current Financing | Recommendations |
|---|---|---|---|
| | | | models that leverage the collective strength of homeowner associations. The government, or the newly established Energy Efficiency (EE) Fund, could launch a pilot project with a utility or a city heating company to retrofit a group of homes, recovering the costs directly through utility bills. This method has been recommended as suitable for both single dwellings and multi-apartment buildings. The experience of Habitat for Humanity Macedonia, which has successfully used a revolving fund model in partnership with municipal authorities, offers a valuable example of how technical and financial assistance can unite residents to achieve energy-efficient upgrades. Building on this model, authorities could create a formal program to support HOA retrofits, using an intermediary to help with project preparation, secure bulk loans or guarantees, and manage implementation. Testing this aggregator strategy, in collaboration with organizations like Habitat or local energy service companies, could help overcome the organizational challenges in the multi-apartment sector. |
| **Serbia** | • High upfront retrofit costs relative to household incomes; low demand for EE loans without incentives.<br>• Banking sector has limited experience with specialized EE financing products. | • ***Financing gaps:*** Serbia has no dedicated residential EE fund. Current financing relies on public calls by Ministry or small-scale municipal grant programs and IFI credit lines. There is a gap in financing single-family houses, which are typically the least efficient and often occupied by lower | • **National residential EE program:** Scale up the ongoing government program (co-financed by local governments) that provides grants for home insulation, window replacement, efficient boilers, etc. This program, now bolstered by the World Bank's 50 million USD Scaling Up Residential Clean Energy (SURCE) project, should continue expanding. It focuses on |

| Country | Key Financial Sector Challenges | Gaps in Current Financing | Recommendations |
|---|---|---|---|
| | | income families.[135] Traditional bank loans do not reach this segment well. Also, multifamily building lending for apartment blocks is minimal – legal ability exists, but few examples without grant incentives.<br>• ***Energy poverty:*** Existing schemes (like one-off stove replacements or bill subsidies) only scratch the surface. Large programs delivering comprehensive retrofits for low-income households beginning to emerge. | single-family homes and includes "top-up" grants for vulnerable households, a best practice to ensure inclusivity. Continuation and expansion of combined grant and loan model scheme will stimulate both homeowner investments and bank lending (as households often finance the remainder via loans).[136]<br>• **Energy Efficiency Obligation & on-bill schemes:** Implement the new Energy Efficiency Obligation mechanism under the Energy Efficiency Law to require power and gas companies to achieve energy savings. These obligated energy providers can offer subsidized insulation or efficient appliances to households, especially targeting those using electricity for heating (common in Serbia). Additionally, work with district heating companies and the utility EPS to pilot on-bill financing, e.g. allow households to repay the cost of a new efficient furnace or heat pump through their monthly utility bill, a model that can improve repayment rates and reach more customers.<br>• **Super ESCO / Aggregator:** Consider establishing a "Super ESCO", a state-backed company that can contract with municipalities and households to implement EE projects (pointed out by different stakeholders). This entity could bundle projects (especially for multifamily buildings or clusters of homes) and |

[135] Gordana Filipovic. 2022. Serbia to Bring Clean Energy Solutions to Households, with World Bank Support. Accessed 20 May 2021
[136] Gordana Filipovic. 2022. Serbia to Bring Clean Energy Solutions to Households, with World Bank Support. Accessed 20 May 2021

| Country | Key Financial Sector Challenges | Gaps in Current Financing | Recommendations |
|---|---|---|---|
| | | | mobilize private finance by guaranteeing performance. It can also coordinate donor funds, commercial loans, and technical assistance, acting as a one-stop-shop for residential EE.<br>• **Green financing by local banks:** Encourage Serbian banks to develop green home improvement loans and green mortgages. The National Bank could support this by integrating energy efficiency into its green finance taxonomy and allowing favourable regulatory treatment for EE loans. International examples (like green mortgages in Western Europe that offer lower interest for efficient homes) can be promoted. EBRD's GEFF in Serbia has already worked with banks like UniCredit and ProCredit to offer such loans; continued partnerships and marketing can increase uptake. |
| **Ukraine** | • Macroeconomic instability and war-related risks complicate long-term financing.<br>• Historically, banks were reluctant to lend for residential EE due to repayment risks and lack of collateral, especially in multifamily buildings. This has improved with government and donor guarantees, but market-rate financing alone still does not reach most households.<br>• Large-scale needs (thousands of Soviet-era apartment blocks in need of deep renovation) require substantial upfront investment, which is challenging given | • ***Financing gaps****:* Pre-2022, Ukraine did develop mechanisms (the warm loans program and the Energy Efficiency Fund), but gaps remained in scale and inclusion. Many individual homeowners still had no support for EE upgrades once the warm loans rebates ended. The EE Fund mainly targeted HOAs; there was a gap in reaching those outside HOAs or in rural areas. Now, war damage has redirected financing toward reconstruction, potentially limiting funds for EE in existing (undamaged) homes.<br>• ***Energy poverty:*** Grants via the EE Fund | • **Scale up the Energy Efficiency Fund (EEF):** Continue and expand Ukraine's EEF program which provides grants to homeowner associations for building retrofits. This model, co-financing upgrades with grant levels around 50-70% and the rest from owner contributions or bank loans, has proven effective in upgrading multifamily buildings. It should be sustained and, when possible, increased (with international support) to cover more buildings, including war-damaged ones (integrating EE into reconstruction). |

| Country | Key Financial Sector Challenges | Gaps in Current Financing | Recommendations |
|---|---|---|---|
| | economic constraints and – since 2022 – war-related risks.<br>• Energy poverty is widespread (even pre-war, many spent huge portions of income on heating). Commercial financing by itself cannot help the poorest reduce energy bills. | required some co-payment that not all could afford, and there were no specific low-income EE programs beyond what municipalities occasionally offered. | • **Facilitate HOA financing through banks:** Encourage more banks to participate in lending to HOAs by extending the partial credit guarantee and interest subsidy programs. As of 2020, state and private banks began offering HOA loans backed by the EEF's framework.[137]<br>Expanding these partnerships (perhaps with central bank regulatory support or risk-sharing from international donors) will channel more private capital into EE. Best practice: Poland and Lithuania achieved mass apartment renovations by combining state grants with loans from commercial banks to HOAs, something Ukraine is already modelling.<br>• **Targeted aid for energy-poor households:** Integrate energy efficiency into social safety nets. For example, revive and broaden the warm loans approach for individual households, provide rebates or grants for items like insulation, heat pumps, or efficient windows, with higher subsidy percentage for the poorest. This could be funded by climate-related funds or a future utility obligation.<br>Energy companies' obligation schemes could be introduced (once the situation stabilizes) to fund free or subsidized insulation for low-income households – similar to the UK's and France's schemes that prioritize vulnerable consumers. |

[137] International Finance Corporation. 2020. An Energy-Efficiency Program in Ukraine Heats Up. Accessed 20 May 2021

| Country | Key Financial Sector Challenges | Gaps in Current Financing | Recommendations |
|---|---|---|---|
| | | | • **Leverage international programs:** Utilize funds from EU, EBRD, EIB, and World Bank dedicated to Ukraine's green reconstruction. Many partners are already directing grants for housing repairs and EE (e.g. an EU-IFC grant program channelling 25 million EUR to help HOAs restore war-damaged homes with efficient technology).[138] Ensuring the EE1st principle in these reconstruction funds, i.e. every rebuilt home is more efficient than before, will lock in long-term savings and lower energy poverty. |

[138] International Finance Corporation. 2022. New EU-IFC Grant Program to Help Restore Homes Damaged by War. Accessed 20 May 2025

# 6 Assessment of available funding and financing models

This chapter proposes several funding and financing models designed to support energy efficiency and building renovation in households affected by energy poverty within the EnC CPs. These models have been informed by the comprehensive review of EU directives and regulations, the analysis of current activities aimed at addressing energy poverty in several example EU countries, the review of current activities aimed at addressing energy poverty in the EnC CPs, and the recommendations for the enhancing the role of the financial sector. By drawing on these insights, we aim to present viable and effective solutions that can be adapted and implemented across the Energy Community.

**Box 1 Funding versus financing**

Funding and financing are two separate concepts, and when developing associated models, it is important to delineate between these two concepts.

**Financing**

Financing is **how the upfront costs of a project or investment is covered**. This will often include some form of borrowing, including debt, which must be repaid over time.

**Funding**

Funding is the **actual money that pays for the investment or project**, and is not repaid. In the case of energy efficiency, examples of funding including grants from donors or government, payments made by the government to pay for loans with cash collected through taxation, or payments made by end consumers.

## 6.1 Approach to identification of funding and financing models

To identify the most appropriate funding and financing models, a long list of possible funding and financing models was drawn up based on models that are commonly in use globally. Models in this long list where then assessed against three criteria:

- Whether the model has been used in the case study EU countries reviewed in Section 2.2.
- Whether the model was recommended as an action for any of the EnC CPs in Section 5.
- Whether the model is considered to be appropriate specifically for supporting building renovation in energy poor households.

Assessment against the above three criteria has been used to identify priority funding and financing models for the EnC CPs. The following sub-sections detail the assessment used to

identify the short-list of priority models, and subsequently give a brief description of the models. A more detailed outline of these models is provided in D3 Recommendations.

For the purposes of this report, ESCOs and aggregators have not been considered to be funding and financing models in their own right, and are treated as implementation mechanisms for given funding and financing models. For example, an ESCO may be provided with concessional private financing to blend with private financing and on lend to customers, which is a form of public cofinancing. Similarly, energy efficiency obligation schemes are treated as an implementation vehicle for grant funding (per EU guidelines). Structuring the analysis in this manner maintains focus of the analysis on the form of funding and financing, without overlapping those concepts with the implementation vehicle for delivering the physical EE measures. Where ESCOs, aggregators, or energy efficiency obligation schemes are a possible implementation vehicle for a funding or financing model has been flagged in the relevant sections in D3 Recommendations.

## 6.2 Long list of possible funding and financing models

A long list of possible funding and financing models is outlined in Table 3. While this list is not fully exhaustive of all funding and financing models used internationally to support energy efficiency, the list has been drawn up considering models internationally that could potentially have wide applicability to the EnC CPs.

**Table 3 Long list of possible funding and financing models**

| Financing mechanism | Description |
|---|---|
| Grant funding | Use of public funds (or funds invested by distributors as part of EE Obligation Schemes) to pay a contribution to, or full coverage of, the purchase price of an energy efficiency measure |
| Results based financing | A form of funding support, where recipients receive funding from an issuing agency that can be a government, donor, or other institution, upon the achievement of predefined set of results |
| Tax relief | A reduction in tax paid on or as a result of the purchase/implementation of energy efficient goods and/or services |
| Public cofinancing | Purchase price of an energy efficiency measure is covered by a combination of private sources (a commercial loan or cash payment from the property owner) and public sources (a concessional loan or grant funding) |
| Public credit guarantees | Contract between private lender and public guarantor to cover borrower in case of default |
| On-bill financing | Repayments for capital investments are made by consumer/prosumer through savings on energy bills |

| Financing mechanism | Description |
|---|---|
| | Can be treated as a loan or as a service whereby it is considered part of services offered by the utility and integrated into tariffs |
| On-wage financing | Repayments for capital investments are made by consumer/prosumer through direct deductions to their monthly salaries |
| On-tax financing | Repayment of capital expenditure for measures through tax, typically property tax, thereby attaching loan (with long tenures) to the property rather than individual |

Source: Economic Consulting Associates

## 6.3 Identification of short list of funding and financing models for the EnC CPs

The long-list of possible models outlined in Table 3 is assessed against the criteria outlined in 6.1 in Table 4 below. Based on this assessment, four proposed funding and financing models have been identified:

- Grant funding.
- Public cofinancing.
- Public credit guarantees.
- On bill financing.

Each of these models are outlined in the following subsections.

**Table 4 Rapid assessment of possible financing models**

| Financing mechanism | Demonstrated in EU case studies | Identified in EnC gap analysis | Effective in targeting energy poverty through building renovation | Comments |
|---|---|---|---|---|
| Grant funding | ✓ | ✓ | ✓ | For the purposes of this report grant funding is used to cover any form of instrument where cash is disbursed to support energy efficiency investment, and that cash is not required to be paid back |
| Results based financing | ✗ | ✗ | - | Access to capital is a key constraint for energy poor households and withholding payments until completion may therefore create difficulties |
| Tax relief | ✗ | ✗ | - | Likely complex to implement, and heavily dependent on local taxation laws and implications on public budget |
| Public cofinancing | ✓ | ✓ | ✓ | For the purposes of this report, public cofinancing covers a range of products where a blend of public and private money is used, including green financing and green mortgages |
| Public credit guarantees | ✓ | ✓ | ✓ | Provide a route to mobilise private finance and deliver more investment with a given amount of public funds |
| On-bill financing | ✓ | ✓ | ✓ | Can improve access to capital for low-income households, and can address issues with split incentives and long repayment periods |
| On-wage financing | ✗ | ✗ | - | Suitable for appliances but less so for building renovation |
| On-tax financing | ✗ | ✗ | - | Would require significant capacity within municipalities, and property tax laws across various jurisdictions may be unsuitable |

Source: Economic Consulting Associates

## 6.4 Grant funding

Grant funding involves the use of public funds or funds invested by distributers as part of an energy efficiency obligation scheme to pay a contribution to, of fully cover, the purchase price of an energy efficiency measure. Funding provided through the grant does not need to be paid back by the beneficiary. Use of grant funding addresses the market barrier arising when households are unable to raise sufficient capital to cover the upfront cost of and energy efficiency intervention.

Funds disbursed through a grant scheme are not recouped by the distributing entities and a source for these funds must be identified. Possible sources for supporting EE measures are: funds collected through fees from an energy savings obligation scheme, funds collected through a carbon price (carbon tax or emissions trading scheme) or other energy tax, or the general budget (possibly using funds allocated for climate or social welfare purposes). Several CPs have already established national energy efficiency funds, which can be used for this purpose. External sources of funding from international development partners may also be available, several such sources were identified in Section 4.

To ensure funding is only provided to the households intended, clear criteria for qualification need to be set. Criteria must be simple to assess using readily available information. Options for qualification criteria include building characteristics and household characteristics. If criteria set based on household characteristics, these could leverage existing criteria for access to social welfare. Qualification criteria can also follow a tired structure, where households most in need of support receive a larger grand amount than less vulnerable households.

The grants can be distributed in various ways: directly to the consumer through a voucher or similar mechanism, to a financial institution to pay down principal or interest rates, or directly to the contractor. The contractor is usually selected by the consumer, although there may be an approved list of service providers and/or products to ensure quality and compliance.

Implementing a grant funding scheme to support energy efficiency involves front-end administration typically undertaken by the responsible ministry or an arms-length public agency, such as an energy agency or regulator.

**Table 5 Funding and financing models | Grant funding**

| | |
|---|---|
| **Design** | • Use of public funds (or funds invested by distributors as part of EE Obligation Schemes) to pay a contribution to, or full coverage of, the purchase price of an energy efficiency measure<br>• Contribution to the purchase price of can be defined as a set value or share of overall cost |
| **Market barrier addressed** | • Access to sufficient capital to cover the upfront cost of an energy efficiency intervention |
| **Funding sources** | Options include:<br>• Funds collected through fees from an energy savings obligation scheme<br>• Funds collected through a carbon price (carbon tax or emissions trading scheme) or other energy tax<br>• General budget, possibly using funds allocated for climate or social welfare purposes |
| **Qualification criteria** | Options include:<br>• Building type<br>• Household characteristics, possibly leveraging existing criteria for access to social welfare<br>• Could follow a tiered structure, with the grant contribution varying by income level |
| **Implementing entities** | • Front-end administration typically undertaken directly by responsible ministry or arms-length public agency (e.g. energy agency or regulator)<br>• The grant can be made via the consumer (through a voucher or similar as shown below), directly to a financial institution (to pay down principle or interest rates), or direct to the contractor<br>• Contractor is typically selected by the consumer although there may be an approved list of service providers and/or products |

## 6.5 Public co-financing

Public cofinancing involves covering the purchase price of an energy efficiency measure through a combination of private sources, such as commercial loans or cash payments from property owners, and public sources, including concessional loans or grant funding. This approach ensures that households have access to sufficient private finance to cover the full cost of energy efficiency interventions.

Sources for grand funds or seed funding for a concessional loan facility are the same as those identified for use in simple grant funding. Similarly, the approach to setting qualification criteria is the same as for simple grant funding.

Providers of concessional loans may operate as arms-length public entities or publicly-owned companies, with regulated procedures for nominating and selecting oversight board members and key executive staff. The concessional loan facility could be managed by a private financial institution, potentially the provider of the private component of finance. Grants can be distributed directly to the consumer through a voucher or similar mechanism, to a financial institution to reduce principal or interest rates, or directly to the contractor. Typically, the contractor is chosen by the consumer, although there may be an approved list of service providers and products to ensure quality and compliance.

**Table 6 Funding and financing models | Public co-financing**

| | |
|---|---|
| **Design** | • Use of public funds (or funds invested by distributors as part of EE Obligation Schemes) to pay a contribution to, or full coverage of, the purchase price of an energy efficiency measure<br>• Contribution to the purchase price of can be defined as a set value or share of overall cost |
| **Market barrier addressed** | • Access to sufficient capital to cover the upfront cost of an energy efficiency intervention |
| **Funding sources** | Options include:<br>• Funds collected through fees from an energy savings obligation scheme<br>• Funds collected through a carbon price (carbon tax or emissions trading scheme) or other energy tax<br>• General budget, possibly using funds allocated for climate or social welfare purposes |
| **Qualification criteria** | Options include:<br>• Building type<br>• Household characteristics, possibly leveraging existing criteria for access to social welfare<br>• Could follow a tiered structure, with the grant contribution varying by income level |
| **Implementing entities** | • Front-end administration typically undertaken directly by responsible ministry or arms-length public agency (e.g. energy agency or regulator)<br>• The grant can be made via the consumer (through a voucher or similar as shown below), directly to a financial institution (to pay down principle or interest rates), or direct to the contractor<br>• Contractor is typically selected by the consumer although there may be an approved list of service providers and/or products |

## 6.6 On-bill financing

On-bill financing involves repayments for capital investments being made by the consumer / prosumer through savings on energy bills; with the capital investment being managed and implemented by the energy supplier serving the customer. Financing in this manner can be treated as a loan from the utility to the consumer / prosumer, or as a service whereby it is considered part of services offered by the utility and integrated into tariffs.

On bill financing can address multiple market barriers including:

- Improving access to capital in similar manner to loan but may be more accessible for low-income households if credit check criteria either (a) are not required due to treatment as a service, or (b) are lowered due to perception of lower default risk on energy bills.
- Tackling the split incentive between owner and renter when loan/service is attached to the property rather than the customer.
- The link to property helps deal with long repayment periods.
- Transaction costs can be lowered due to routine payment of energy bills.

While implemented through the utility, financing for the energy efficiency measures may come from the utility itself or via a third-party financing body. Utilities may be supported in implementing on bill financing by being offered access to low-cost public finance.

When implementing on-bill financing, the utility may take on all functions including acting as the financier and the assessor for eligibility. Alternatively, third party finance may be arranged, and assessors can be stipulated to be independent.

Qualification for eligibility is typically based on the building characteristics.

**Table 7 Funding and financing models | On-bill financing**

| | |
|---|---|
| **Design** | • Repayments for capital investments are made by consumer/prosumer through savings on energy bills<br>• Can be treated as a loan or as a service whereby it is considered part of services offered by the utility and integrated into tariffs |
| **Market barrier addressed** | • Improves access to capital in similar manner to loan but may be more accessible for low-income households if credit check criteria either (a) are not required due to treatment as a service, or (b) are lowered due to perception of lower default risk on energy bills<br>• Tackles split incentive between owner and renter when loan/service is attached to the property<br>• Link to property helps deal with long repayment periods<br>• Low transaction cost due to routine payment of energy bills |
| **Funding sources** | • Finance may come from utility (which may be offered access to low-cost public finance) or third-party financing bodies |
| **Qualification criteria** | • Building type |
| **Implementing entities** | • The participating utility may also act as assessor and financier<br>• Or third-party finance may be arranged while assessors can be stipulated to be independent<br>• Public entities may support financing and marketing |

## 6.7 Public credit guarantees

A public credit guarantee involves a contract between a private lender and public guarantor to cover a borrower in case of defaulting on their loan. The private lender provides finance to an individual or household to implement and energy efficiency measure. Provision of a guarantee addresses the issue of a perceived lack of creditworthiness of energy poverty effected households as borrowers.

Sources for seed funding for a guarantee facility are the same as those identified for use in grant funding. Similarly, the approach to setting qualification criteria is the same as for grant funding.

**Table 8 Funding and financing models | Public credit guarantees**

| | |
|---|---|
| **Design** | • Contract between private lender and public guarantor to cover borrower in case of default |
| **Market barrier addressed** | • Perceived creditworthiness of energy poverty effected households as borrowers |
| **Funding sources** | Seed funding for a guarantee facility could be provided by:<br>• Funds collected through fees from an energy savings obligation scheme<br>• Funds collected through a carbon price (carbon tax or emissions trading scheme) or other energy tax<br>• General budget, possibly using funds allocated for climate purposes |
| **Qualification criteria** | Options include<br>• Building type<br>• Household characteristics, possibly levering existing criteria for access to social welfare |
| **Implementing entities** | • Front-end administration typically undertaken by an arms-length public agency (e.g. energy agency or regulator) |

# Annexes

## A1 Summary of actions to address energy poverty in BiH at municipal level

A summary of actions and measures proposed to address energy poverty in BiH by the Innovations in Energy Efficiency and Renewable Energy for Better Adaptation to Climate Change and Poverty Reduction project is included in attachment as a separate document.

Energy Community Secretariat

# Study on the implementation of EE1st principle in buildings, with the focus on reducing energy poverty

## Part two: Recommendations

ECA

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# Abbreviations and acronyms

| | |
|---|---|
| BiH | Bosnia and Herzegovina |
| BRS | Building Renovation Strategy |
| COPD | Chronic Obstructive Pulmonary Disease |
| CP | Contracting Parties |
| ECA | Economic Consulting Associates |
| EIHP | Energetski institut Hrvoje Požar |
| EnC | Energy Community |
| EnCS | Energy Community Secretariat |
| EE1st | Energy Efficiency First |
| EEAP | Energy Efficiency Action Plan |
| EED | Energy Efficiency Directive |
| EEO | Energy Efficiency Obligation |
| EPAH | Energy Poverty Advisory Hub |
| ESCO | Energy Service Company |
| ETS | Emissions Trading System |
| EU | European Union |
| EUR | Euro |
| EVRF | Energy Vulnerability Reduction Fund |
| FPEER | Fuel Poverty Energy Efficiency Rating |
| GHG | Greenhouse Gas |
| HBS | Household Budget Survey |
| IAQ | Indoor air quality |
| IEA | International Energy Agency |
| IFI | International Financial Institutions |
| INDEP | Institute for Development Policy |
| IoT | Internet of Things |
| KPI | Key Performance Indicators |
| LILEE | Low-Income Low Energy Efficiency |
| M&E | Monitoring and Evaluation |
| MI | Multiple Impacts |
| MIA | Multiple Impact Assessments |
| MICAT | Multiple Impacts Calculation Tool |
| MS | Member States |
| MVP | Monitoring and Verification Programme |

| | |
|---|---|
| NECP | National Energy and Climate Plan |
| NGO | Non-governmental organisation |
| RES | Renewable Energy Sources |
| SILC | Statistics on Income and Living Conditions |
| SITEE | Sociocultural, Institutional, Technological, Environmental, and Economic |
| WHO | World Health Organisation |

# Executive summary

**This study has been prepared to assist the Energy Community (EnC) Contracting Parties (CPs) in addressing energy poverty through implementation of energy efficiency improvement measures in the buildings sector.**

The primary purpose of the study is to strengthen capacity within CP national institutions by sharing European Union best practices in capturing synergies between energy efficiency and social policy. The study also contributes to the implementation of the *Ministerial Council Recommendations R/2024/01/MC-EnC on accelerating the deployment of renewable energy projects and implementing the Energy Efficiency First (EE1st) principle* and of the *2022 EnCS Policy Guidelines on identifying and addressing energy poverty in the EnC CPs*.

**Recommendations on how the EnC CPs can best address energy poverty through implementation of energy efficiency improvement measures in the buildings sector are given in five areas:**

- **Actions and programmes** for energy efficiency and building renovation with a focus on energy poor.
- **Funding and financing** models for renovation of buildings for energy poor households.
- Recommended amendments to **legislative and policy framework**.
- **Methods for monitoring** and capturing social, environmental, and economic benefits of energy efficiency.
- How to integrate and operationalise the **EE1st principle into plans and strategies**.

**Recommended overarching actions and programmes to address energy efficiency and building renovation with a focus on the energy poor:**

**Awareness and communication to empower and protect vulnerable customers and alleviate energy poverty.** Key information and services in local one-stop-shops should include energy consumption assessments, energy saving advice, provision of packages for simple energy efficiency improvements (e.g. LED bulbs, window and door seals, door brushes, reflective foils for radiators, etc).

**Energy renovation programme targeted at prioritising energy poverty.** Multiple criteria including affordability and access, indoor environment and health outcome, and social vulnerabilities to identify energy poor households should be set to determine eligibility to participate in an energy renovation programme, and receive funding or financing support towards the associated investment costs. Reduction of the number of people affected by energy poverty should be a target in national building renovation plans and NECPs, and therefore vulnerable households must be included in the energy renovation rate.

**Major building renovations at a deep level with staged implementation.** Evaluation of whether to make deep building renovations should be done by applying cost-benefit analysis according to the EE1st principle. Living conditions improvement for vulnerable households and higher financial, fiscal, administrative and technical support for deep and staged energy renovation should be provided.

### Recommended funding and financing models for renovation of buildings for energy poor households:

**Grant funding:** Use of public funds (or funds invested by energy distributors as part of EE Obligation Schemes, or collected through carbon pricing) to pay a contribution to, or full coverage of, the purchase price of an energy efficiency measure.

**Public co-financing:** Purchase price of an energy efficiency measure is covered by a combination of private sources (a commercial loan or cash payment from the property owner) and public sources (a concessional loan or grant funding).

**Public credit guarantees:** Contract between private lender and public guarantor to cover borrower in case of default.

**On-bill financing:** Repayments for capital investments are made by consumer/prosumer through energy bills. This can be treated as a loan or as a service whereby it is considered part of services offered by the utility and integrated into tariffs. One important issue with treating this sort of investment as a loan is the regulatory issues and collateral requirements which are then required – which could be a major barrier for inclusion of energy poor households.

### Recommended amendments to legislative and policy framework.

Based on EU requirements, four actions[1] to enable addressing energy poverty through energy efficiency and building renovation are recommended:

- **Defining energy poverty and establishing clear criteria to identify energy poor households,** to enable targeted support and prioritisation.
- Preparing a **building renovation strategy or plan (or updated NECP)**, which includes **specific targets and actions** for the **reduction of energy poverty**.
- Financial support to improve access to finance via **targeted use of public funds**.
- National **energy savings targets**, and associated **energy efficiency obligation schemes**, that **prioritise reduction in energy poverty.**

[1] Note that while EU MS are also required to prepare an NECP, which should assess the number of households in energy poverty, preparation of an NECP has not been included as a recommended amendment here as the CPs have all prepared, or are in the process of preparing, and NECP and are required to do so as CPs of the EnC.

- **Technical assistance and information campaigns**, including the establishment of one-stop-shops.

EnC CPs currently vary in the degree to which these have been implemented already, and therefore recommendations differ by country. However, some trends in current implementation across the CPs include:

- EnC CPs all have plans to develop building renovation strategies or plans, however preparation and adoption of strategies has been mixed, and specific targets for the reduction of energy poverty are often missing.
- Financial support targeting the energy poor tends to focus on subsidising bills, rather than providing incentives for improving energy efficiency.
- Very few EnC CP's have national energy savings targets that prioritise the energy poor, and none have energy efficiency obligation schemes.
- While some CPs have plans to provide technical assistance and information on how households can improve energy efficiency, overall, the provision of these is very limited.
- Moldova, Montenegro, and Serbia have all legally defined energy poverty in national energy or energy efficiency laws. Albania, Bosnia and Herzegovina, Georgia, Kosovo*[2], North Macedonia and Ukraine have not defined energy poverty but have a legal definition for "vulnerable customers".

### Recommendations on methods for monitoring and capturing social, environmental, and economic benefits of energy efficiency.

A proposed set of indicators to enable a comprehensive assessment of social, economic, environmental, and health-related impacts, while also facilitating alignment with EU methodologies[3] and enabling benchmarking across countries is provided in the table below.

#### Proposed Indicators for assessing the multiple benefits of energy efficiency

| Indicator | Definition | Data source |
|---|---|---|
| **Energy poverty and affordability indicators** | | |

[2] Throughout this Report, this designation is without prejudice to positions on status, and is in line with UNSCR 1244 and the ICJ Opinion on the Kosovo declaration of independence.
[3] The proposed indicators have been selected to ensure compatibility with methodologies used in EU Member States, enabling benchmarking across Contracting Parties. Where applicable, they align with established frameworks such as the EU EPAH, the Horizon 2020 MICAT project (Multiple Impacts of Energy Efficiency), the Odyssee-MURE project, and Eurostat practices (e.g. EU-SILC and HBS modules). Indicators related to indoor environment and health are informed by WHO Housing and Health Guidelines and the UK's methodology for measuring excess winter deaths and indoor temperature thresholds. Employment and investment indicators are aligned with literature on green jobs multipliers from the IEA and the European Investment Bank.

| Indicator | Definition | Data source |
|---|---|---|
| **Household energy expenditure burden**[4] | Average share of household income spent on energy disaggregated by income decile (especially the lowest 20%).<br>A burden exceeding 10% in lower deciles indicates a high likelihood of energy poverty. | Household Budget Survey (HBS), conducted annually or periodically in most CPs. |
| **Inability to Keep Home Adequately Warm (or Cool)**[5] | Percentage of households self-reporting that they are unable to maintain sufficient indoor temperature in winter (and summer, where applicable). | National living conditions surveys or EU-Statistics on Income and Living Conditions (SILC) equivalents. |
| **Arrears on Utility Bills** | Percentage of households that fell behind on energy bill payments within the last 12 months. | Household surveys or utility-provided data (e.g. disconnections, payment delays). |
| **At-risk of poverty rate** | Percentage of individuals living in households with an income below 60% of the national median equivalised income, after social transfers. Used as a social vulnerability indicator and relevant for understanding overlapping risks with energy poverty. | National statistical offices; Eurostat EU-SILC (or national equivalents). |
| **Frequency of Fuel Rationing**[6] | Proportion of households reporting deliberate reductions in heating (e.g. heating a single room) to save on energy costs. | Specialised modules in HBS or dedicated energy poverty surveys. |
| **Indoor environment and health indicators** | | |
| **Indoor air quality (IAQ) indicator**[7] | Percentage of homes using solid fuels (e.g. wood, coal) in inefficient stoves, or where possible, measured PM2.5 levels pre/post intervention. | National census or energy survey data; pilot studies[8] for direct measurement. |
| **Health Outcomes** | Population-level incidence rates of respiratory diseases (e.g. Chronic Obstructive Pulmonary Disease (COPD), childhood asthma) and excess winter mortality among vulnerable groups. | Ministry of Health statistics, World Health Organisation (WHO) databases, or household survey supplements. An alternative metric might be number of days of work/school missed due to respiratory issues (from household surveys), which should drop as indoor conditions improve. |

[4] Institute for Development Policy (INDEP). 2024. Energy Poverty in just transition.
[5] ODYSSEE-MURE. 2022. Measuring and monitoring energy poverty in the EU – examples of good practices.
[6] Kvaratskhelia & Dubos. 2023. Understanding Energy Poverty in Georgia.
[7] Kvaratskhelia & Dubos. 2023. Understanding Energy Poverty in Georgia.
[8] Small-scale, targeted research projects designed to test or explore specific indicators or methodologies before rolling them out on a larger scale.

| Indicator | Definition | Data source |
|---|---|---|
| **Indoor Temperature** | Proportion of households with average indoor winter temperatures below 18°C, as is the case in the UK[9]. | Sample-based measurements or survey-reported data (e.g. UK model). Indicates the effectiveness of efficiency measures in improving thermal comfort. |
| **Economic and job creation indicators** | | |
| **Jobs Created in Energy Efficiency Sector** | Number of person-years of employment generated annually through public energy efficiency programmes. | Programme monitoring reports, supplemented by labour force surveys.<br>Estimations can be supported using employment multipliers (studies show the creation of 12.5 net jobs for every million EUR invested, including 3.7 direct jobs, 3.8 indirect jobs, and 5 induced jobs[10], while others state 15-19 jobs are created per 1 million EUR invested[11]). |
| **Investment in Energy Efficiency** | Annual public and private investments in residential energy efficiency improvements, expressed in EUR per capita. | Public budgets, donor programme financial reports, and private sector co-financing estimates. |
| **Energy Cost Savings Achieved** | Aggregate and per household financial savings resulting from energy efficiency interventions. | Technical programme evaluations or engineering estimates based on measured savings (e.g. savings/year EUR per household). |
| **Energy and Emissions Indicators** | | |
| **Energy Savings (Consumption Reduction)** | Reduction in residential sector energy consumption (kWh) attributable to energy efficiency measures. | Pre- and post-retrofit energy audits, utility data, or aggregated modelling; evaluations from energy efficiency obligation schemes. |
| **Emissions Avoided** | Annual reductions in $CO_2$ and other air pollutants (e.g., PM2.5, $SO_2$, $NO_x$) resulting from decreased energy consumption, emphasising both climate and public health co-benefits. | Energy saved × emission factors (based on national energy mix). |
| **Renewable Energy Uptake in Low-Income Households** | Number of low-income households adopting renewable heating technologies (e.g. heat pumps, solar water heaters) with support mechanisms.<br>Indicates structural transition aligned with long-term sustainability goals. | Government or donor-funded programme registries. |

[9] Hueber et al. Determinants of winder indoor temperatures below the threshold for healthy living in England.
[10] An estimated 31,000 net jobs (comprising direct, indirect, and induced employment) are projected to be created with a total investment of 2.4 billion EUR. This translates to approximately 12.5 net jobs for every million EUR invested, including 3.7 direct jobs, 3.8 indirect jobs, and 5 induced jobs. Source: Smart Balkans. Governments' support to improving energy efficiency as a response to mitigating (future) energy shocks. Western Balkan 6.
[11] World Bank. 2013. Scaling Up Energy Efficiency in Buildings in the Western Balkas. Interim Report.

Modern methodologies and tools have been developed to quantify the broader societal, environmental, and economic benefits of energy efficiency measures, supporting the operationalisation of the EE1st principle. Three complementary EU-funded initiatives provide practical approaches that can be adopted by CPs to capture these multiple impacts in a structured and policy-relevant manner:

- **MICATool and SEED-MICAT** offer a web-based calculation platform for estimating multiple impacts, including avoided emissions, health benefits, job creation, energy cost savings, and reduced inequality. The tool supports scenario modelling by income group and directly informs cost-benefit analyses aligned with Energy Efficiency Directive (EED) Article 3(5a). SEED-MICAT further extends this framework through a replicability methodology (SITEE)[12] and enables comparisons between energy efficiency and supply-side alternatives.

- **ODYSSEE-MURE** provides standardised top-down and bottom-up indicators for tracking energy efficiency progress and associated co-benefits. The platform allows CPs to assess trends in affordability, emissions, and job creation, and to benchmark against EU Member States. It is strongly recommended that all CPs fully participate in the ODYSSEE-MURE initiative to strengthen data consistency and comparability.

- **ENEFIRST** focuses on embedding EE1st into decision-making and regulatory frameworks, emphasising the need to monitor broader impacts such as energy poverty reduction and avoided social costs. It proposes a set of key performance indicators (KPIs) tailored to low-income households, enabling CPs to track the distributive outcomes of efficiency investments.

Together, these methodologies provide a solid foundation for CPs to incorporate social equity, environmental sustainability, and economic recovery into energy efficiency planning and monitoring, ensuring that the EE1st principle translates into tangible societal benefits.

To effectively collect and use recommended indicators, CPs will have to enhance the monitoring frameworks. Actional recommendations to improve monitoring are:

- **Establish clear definitions and targets.** Governments should formally define energy poverty in their national context, drawing on EU definitions, assess the number of households in energy poverty, set clear reduction targets, and ensure these are integrated into the NECPs in accordance with the Governance Regulation (EU) 2018/1999 and its implementing regulation. Complementing this, the Internal Electricity Market Directive (EU) 2019/944 obliges countries to define energy poverty and vulnerable customers by considering low-income, high-energy expenditure, and poor energy efficiency, and to reflect these criteria in policy design and monitoring. A key advancement in operationalising these obligations is the implementing regulation (EU) 2022/2299, which provides a standardised framework for NECP Progress Reporting (NECPR), including annexed tables specifically dedicated to energy poverty. Starting in 2025, EnC CPs will also be required to submit NECPR reports biannually. These must include data on the

[12] The methodology evaluates policies through five dimensions, Sociocultural, Institutional, Technological, Environmental, and Economic.

number of affected households, measures taken, and progress made, embedding energy poverty monitoring into national climate and energy planning cycles.

- **Integrate monitoring into National Energy and Climate Plans (NECPs).** Policymakers should use the NECP process to institutionalise energy poverty monitoring. Each country's NECP should contain a dedicated section on energy poverty which outlines the indicators to be tracked, baseline values, and planned updates.

- **Strengthen institutional capacity and assign responsibilities.** Governments should designate a lead agency/national observatory to coordinate energy poverty monitoring with the statistics office, regulator, and relevant ministries.

- **Develop an energy poverty & efficiency monitoring system (dashboard).** A centralised online dashboard should be developed to compile key indicators such as energy poverty rates, retrofit numbers, energy savings, job creation, and emissions reductions.

- **Enhance data collection through surveys and energy audits.** Existing surveys should include energy poverty-related questions, and periodic dedicated surveys should assess energy use, housing conditions, and comfort. Policymakers should also mandate pre- and post-retrofit evaluations for public energy efficiency projects, enabling standardised, aggregated impact tracking.

- **Leverage technology and innovation.** Policymakers should promote innovative technologies to enhance monitoring.

- **Coordinate regionally and ensure peer learning.** The EnC Secretariat can convene an annual Energy Poverty Monitoring Forum where all nine CPs present their latest data and share experiences.

- **Engage non-governmental organisations (NGOs) and community organisations in monitoring and outreach.** NGOs and civil society actors play a vital dual role in energy poverty monitoring, facilitating grassroots data collection and contributing to accountability and policy refinement through independent analysis.

- **Use monitoring results to inform policy adjustments and target investments.** Embed annual policy reviews into NECPs and energy strategies. Monitoring results should trigger real-time policy responses, whether by scaling successful interventions or redesigning underperforming ones.

### How to integrate and operationalise the EE1st principle into plans and strategies.

Implementation of the EE1st principle in buildings with a focus on the energy poor, can to a very large extend be achieved by implementing the policy recommendations outlined in Chapter 4 of this report. Each of these actions will prioritise and support the implementation of energy efficiency, and therefore by extension prioritise energy efficiency in planning decisions. There are, however, further actions that EnC CPs can take when adopting the policy recommendations to operationalise the EE1st principle:

- When developing building renovation strategies, ensure the strategy prioritises the most efficient sources of energy supply alongside energy savings.
- Existing financial support can be restructured to target energy efficiency - and it is necessary to remove incentives which increase consumption.
- Energy efficiency obligation schemes require energy suppliers to consider energy efficiency, rather than focusing solely on energy supply.
- Provision of information will be essential to help households better understand energy efficiency first, and to adapt to changing support.
- Energy efficiency for energy poverty must be addressed holistically, with alignment across various strategies and plans such as NECPs, building renovation strategies, and any relevant sectoral strategies.
- When developing and updating NECPs, CPs should take into account interlinkages between the five dimensions of the Energy Union, as well as applying the EE1st principle.

# 1 Introduction

## 1.1 Background

This study aims to assist the Contracting Parties (CPs) in addressing energy poverty through implementation of energy efficiency improvement measures in the buildings sector. The aim is to help strengthen capacity within CP national institutions by sharing EU best practices in capturing synergies between energy efficiency and social policy. The study also contributes to the implementation of the *Ministerial Council Recommendations R/2024/01/MC-EnC on accelerating the deployment of renewable energy projects and implementing the Energy Efficiency First (EE1st) principle* and of the *2022 EnCS Policy Guidelines on identifying and addressing energy poverty in the Energy Community (EnC) CPs*.

## 1.2 Purpose of this report

This report presents recommendations on how the EnC CPs can best address energy poverty through implementation of energy efficiency improvement measures in the buildings sector, including:

- Actions and programmess for energy efficiency and building renovation with a focus on energy poor in Section 2.
- Funding and financing models for renovation of buildings for energy poor households in Section 3.
- Recommended amendments to legislative and policy framework in Section 4.
- Methods for monitoring and capturing social, environmental, and economic benefits of energy efficiency in Section 5.
- How to integrate and operationalise the EE1st principle into plans and strategies in Section 6.

# 2 Actions and programmes for energy efficiency and building renovation with a focus on energy poor

Energy efficiency and building renovation tackle the root cause of energy poverty. The value of these interventions goes beyond pure costs saving and is related to health and wellbeing multiple benefits. There is considerable qualitative evidence that the value of the multiple

benefits of energy poverty alleviation is significant – up to three times the direct energy cost savings[13].

There a is high demand to improve the performance of the existing building stock in the CPs. Insight into average heat energy demand in the housing sector for specific CPs shows that the energy consumption for heating is 50% to 70% above the energy efficiency standard[14]. This causes high energy consumption costs for households and a risk of not being able to afford to heat the entire household surface or to provide for adequate indoor thermal comfort. The use of heating systems varies between countries. In rural households, mostly individual stoves with an efficiency of 50% or less and solid fuels are used. In Albania, Bosnia and Herzegovina, Montenegro, Kosovo*, Moldova, North Macedonia and Serbia, even in urban areas individual stoves fuelled by wood dominate. In Ukraine and Georgia individual boilers with an efficiency of around 90% using natural gas are most used, serving around 53% of households. In addition to the poor energy efficiency standard of the housing stock, it can be assumed that the age of the building stock and lack of funding for regular maintenance contribute further to inadequate dwelling conditions caused by leaking roofs, damp in walls, and related issues.

Actions currently being taken by the EnC CPs to address energy poverty have been presented in more detail in D2 Interim Report of this assignment.

**Box 1 Good practices to alleviate energy poverty currently implemented in the CPs**

- **Key regulatory and policy actions** have included: legally defining energy poverty (Moldova, Montenegro, Serbia, Ukraine), developing a methodology for identifying energy poor groups or areas including through data collection and monitoring tools (Albania, Bosnia and Herzegovina, Kosovo*, Moldova, Montenegro, Serbia), assessing the level of energy poverty in the country (Georgia, Ukraine), and development of an action plan or goal for reducing energy poverty (Albania, Georgia, Serbia, Moldova).
- **Direct national support for the implementation of energy efficiency & renewable energy measures targeted to energy poor households** have included: identifying energy retrofit programmes targeted at energy poor households (Albania, Serbia, Bosnia and Herzegovina, Moldova, North Macedonia, Kosovo*), facilitating installation of solar thermal systems (Serbia), substitution of inefficient appliances and technologies with new energy efficient ones (Moldova, Serbia, North Macedonia), and facilitating access of energy poor households to alternative energy sources (Serbia, North Macedonia) and district heating (Serbia).
- **Awareness raising** (e.g. conducting simplified energy audits to propose energy saving advice), **training programmes** (e.g. training of professionals to identify energy poor households, help avoid stigmatisation and respect genders equality, etc.) to facilitate planned policies and measures to contribute to effective alleviation of energy poverty (Serbia) or energy efficiency education for socially vulnerable customers, in collaboration with local social welfare authorities and civil society organisations (Bosnia and Herzegovina).

[13] International Energy Agency. 2011. Evaluating the co-benefits of low-income energy efficiency programes.
[14] DOOR, EIHP. 2021. Study on Addressing Energy Poverty in the Energy Community Contracting Parties.

The following subsection describes actions and programmes for energy efficiency that could be utilised by the CPs to further address energy poverty. Initiatives to support energy efficiency and building renovation should include development of the regulatory framework and policies, direct national support in the implementation of energy efficiency and renewable energy measures, and awareness and information measures targeting energy poor households. Below is an overview of actionable recommendations for each CP.

**Table 1 Actionable recommendations by CP**

| **Albania** |
|---|
| **Awareness raising and communication to empower decision makers and protect vulnerable customers and energy poor households.**<br>● Establishing a cross-sector network of experts to develop local and national strategies on implementing energy efficiency improvement measures, technical assistance and financial tools in accordance with a national goal for energy poverty reduction.<br>● Establishment of local one-stop-shops to provide advice and packages for simple energy efficiency improvements to energy poor households.<br>**Energy renovation programme targeted at prioritising energy poverty.**<br>● Development of a targeted energy renovation programme for energy poor households to support goals of a plan for reducing energy poverty.<br>● Definition of multiple criteria for identifying energy poor households to participate in energy renovation programmes.<br>● Providing a higher co-financing rate for energy renovation of energy poor households.<br>● Providing technical assistance in preparation of the design documentation for energy renovation of energy poor households.<br>● Establishment of an ongoing financial support and funding for replacement of inefficient heating and cooling equipment and household appliances.<br>**Major building renovation at a deep level.**<br>● Targeting energy renovation measures on the building envelope and decarbonisation of energy consumption by achieving a nearly zero energy standard or at least 60% primary energy savings.<br>● Including measures to improve living conditions and wellbeing in energy poor households.<br>● Use of renewable energy: solar thermal, photovoltaic systems and heat pumps in areas with limited grid access and to replace polluting fuels. |
| **Bosnia and Herzegovina[15]** |
| **Awareness raising and communication to empower decision makers and protect vulnerable customers and energy poor households.** |

[15] Here the activities are described for the national level implementation. Suggestion is to further continue activities on local level by using the example of local strategies implemented by the "Innovations in Energy Efficiency and Renewable Energy for Better Adaptation to Climate Change and Poverty Reduction" project

- Establishing a cross-sector network of experts to develop local and national strategies on implementing energy efficiency improvement measures, technical assistance and financial tools.
- Establishment of local one-stop-shops to provide education, advice and packages for simple energy efficiency improvements to energy poor household.

**Energy renovation programme targeted at prioritising energy poverty.**

- Development of a targeted energy renovation programme for energy poor households.
- Definition of multiple criteria to identify energy poor households to participate in energy renovation programmes.
- Providing a higher co-financing rate for energy renovation of energy poor households.
- Providing technical assistance in preparation of the design documentation for energy renovation of energy poor households.
- Establishment of an ongoing financial support and funding for the replacement of inefficient heating and cooling equipment and household appliances.

**Major building renovation at a deep level.**

- Targeting energy renovation measures on the building envelope and decarbonisation of energy consumption by achieving a nearly zero energy standard or at least 60% primary energy savings as part of a sustainable energy framework.
- Including measures to improve living conditions and wellbeing in energy poor households.
- Use of renewable energy: solar thermal and photovoltaic systems in areas with limited grid access and to replace polluting fuels.

**Georgia**

**Awareness raising and communication to empower decision makers and protect vulnerable customers and energy poor households.**

- Establishing a cross-sector network of experts to develop local and national strategies on implementing energy efficiency improvement measures, technical assistance and financial tools in accordance with national goals for energy poverty reduction.
- Establishment of local one-stop-shops to continue providing advice and packages for simple energy efficiency improvements to energy poor households.

**Energy renovation programme targeted at prioritising energy poverty.**

- Development of a targeted energy renovation programme for energy poor households.
- Definition of multiple criteria for identifying energy poor households to participate in energy renovation programmes.
- Providing a higher co-financing rate for energy renovation of energy poor households.
- Providing technical assistance in preparation of the design documentation for energy renovation of energy poor households.
- Establishment of an ongoing financial support and funding for the replacement of inefficient heating and cooling equipment and household appliances.

**Major building renovation at a deep level.**

- Targeting energy renovation measures on the building envelope and decarbonisation of energy consumption by achieving a nearly zero energy standard or at least 60% primary energy savings.
- Including measures to improve living conditions and wellbeing in the energy poor households.
- Use of renewable energy: solar thermal and photovoltaic systems in areas with limited grid access.

**Kosovo***

**Awareness raising and communication to empower decision makers and protect vulnerable customers and energy poor households.**

- Establishing a cross-sector network of experts to develop local and national strategies on implementing energy efficiency improvement measures, technical assistance and financial tools.
- Establishment of local one-stop-shops to support energy efficiency consumer information programmes by providing advice and packages for simple energy efficiency improvements to energy poor households.

**Energy renovation programme targeted at prioritising energy poverty.**

- Development of targeted energy renovation programme for energy poor households.
- Definition of multiple criteria for identifying energy poor households to participate in energy renovation programmes.
- Providing higher co-financing rate for energy renovation of energy poor households.
- Providing technical assistance in preparation of the design documentation for energy renovation of energy poor households.
- Establishment of an ongoing financial support and funding for replacement of inefficient heating and cooling equipment and household appliances.

**Major building renovation at a deep level.**

- Targeting energy renovation measures on the building envelope and decarbonisation of energy consumption by achieving a nearly zero energy standard or at least 60% primary energy savings.
- Including measures to improve living conditions and wellbeing in energy poor households.
- Use of renewable energy: solar thermal and photovoltaic systems in areas with limited grid access and to replace polluting fuels by use of the financial resources from the Vulnerable Electricity Consumers Program.

**Moldova**

**Awareness raising and communication to empower decision makers and protect vulnerable customers and energy poor households.**

- Establishing a cross-sector network of experts to develop local and national strategies on implementing energy efficiency improvement measures, technical assistance and financial tools in accordance with national goal for energy poverty reduction.

- Establishment of local one-stop-shops to provide advice and packages for simple energy efficiency improvements to energy poor households.

**Energy renovation programme targeted at prioritising energy poverty.**

- Development of targeted energy renovation programme for energy poor households to support goals of an action plan for reducing energy poverty.
- Application of multiple criteria of energy poverty definition for households to participate in energy renovation programmes.
- Providing a higher co-financing rate for energy renovation of energy poor households.
- Providing technical assistance in preparation of the design documentation for energy renovation of energy poor households.
- Continuation of financial support and funding for replacement of inefficient heating and cooling equipment and household appliances.

**Major building renovation at a deep level.**

- Targeting energy renovation measures on the building envelope and decarbonisation of energy consumption by achieving a nearly zero energy standard or at least 60% primary energy savings.
- Including measures to improve living conditions and wellbeing in the energy poor households.
- Use of renewable energy: solar thermal and photovoltaic systems in areas with limited grid access and to replace polluting fuels.

**Montenegro**

**Awareness raising and communication to empower decision makers and protect vulnerable customers and energy poor households.**

- Establishing a cross-sector network of experts to develop local and national strategies on implementing energy efficiency improvement measures, technical assistance and financial tools.
- Establishment of local one-stop-shops to provide advice and packages for simple energy efficiency improvements to energy poor households.

**Energy renovation programme targeted at prioritising energy poverty.**

- Development of targeted energy renovation programme for energy poor households.
- Definition of multiple criteria of identifying energy poor households to participate in energy renovation programmes.
- Providing a higher co-financing rate for energy renovation of energy poor households.
- Providing technical assistance in preparation of the design documentation for energy renovation of energy poor households.
- Establishment of an ongoing financial support and funding for the replacement of inefficient heating and cooling equipment and household appliances.

**Major building renovation at a deep level.**

- Targeting energy renovation measures on the building envelope and decarbonisation of energy consumption by achieving a nearly zero energy standard or at least 60% primary energy savings.

- Including measures to improve living conditions and wellbeing in the energy poor households.
- Use of renewable energy: solar thermal and photovoltaic systems and heat pumps in areas with limited grid access and to replace polluting fuels.

**North Macedonia**

**Awareness raising and communication to empower decision makers and protect vulnerable customers and energy poor households.**

- Establishing a cross-sector network of experts to develop local and national strategies on implementing energy efficiency improvement measures, technical assistance and financial tools.
- Establishment of one-stop-shops to provide advice and packages for simple energy efficiency improvements to energy poor households.

**Energy renovation programme targeted at prioritising energy poverty.**

- Development of a targeted energy renovation programme for energy poor households to support goals of an action plan for reducing energy poverty.
- Definition of multiple criteria of identifying energy poor households to participate in energy renovation programmes.
- Providing a higher co-financing rate for energy renovation of energy poor households.
- Providing technical assistance in preparation of the design documentation for energy renovation of energy poor households.
- Continuation of financial support and funding for replacement of inefficient heating and cooling equipment and household appliances.

**Major building renovation at a deep level.**

- Targeting energy renovation measures on the building envelope and decarbonisation of energy consumption by achieving a nearly zero energy standard or at least 60% primary energy savings in the pending development of a Building Renovation Strategy.
- Including measures to improve living conditions and wellbeing in the energy poor households.
- Continuation of promotion of renewable energy use, solar thermal, photovoltaic systems and heat pumps in areas with limited grid access and to replace polluting fuels.

**Serbia**

**Awareness raising and communication to empower decision makers and protect vulnerable customers and energy poor households.**

- Establishing a cross-sector network of experts to develop local and national strategies on implementing energy efficiency improvement measures, technical assistance and financial tools in accordance with national goal for energy poverty reduction.
- Establishment of local one-stop-shops to provide education, advice and packages for simple energy efficiency improvements to energy poor households.

**Energy renovation programme targeted at prioritising energy poverty.**

- Development of a targeted energy renovation programme for energy poor households to support goals of an action plan for reducing energy poverty.
- Application of multiple criteria of the national energy poverty definition for households to participate in energy renovation programmes.
- Providing a higher co-financing rate for energy renovation of energy poor households.
- Providing technical assistance in preparation of the design documentation for energy renovation of energy poor households.
- Continuation of financial support and funding for the replacement of inefficient heating and cooling equipment and household appliances.

**Major building renovation at a deep level.**

- Targeting energy renovation measures on the building envelope and decarbonisation of energy consumption by achieving a nearly zero energy standard or at least 60% primary energy savings to support the goals of the Long-term Strategy for Encouraging Investment in the Renovation of the National Building Stock of the Republic of Serbia until 2050.
- Including measures to improve living conditions and wellbeing in the energy poor households.
- Continuation of promotion of district heating, renewable energy use, solar thermal and photovoltaic systems in areas with limited grid access and to replace polluting fuels.

**Ukraine**

**Awareness raising and communication to empower decision makers and protect vulnerable customers and energy poor households.**

- Establishing a cross-sector network of experts to develop local and national strategies on implementing energy efficiency improvement measures, technical assistance and financial tools to support the national energy poverty reduction goal.
- Establishment of local one-stop-shops to provide advice and packages for simple energy efficiency improvements to energy poor households.

**Energy renovation programme targeted at prioritising energy poverty.**

- Development of a targeted energy renovation programme for energy poor households.
- Application of multiple criteria of the national energy poverty definition for households to participate in energy renovation programmes.
- Providing a higher co-financing rate for energy renovation of energy poor households.
- Providing technical assistance in preparation of the design documentation for energy renovation of energy poor households.
- Establishment of an ongoing financial support and funding for replacement of inefficient heating and cooling equipment and household appliances.

**Major building renovation at a deep level.**

- Targeting energy renovation measures on the building envelope and decarbonisation of energy consumption by achieving a nearly zero energy standard or at least 60% primary energy savings to support the goals of the Long-term Strategy for thermal modernisation of buildings until 2050.

- Including measures to improve living conditions and wellbeing in energy poor households.
- Use of renewable energy: solar thermal and photovoltaic systems in areas with limited grid access and to replace polluting fuels.

## 2.1 Recommended actions and programmes to address energy efficiency and building renovation with a focus on energy poor

### 2.1.1 Awareness and communication to empower decision makers and protect vulnerable customers and energy poor households

Priority should be given to consumer protection and providing information among people affected by energy poverty, vulnerable customers, people in low-income households and people living in social housing. A communication and awareness raising campaign can be implemented by the following actions:

- Establishing a network of experts from various sectors such as the health, building and social sectors, or entrust an existing network, to develop strategies to support local and national decision makers in implementing energy efficiency improvement measures, technical assistance and financial tools aiming to alleviate energy poverty.
- Efforts in information and awareness raising specifically targeting households in energy poverty can be best supported by establishment of “one-stop-shops” in cooperation with public bodies, energy agencies and community led initiatives. Trained experts in one-stop-shops should be engaged in providing key services including: energy consumption assessments, energy saving advice, information on support opportunities and provision of packages for simple energy efficiency improvements (e.g. LED bulbs, window and door seals, door brushes, reflective foils for radiators, etc).

**Box 2 Good practices in EU MS on awareness and communication to empower decision makers and protect vulnerable customers and energy poor households**

- Cross-sectoral communication and cooperation platform of professionals in public and private sectors and civil society focusing on EE1st principle, energy renovation and energy poverty (Croatia).
- Capacity building of citizens on energy poverty alleviation provided in local information centres (Croatia).
- Consumer advice centres to provide advice on energy efficiency, energy savings, energy efficient refurbishment, modern heating technology, and funding opportunities for low-income households along with home visits to focus on energy saving behaviour (Germany).

- Rapid roll-out of smart meters in households affected by energy poverty to help better management of energy consumption (Greece).
- Targeted information and education to households affected by energy poverty, owners of buildings rented by households affected by energy poverty, and entities involved in implementing technical measures addressing energy poverty through regional authorities, professional associations, consumer associations, and educational bodies; and through the establishment of one-stop-shops specifically targeting energy poverty (Greece).
- One-stop-shops at local administration level to support households affected by energy poverty (Romania).
- Information to households living in energy poverty through establishing network of energy advisers and one- stop-shop website (Slovakia).

### 2.1.2 Energy renovation programme targeted at prioritising energy poverty

The reduction of the number of people affected by energy poverty should be targeted in CP building renovation plans and NECPs, and a national energy poverty definition should be established in the national regulatory framework and aligned with the definition set out in the Directive (EU) 2023/1791:

*"**[energy poverty]** means 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"*

**Criteria to identify energy poor households should be set out to determine eligibility to participate in an energy renovation programme**, and receive funding or financing support towards the associated investment costs with co-financing rate higher than in mainstream energy renovation programmes.

Suggested criteria to identify energy poor households to participate in the energy renovation programme should be based on multiple criteria, including affordability and access criteria, site visits or questionnaires on indoor environments and health outcomes, and social vulnerabilities[16]:

- Affordability and access criteria: lower-than-average income of a household, poor energy performance of a building, fuel rationing, limited energy infrastructure access.
- Indoor environment and health outcome criteria: poor IAQ due to use of polluting fuels (solid and liquid), incidence of respiratory diseases, inadequate indoor

[16] ODYSSEE-MURE. 2022. Measuring and Monitoring Energy Poverty in the EU – Examples of Good Practices.

temperature, poor indoor environment quality due to visible presence of mould and draught incidence, at-risk of climate changes.

- Social vulnerabilities criteria: household-specific circumstances regarding gender composition, disability status, and ethnic minority.

The programme can be implemented through the following activities:

- Development of a list of key energy renovation measures and health and safety improvements, including average investment costs for construction works and equipment required. This should be developed with the support of a national network of experts (incl. health, building and social backgrounds).

- Site visits to households to assess the condition of the building and identify necessary improvements. Basic information to be collected includes household size (m2), position (individual home or multiapartment building), classification of improvements to be performed (improvements to provide safe and heathy living conditions, major renovation or upgrades to building systems). Site visits should be organised in cooperation with local social welfare offices and building management companies and coupled with activities of a local one-stop-shop.

- Preparation of energy audits with the aim to define energy efficiency and renewable energy measures for buildings, along with indoor health and safety improvements including estimation of investment costs. Acquiring experts to implement energy audits should be coupled with the activities of a local one-stop-shop.

- Preparation of design documentation in cases where an entire multi-residence building is undergoing energy refurbishment including health and environment, structural stability and fire safety improvements. Acquiring experts to prepare the design documentation should be coupled with the activities of a local one-stop-shop.

- Replacement of inefficient heating and cooling equipment and household appliances should be facilitated on an ongoing basis through funding and financing support.

**Box 3 Good practices or regulatory framework and policy action in EU MS**

- Definition of energy poverty and criteria for identifying the number of energy-poor households, adapted to national context (Slovenia). Box 7 for offers further details.
- Reducing energy poverty among occupants of single-dwelling buildings and reaching energy poverty targets by energy renovation of the national building stock (Bulgaria).
- Energy renovation programme for households at-risk of energy poverty (in multiapartment buildings and family homes) funded by energy efficiency obligation scheme, National Environment Protection and Energy Efficiency Fund and EU funds/dedicated fund to reimburse costs (Croatia).
- Criteria to identify citizens affected by energy poverty (Croatia).

- Energy saving targets in the energy efficiency obligation scheme for energy suppliers and liquid and solid fuel traders to prioritise households at-risk of energy poverty (Bulgaria).
- Energy efficiency obligation scheme parties to implement low-cost measures in households affected by energy poverty (Greece).

### 2.1.3 Major building renovations at a deep level

Deep energy renovation ultimately transforms buildings to zero-emission buildings from 2030 onward, but as a first step to nearly zero-emission buildings by 2030[17]. Deep energy renovation projects must adhere to the EE1st principle, which prioritises capturing the full economic potential of energy savings – primarily through interventions on the building envelope and the decarbonisation of energy consumption. This can be carried out by staged deep renovation, and in accordance with an energy renovation passport. A deep renovation for energy performance purposes may also address other aspects such as indoor environmental quality, living conditions of vulnerable households, increasing climate resilience, resilience against disaster risks including seismic resilience, fire safety, the removal of hazardous substances including asbestos, and accessibility for persons with disabilities. Higher financial, fiscal, administrative and technical support should be provided for deep renovation and staged deep renovation. Financial incentives should target as a priority vulnerable households, people affected by energy poverty and people living in social housing. Given the wide scope of possible improvements in energy poor households, staged renovation may be suggested to allow for savings and energy cost reduction to be reached as soon as possible.

Evaluation of whether to make deep building renovations should be done by applying cost-benefit analysis according to the EE1st principle and include additional improvements of living conditions and wellbeing in the energy poor households. A renovation resulting in at least a 60% reduction of primary energy is considered a deep level renovation. Energy renovation measures, decarbonisation of the building stock and health and safety improvements should include the following performance levels:

- Increasing the thermal insulation of the building envelope including the windows, doors, and transparent elements of the façade aiming to reduce at least 50% of heating demand. This should be achieved by thermal insulation thickness of 10 to 15 cm for external walls (for warmer and colder climate zones, respectively), 16 to 20 cm for roofs (sloped and flat) or ceilings to unheated attics and floors to unheated basements. Basement walls should also be thermally insulated when the basement is used for housing accommodation. Window glazing should be double or triple with thermal transmittance Ug≤ 1,1 W/m$^2$K, for the complete window thermal transmittance should Uw≤ 1,40 W/m$^2$K in colder climate or Uw≤ 1,60 W/m$^2$K in warmer climate zones, including gaseous filling for air cavities and solar shading coefficient of g<0,6. Sun shading should be provided for all

[17]European Union. 2024. Directive (EU) 2024/1275 of the European Parliament and of the Council of 24 April 2024 on the energy performance of buildings (recast), https://eur-lex.europa.eu/eli/dir/2024/1275/oj/eng

glazed surfaces in accordance to locally used devices, e.g. venetian blinds or grilles.

- Health and safety improvements should be expected in energy poor households. These include remediation of damp (of capillary or condensing origin) in the walls, roof, and floor; replacement of leaking roof coverings and gutters; interior final works (painting of walls and ceilings, replacement of flooring) to combat moisture, fungus and mould; and hydro insulation of basement walls where necessary, to provide for healthy living conditions. Structural stability improvement, accessibility for disabled persons, and fire safety measures might be necessary to provide for safe living conditions.

- Installing new or replacing or improving existing technical building systems that include technical equipment for heating, cooling, ventilation, air-conditioning and preparation of domestic hot water. Minimum technical standards for the equipment should be at least the following: heat pumps with air-water SCOP ≥ 3.5, ground-water heat pumps with SCOP ≥ 4.1, solar thermal collectors with efficiency $\eta \geq 70\%$, wood chips/pellets fired boilers with $\eta \geq 87\%$, and condensing boilers with $\eta \geq 90\%$. Where available, access to a district heating system should be enabled. Improvement of technical building systems includes all additional equipment for achieving adequate indoor temperature such as thermostatic valves, operating time and indoor temperature control devices, and hydraulic balancing for larger systems.

- Installation of photovoltaic systems to produce electricity with installed power per household of 3 to 6 kWp, especially in locations with limited grid access.

- Lighting system replacement or introducing LED bulbs with specifications: rated luminous efficacy of 110 lm/W, nominal correlated colour temperature of 3000 K or lower, colour rendering index of ≥ 80, minimum switching cycle of 50,000, LLMF At End Of Nominal Lifetime minimum 70%.

- Efficient household appliances of highest energy efficiency class and performance and characteristics of the appliance according to the Ecodesign and Energy Labelling scheme[18] for refrigerators and freezers, washing machines, washer-dryers, electronic displays etc.

**Box 4 Direct national support for implementation of EE and RES measures for energy poor households in EU MS**

- Co-financing for replacement of household appliances and upgrading or replacing heating systems with systems that are environmentally and economically more favourable (Croatia).
- Income-based funding for heating replacement (Germany).
- On-bill financing and guarantees to support in energy efficiency improvements in households affected by energy poverty, reducing the electricity bills for vulnerable households using virtual net billing with compensation offset against the energy bills of Citizen Energy Communities' members (Greece).

[18] European Commission. Ecodesign and Energy Labelling. Accessed: 03 June 2025.

- Variety of financial instruments (co-financing, financial support, funding, full subsidy and tax credits) that are intended to address energy poverty alongside other EE1st and environmental objectives (Poland).
- Full funding for comprehensive renovation of homes for low-income households (Slovakia).

# 3 Funding and financing models for renovation of buildings for energy poor households

This section details several funding and financing models designed to support energy efficiency and building renovation in households affected by energy poverty within the EnC CPs. These models have been informed by activities included in D2 Interim Report including the comprehensive review of EU directives and regulations, the analysis of current activities aimed at addressing energy poverty in several example EU countries, the review of current activities aimed at addressing energy poverty in the EnC CPs, and the recommendations for enhancing the role of the financial sector. By drawing on these insights, we aim to present viable and effective solutions that can be adapted and implemented across CPs.

**Box 5 Funding versus financing**

Funding and financing are two separate concepts, and when developing associated models, it is important to delineate between these two concepts.

**Financing**

Financing is **how the upfront costs of a project or investment is covered**. This will often include some form of borrowing, including debt, which must be repaid over time.

**Funding**

Funding is the **actual money that pays for the investment or project** and is not repaid. In the case of energy efficiency, examples of funding including grants from donors or government, payments made by the government to pay for loans with cash collected through taxation, or payments made by end consumers.

## 3.1 Approach to identification of funding and financing models

To identify the most appropriate funding and financing models, a long list of possible funding and financing models was drawn up based on models that are commonly in use globally. Models in this long list where then assessed against three criteria:

- Whether the model has been used in the case study EU countries reviewed in the Interim Report.
- Whether the model was recommended as an action for any of the EnC CPs in the Interim Report.

- Whether the model is considered to be appropriate specifically for supporting building renovation in energy poor households.

Assessment against the above three criteria has been used to identify priority funding and financing models for the EnC CPs. The following subsections detail the assessment used to identify the short-list of priority models, and subsequently give a detailed description of the models.

For the purposes of this report, Energy Service Companies (ESCOs) and aggregators have not been considered to be funding and financing models in their own right, and are treated as implementation mechanisms for given funding and financing models. For example, an ESCO may be provided with concessional financing to blend with private financing and on-lend to customers, which is a form of public co-financing. Similarly, energy efficiency obligation schemes can serve as implementation vehicle for grant funding[19]. Structuring the analysis in this manner maintains focus of the analysis on the form of funding and financing, without overlapping those concepts with the implementation vehicle for delivering the physical EE measures.

## 3.2 Long list of possible funding and financing models

A long list of possible funding and financing models is outlined in Table 2. While this list is not fully exhaustive of all funding and financing models used internationally to support energy efficiency, the list has been drawn up considering models internationally that could potentially have wide applicability to the EnC CPs.

**Table 2 Long list of possible funding and financing models**

| Financing mechanism | Description |
|---|---|
| **Grant funding** | Use of public funds (or funds invested by distributors as part of EE Obligation Schemes) to pay a contribution to, or full coverage of, the purchase price of an energy efficiency measure |
| **Results based financing** | A form of funding support, where recipients receive funding from an issuing agency that can be a government, donor, or other institution, upon the achievement of predefined set of results |
| **Tax relief** | A reduction in tax paid on or as a result of the purchase / implementation of energy efficient goods and/or services |
| **Public co-financing** | Purchase price of an energy efficiency measure is covered by a combination of private sources (a commercial loan or cash payment from the property owner) and public sources (a concessional loan or grant funding) |
| **Public credit guarantees** | Contract between private lender and public guarantor to cover borrower in case of default |
| **On-bill financing** | Repayments for capital investments are made by consumer/prosumer through energy bills |

[19] European Union. 2023. Directive (EU) 2023/1791 of the European Parliament and of the Council of 13 September 2023 on energy efficiency and amending Regulation (EU) 2023/955 (recast).

| Financing mechanism | Description |
|---|---|
| | Can be treated as a loan or as a service whereby it is considered part of services offered by the utility and integrated into tariffs |
| **On-wage financing** | Repayments for capital investments are made by consumer/prosumer through direct deductions to their monthly salaries |
| **On-tax financing** | Repayment of capital expenditure for measures through tax, typically property tax, thereby attaching loan (with long tenures) to the property rather than individual |

Source: Economic Consulting Associates

## 3.3 Identification of short-list of funding and financing models for the EnC CPs

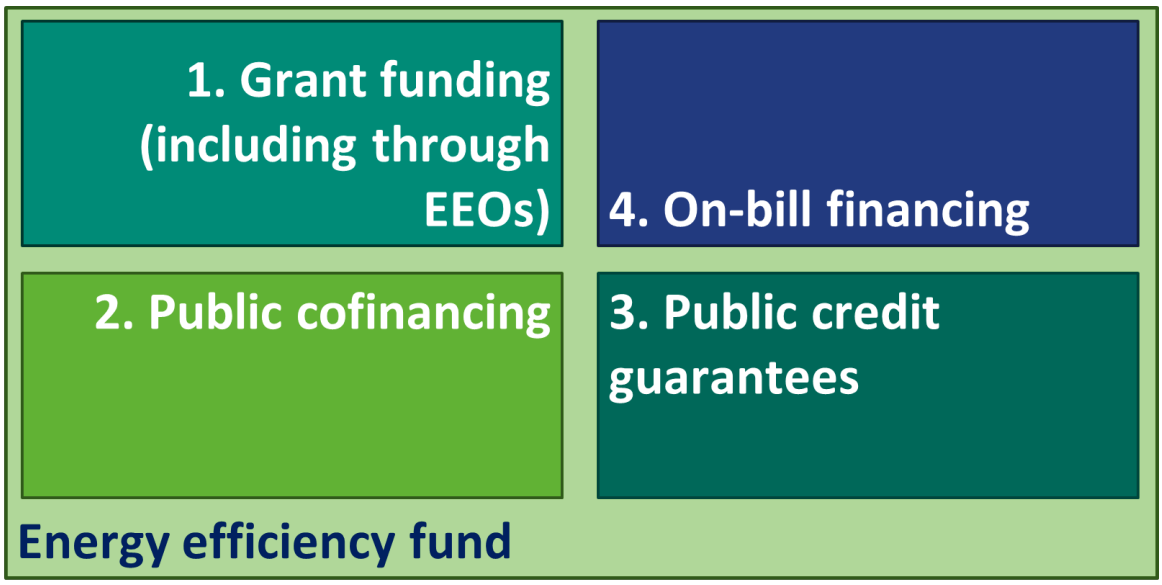
The long list of possible models outlined in Table 2 is assessed against the criteria outlined in 3.1 in Table 3 below.

Based on this assessment, four proposed funding and financing models have been identified:

- Grant funding.
- Public co-financing.
- Public credit guarantees.
- On-bill financing.

Each of these models are outlined in the following subsections.

**Figure 1 Funding and financing models for energy efficiency**




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**Table 3 Rapid assessment of possible financing models**

| Financing mechanism | Demonstrated in EU case studies | Identified in EnC gap analysis | Effective in targeting energy poverty through building renovation | Comments |
|---|---|---|---|---|
| Grant funding | ✓ | ✓ | ✓ | For the purposes of this report grant funding is used to cover any form of instrument where cash is disbursed to support energy efficiency investment, and that cash is not required to be paid back |
| Results based financing | ✗ | ✗ | - | Access to capital is a key constraint for energy poor households and withholding payments until completion may therefore create cash flow difficulties |
| Tax relief | ✗ | ✗ | - | Likely complex to implement, and heavily dependent on local taxation laws and implications on public budget – also dependent upon households having sufficient taxable income |
| Public co-financing | ✓ | ✓ | ✓ | For the purposes of this report, public co-financing covers a range of products where a blend of public and private money is used, including green financing and green mortgages |
| Public credit guarantees | ✓ | ✓ | ✓ | Provide a route to mobilise private finance and deliver more investment with a given amount of public funds |
| On-bill financing | ✓ | ✓ | ✓ | Can improve access to capital for investment – even amongst low-income households, and can address issues with split incentives and long repayment periods |
| On-wage financing | ✗ | ✗ | - | Suitable for appliances but less so for building renovation |
| On-tax financing | ✗ | ✗ | - | Would require significant capacity within municipalities, and property tax laws across various jurisdictions may be unsuitable |

Source: Economic Consulting Associates

## 3.4 Grant funding (including through Energy Efficiency Obligations)

**Grant funding involves the use of public funds to pay a contribution to the purchase price of an energy efficiency measure.**

The funding can cover a contribution to the purchase price or cover the full amount, and the contribution can be defined as a set value or a share of the overall cost. The contribution can also vary based on the recipient meeting predetermined criteria, for example a grant funding scheme could cover households in energy poverty and households not in energy poverty, but households in energy poverty are eligible for a larger grant funding contribution to any given energy efficiency measure.

**The primary purpose of a grant funding scheme is to support households with insufficient capital to cover the upfront cost of an energy efficiency measure.**

Major energy efficiency investments, including for example building renovations, are typified by high upfront costs and lead to long-term energy savings. Many households may face issues with the upfront cost of making an investment. A lack of ability to cover the upfront costs can prevent these households from accessing the long-term financial and energy savings associated with the energy efficiency investment. Grant funding support will lower the capital outlay required to implement the energy efficiency investment and overcome the issue of having insufficient capital.

Grant funding can also help incentivise risk averse customers to adopt new energy efficiency technologies and accelerate nascent markets. Grants are therefore a good option for early-stage energy efficiency measures where proof of concept is critical to gain consumer buy in.

**Budget availability can limit the size of grant funding schemes, and funding can come from a range of sources.**

Typical sources of funding used to provide energy efficiency grants include: funds collected through fees from an energy efficiency obligation (EEO) schemes, funds collected through a carbon price (a carbon tax or emissions trading system (ETS)), or funding from the government budget collected through general taxation.

International sources of funding might also be available. For example, under WBIF, the Regional Energy Efficiency Programme (REEP) for the Western Balkans[20], supported by multiple international financial institutions (IFIs) and EU, blends grants and loans to finance technical assistance and energy efficiency upgrades in the Western Balkan countries. Countries in the Western Balkans can also use the funds from the Reform and Growth Facility by following a structured and conditional process designed to promote socio-economic reforms and accelerate EU integration. CPs outside the Western Balkans have also received funding support for energy efficiency from the international sources, for example, Georgia has received EU support for energy efficiency improvements in schools, public buildings, and

[20] Western Balkans Investment Framework. Regional Energy Efficiency Programme (REEP). Accessed: 11 July 2025.

businesses[21]. Kosovo*, Moldova and Ukraine launched national funds blending EU, international and state grants with concessional loans to scale up home-energy improvements.

What constitutes the most suitable source of funding will vary for each EnC CP, and each country will need to make an assessment of where funding can come from.

**Box 6 Energy efficiency obligation schemes in EU**

EU MS are required to implement EEO schemes, defined as energy savings obligations imposed on energy distributors and/or retail energy sales companies (the obligated parties). EEO schemes place requirements on obligated parties to meet quantitative energy savings targets across their customer portfolio. EEOs are market-based instruments that do not prescribe the measures to be deployed – obligated parties are given the freedom to choose the measures and delivery routes that work best for them within the constraints defined by the scheme administrator. As a result, this instrument allows the market as a whole to discover the most cost-effective way to achieve energy savings in that particular context.

These schemes should prioritise people affected by energy poverty, vulnerable customers, low-income households, and people living in social housing; and should also have no adverse impact on these people.

In order to achieve the objective of prioritising people in energy poverty, MS may require obligated parties to:

- achieve a share of their energy savings obligation through people affected by energy poverty,
- work with social services, local authorities or municipalities to promote energy efficiency improvement measures among people affected by energy poverty, and
- carry out renovation of buildings, replacement of appliances, and provide financial support and incentives for energy efficiency improvement measures.

If implementing the above three actions, MS shall require obligated parties to annually report on energy savings achieved by obligated parties from actions promoted among people affected by energy poverty.

Source: European Union. 2023. Directive (EU) 2023/1791 of the European Parliament and of the Council of 13 September 2023 on energy efficiency and amending Regulation (EU) 2023/955 (recast). | EBRD & Energy Community. Energy Efficiency Obligation Schemes: Policy Guidelines. Deep Dive on Key Policy Mechanism That Can Be Deployed under Article 7 of the Energy Efficiency Directive.

### Criteria for accessing grant funding can include both the types of building that households reside in and the household economic characteristics.

Grant funding may be made available only for certain types of buildings, for example in Croatia grants are made available to energy poor households within apartment buildings to overcome the issue of ensuring all co-owners of a building have the financial means to undertake the renovation.

Access to grant funding can also be predicated on meeting socio-economic criteria, including being linked to meeting criteria identified as indicating a household meets a country's definition of energy poverty. Alternatively, the amount of grant funding a household is eligible for can

[21] EU in Georgia. Energy Efficiency – Doing More with Less. Accessed: 11 July 2025.

vary based on socio-economic criteria with energy poor households eligible for more support than households not facing energy poverty.

### Administration of grant funding is typically undertaken by the responsible ministry or arms-length public agency (e.g. energy agency or regulator).

The grant can be made via the consumer (through a voucher or similar), directly to a financial institution (to pay down principle or interest rates on a loan), or direct to the contractor. The contractor is typically selected by the consumer although there may be an approved list of service providers and/or products that the consumer can select from.

**Table 4 Grant funding model summary**

| | |
|---|---|
| **Design** | • Use of public funds (or funds invested by distributors as part of EEO Schemes) to pay a contribution to, or full coverage of, the purchase price of an energy efficiency measure<br>• Contribution to the purchase price can be defined as a set value or share of overall cost |
| **Market barriers addressed** | • Access to sufficient capital to cover the upfront cost of an energy efficiency intervention |
| **Funding sources** | Options include:<br>• Funds collected through fees from an energy savings obligation scheme<br>• Funds collected through a carbon price (carbon tax or emissions trading scheme) or other energy tax<br>• General budget, possibly using funds allocated for climate or social welfare purposes |
| **Qualification criteria** | Options include:<br>• Building type<br>• Household characteristics, possibly leveraging existing criteria for access to social welfare<br>• Could follow a tiered structure, with the grant contribution varying by income level |
| **Implementing entities** | • Front-end administration typically undertaken directly by responsible ministry or arms-length public agency (e.g. energy agency or regulator)<br>• The grant can be made via the consumer (through a voucher or similar), directly to a financial institution (to pay down principle or interest rates), or direct to the contractor<br>• Contractor is typically selected by the consumer although there may be an approved list of service providers and/or products |

## 3.5 Public co-financing

**Public co-financing includes instruments where a combination of private and public financing and funding are used to cover the cost of an energy efficiency measure.**

Private contributions include funding, for example cash payments from the property owners, and financing, e.g. a commercial loan taken out by the home-owner. Similarly, public contributions include both funding, e.g. grant funding, or financing, e.g. a concessional loan provided to the home-owner. The market barrier these models address is the same as grant funding, which is a subset of public co-financing. However, the key feature of public co-financing that differs from simple grant funding is that co-financing seeks to use public funding and financing to mobilise private sources of funding and financing as much as possible.

**Funding sources can either be used as grant funding or seed funding for a concessional loan facility dependent on the structure of the co-financing.**

Sources of funding are similar to those for grant funding and could include: grants collected through fees from an energy savings obligation schemes, funds collected through a carbon price (a carbon tax or ETS), or from the government budget collected through general taxation. Use of funds as seed funding for a loan scheme, rather than providing grants, can deliver larger scale with the same amount of funding.

**Criteria for eligibility are similar to grant funding, however there is broader scope for differentiating support based on household characteristics.**

Similar to grant funding, co-financing can be targeted towards different building types and based on socio-economic characteristics. Public co-financing does provide scope to offer a differentiated suite of products to different recipients. For example, concessional finance could be provided to a wide set of households, while households facing energy poverty are also eligible for grant funding to cover a proportion of the costs and to reduce the amount of debt they will have to take on from the concessional financing.

**The implementing entity for a co-financing scheme will differ dependent on the structure of co-financing being offered.**

If grants are being provided, implementation will be structured similar to grant funding. The grant can be made via the consumer (through a voucher or similar), directly to a financial institution (to pay down principle or interest rates on a loan), or directly to the contractor.

A provider of concessional loans may be operated as arms-length public entity / public-owned company with regulated procedures for nominating and selecting oversight board and key executive staff. Alternatively, a concessional loan facility could be managed by private financial institution, possibly the provider of the private component of finance.

**Table 5 Public co-financing model summary**

| | |
|---|---|
| **Design** | • Purchase price of an energy efficiency measure is covered by a combination of private sources (a commercial loan or cash payment from the property owner) and public sources (a concessional loan or grant funding) |
| **Market barriers addressed** | • Access to sufficient private finance to cover the full cost of an energy efficiency intervention |
| **Funding sources** | Grant funding or seed funding for a concessional loan facility could be provided by:<br>• Funds collected through fees from an energy savings obligation scheme<br>• Funds collected through a carbon price (carbon tax or emissions trading scheme) or other energy tax<br>• General budget, possibly using funds allocated for climate purposes |
| **Qualification criteria** | Options include:<br>• Building type<br>• Household characteristics, possibly leveraging existing criteria for access to social welfare |
| **Implementing entities** | • Provider of concessional loans may be operated as arms-length public entity / public-owned company with regulated procedures for nominating and selecting oversight board and key executive staff<br>• Concessional loan facility could be managed by a private financial institution, possibly the provider of the private component of finance<br>• Grants can be made via the consumer (through a voucher or similar as shown below), directly to a financial institution (to pay down principle or interest rates), or direct to the contractor<br>• Contractor is typically selected by the consumer although there may be an approved list of service providers and/or products |

## 3.6 On-bill financing

**On-bill financing is a model where households make financing repayments for energy efficiency investments through their energy bill.**

On-bill financing can be structured as either a loan or a service:

- If **structured as a loan**, the energy supplier, possibly on-lending from a third-party financial institution, provides a loan to the customer for the investment in energy efficiency. Loan repayments are then included as a line item on the household's energy bill. Under this arrangement, the customer owns the energy efficiency equipment that has been purchased, while the loan may or may not transfer to the new occupant if the property is sold. One important issue with treating this sort of

investment as a loan is the regulatory issues and collateral requirements which are then required – which could be a major barrier for inclusion of energy poor households.

- If **structured as a service**, the energy supplier, or a third-party, installs and owns the equipment. A service charge is then included as a line item on the households' energy bill. Under this arrangement, the charge is tied to the utility meter or property rather than the individual, and the obligation to make service payments stays with the property or meter and is therefore transferred to the new owner if the property is sold.

Qualification criteria used for eligibility for on-bill financing are typically based on building type.

### On-bill financing can improve access to capital for low-income households, and can address issues with split incentives and long repayment periods.

Similar to concessional loans, on-bill financing can improve access to capital but may be more accessible for low-income households if credit check criteria either are not required due to treatment as a service, or are lowered due to perception of lower default risk on energy bills. Additional market barriers on-bill financing can address are: the split incentive between owner and renter because the loan/service is attached to the property, the link to the property helps deal with the risk of long repayment periods, and the link to energy bills can lower transaction costs.

### Financing for the energy efficiency investments can come from a utility or a third-party financing body.

Energy suppliers may offer financing directly. When doing so, particularly if the supplier is a public utility, they may be offered access to low-cost public finance, which can then be no-lend to households. Alternatively, financing may be provided by a third-party financing body whereby the supplier would effectively operate as a billing agent for the financier.

### Implementation arrangements for on-bill financing can take various forms to suit local context and energy supplier resources.

The participating energy supplier may act as the assessor and financier, however limited capacity within the organisation may limit their ability to deliver all functions internally. As such, third-party finance may be arranged while assessors can be stipulated to be independent. Alternatively public entities (e.g. regulator or energy agency) may support financing and marketing.

**Table 6 Public co-financing model summary**

| | |
|---|---|
| **Design** | • Repayments for capital investments are made by consumer/prosumer through savings on energy bills<br>• Can be treated as a loan or as a service whereby it is considered part of services offered by the utility and integrated into tariffs |

| | |
|---|---|
| **Market barriers addressed** | • Improves access to capital in similar manner to loan but may be more accessible for low-income households if credit check criteria either are not required due to treatment as a service, or are lowered due to perception of lower default risk on energy bills<br>• Tackles split incentive between owner and renter when loan/service is attached to the property<br>• Link to property helps deal with long repayment periods<br>• Low transaction cost due to routine payment of energy bills |
| **Funding sources** | • Finance may come from utility (which may be offered access to low-cost public finance) or third-party financing bodies |
| **Qualification criteria** | • Building type |
| **Implementing entities** | • The participating utility may also act as assessor and financier<br>• Third-party finance may be arranged while assessors can be stipulated to be independent<br>• Public entities may support financing and marketing |

## 3.7 Public credit guarantees

**A public credit guarantee involves a contract between a private lender and public guarantor who will cover any outstanding loan value in case of default.**

The purpose for providing such a guarantee is for the public guarantor to take on-lending risk that private financial institutions would otherwise be unwilling to take on. As such, public credit guarantees can address a perceived lack of creditworthiness of energy poor households as borrowers. Similar to grant funding, qualification criteria used for eligibility for public credit guarantees are typically based on a combination of building and household characteristics. Design of the scheme should be targeted to support only households expected to face barriers to accessing commercial finance.

**Public credit guarantees provide a route to mobilise private finance and deliver more investment with a given amount of public funds.**

Sources of funding are similar to those for grant funding and could include: grants collected through fees from an energy savings obligation scheme, funds collected through a carbon price (a carbon tax or emissions trading system (ETS)), or from the government budget collected through general taxation. Use of seed fundings to provide guarantees can help to mobilise volumes of private capital that can be several times larger the amount of seed funding, and therefore significantly larger than if the funding was used for grants. Administration of the scheme would typically be undertaken by an arms-length public agency (e.g. energy agency or regulator), who would contract with selected financial providers.

**Table 7 Public credit guarantees model summary**

| | |
|---|---|
| **Design** | • Contract between private lender and public guarantor to cover borrower in case of default |

| | |
|---|---|
| **Market barriers addressed** | • Perceived creditworthiness of energy poverty effected households as borrowers |
| **Funding sources** | Seed funding for a guarantee facility could be provided by:<br>• Funds collected through fees from an energy savings obligation scheme<br>• Funds collected through a carbon price (carbon tax or emissions trading scheme) or other energy tax<br>• General budget, possibly using funds allocated for climate purposes |
| **Qualification criteria** | Options include:<br>• Building type<br>• Household characteristics, possibly levering existing criteria for access to social welfare |
| **Implementing entities** | • Front-end administration typically undertaken by an arms-length public agency (e.g. energy agency or regulator) |

## 3.8 National energy efficiency fund

**A national energy efficiency fund can be established to support the implementation of funding and financing models.**

An energy efficiency fund can be a central vehicle for collecting all funds allocated to support energy efficiency. The core purpose of establishing such a vehicle is to manage and allocate the funds towards financial incentives for energy efficiency measures and investments. The fund can however provide other services, such as:

- Hire professional services and cover the costs of executing EE projects and programmes.
- Support and provide funding for programmes of to establish minimum standards and labelling of equipment and appliances and to fund activities that control and monitor energy efficiency labelling of equipment and appliances.
- Provide funding for technical assistance, training, and education programmes as well as information and outreach campaigns targeting the general public.

# 4 Recommended amendments to legislative and policy framework

The D2 Interim Report includes an assessment of the European Union legislative and regulatory framework supporting energy efficiency implementation for energy poor

households, identifying the types of actions that EU MS are required to take to address energy poverty through energy efficiency[22]. EU rules require MS to take four types of action:

- Preparing a building renovation strategy or plan, which includes specific targets for the reduction of energy poverty.
- Financial support, access to finance, and targeted used of public funds for energy poor households.
- National energy savings targets, and associated energy efficiency obligation schemes, that prioritise reduction in energy poverty.
- Technical assistance and information campaigns, including the establishment of one-stop-shops.

These action types can be used to guide evaluation of the current legislative and policy framework in the EnC CPs. In the following subsection, the current framework in each EnC CP (assessed and summarised in D2 Interim Report) is reviewed against the action types to see if and how those actions have been implemented in each country.

In addition to the four action types, it is reviewed whether CPs have formally defined "energy poverty" in their own country context. Defining energy poverty is an important first step to addressing the issue and will help identify which energy efficiency actions should be prioritised for support, and how best to target support towards households most in need.

A review of the current legislative and policy frameworks in the CPs against the five criteria (four types of action and defining energy poverty) have been used to guide recommendations for proposed amendments to the framework of each country.

### Assessment of the EnC CPs frameworks for addressing energy poverty

#### The EnC CPs have outlined planned and ongoing actions to address energy poverty in their NECPs.

These actions cover some, but not all, of those required by EU MS. While many countries have begun to develop strategies or plans to address energy poverty, actual implementation of the planned actions has been limited. A detailed discussion of the current actions being taken to address energy poverty is provided in the D2 Interim Report. Below is a summary of how actions outlined in country NECPs map against the requirements for addressing energy poverty in EU.

#### EnC CPs all have plans to develop building renovation strategies or plans, however preparation and adoption has been mixed.

Kosovo* and North Macedonia have all stated an intention to develop or finalise a building renovation strategy or plan, but have not yet done so. Bosnia and Herzegovina, Georgia,

[22] Review of the EU legislative and regulatory framework focused on Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action, Directive (EU) 2023/1791 on energy efficiency, and Directive (EU) 2024/1275 on the energy performance of buildings.

Moldova, Montenegro (prepared but not yet formally adopted), Albania, Serbia, and Ukraine have all prepared strategies or plans. However, only Albania, Georgia, Serbia and Moldova have targets for the reduction of energy poverty. While Serbia's target is clear and set as a percentage reduction in the level of energy poverty, Moldova has set the target relative to the level of absolute poverty which may make measurement and monitoring difficult.

### Financial support targeting the energy poor tends to focus on subsidising bills, rather than providing incentives for improving energy efficiency.

Funding and financing support for building renovation and energy efficiency is available in many EnC CPs, however prioritisation toward energy poverty is often lacking. Moldova already has a residential energy efficiency fund targeting vulnerable consumers, including those in energy poverty, and has a voucher programme supporting the purchase of energy efficient appliances for households that meet criteria associated with energy poverty. Kosovo*, Montenegro, North Macedonia, Serbia and Ukraine currently provide support for implementation of energy efficiency measures in homes. However, this support is not targeted towards energy poverty. Some targeted support for vulnerable customers making investments in energy efficiency is available in North Macedonia. Georgia, Kosovo*, Moldova, Montenegro, and Ukraine also support energy poor households by subsidising energy consumption, but these subsidies also incentivise economically inefficient use of energy. Several EnC CPs, including Albania and Bosnia and Herzegovina[23] have stated plans to introduce financial incentives for implementing energy efficiency measures targeting energy poor households.

### Very few EnC CP's have national energy savings targets that prioritise the energy poor.

While all CPs have set or are in the process of adopting of national energy efficiency or EEO energy savings targets as part of the NECP process, only Albania and Moldova seem to prioritise the energy poor in those targets.

### While some CPs have plans to provide technical assistance and information, overall, the provision of these is very limited.

Bosnia and Herzegovina, Georgia, and Serbia have all expressed an intention in NECPs to provide some form of technical assistance and public information on energy efficiency; however this has yet to be implemented in any of the three countries. In the case of Serbia, there is also an intention to introduce one-stop-shops to support households in lowering their energy consumption.

### Moldova, Montenegro, and Serbia have all legally defined energy poverty in national energy or energy efficiency laws[24].

[23] Bosnia and Herzegovina has received support from the EU and German Federal Ministry for Economic Cooperation and Development (BMZ) to provide financial incentives for energy efficiency at a local level.
[24] Montenegro and Serbia also have definitions for vulnerable customers.

Albania, Bosnia and Herzegovina, Georgia, Kosovo* and North Macedonia and Ukraine have not defined energy poverty, but have a legal definition for “vulnerable customers”. These CPs still have to adopt formal definitions for energy poverty.

**Table 8 Assessment[25] of EnC CPs energy poverty frameworks | Albania, Bosnia and Herzegovina, and Georgia**

| | | Albania | Bosnia and Herzegovina | Georgia |
|---|---|---|---|---|
| **Preparing a NECP, Building Renovation Strategy or Plan, which includes specific targets for the reduction of energy poverty.** | **Current status** | Albania adopted Building Renovation Strategy<br><br>An Action Plan to reduce energy poverty is also intended to be developed | The Federation of BiH adopted a building renovation strategy in 2025, however an integrated long-term building renovation strategy of BiH by 2050 has not yet been adopted<br><br>The BRS of the Federation of BiH assesses energy poverty based on five metrics and presents solutions for reducing energy poverty | Georgia is currently preparing a Building Renovation Plan<br><br>The NECP includes a target to reduce the rate of energy poverty from 43% in 2017 to 15% in 2030 |
| | **Assessment** | **BRS adopted, but a target for reduction of energy poverty is still to be set** | **BRS adopted (in Federation of BiH), pending in other entities** | **BRP in development** |
| **Financial support[26] targeting the energy poor, access to finance, and targeted used of public funds.** | **Current status** | The to be developed energy poverty action plan will define grants to be distributed for the renovation of the worst-performing buildings and for the exchange of old house appliances[27] | The establishment of a sustainable energy framework for the implementation of the BRS will include providing incentives for categories to improve energy performance of residential buildings | Georgia does not currently have any financial support specifically targeting energy efficiency for energy poor homes or households |
| | **Assessment** | **Financial support intended to be implemented but details on mechanisms not yet confirmed, and support not yet available** | **Financial support intended to be implemented but details on mechanisms not yet confirmed, and support not yet available** | **Intention to provide financial support has not been formally stated** |
| **National energy savings targets, and associated energy efficiency obligation schemes, that prioritise** | **Current status** | National energy savings targets which prioritise the energy poor are established in Albania's NECP | Have not prioritised the energy poor in national energy savings targets | Have not prioritised the energy poor in national energy savings targets |

[25] Assessment has focused on measures and actions included in each country's NECP.
[26] Financial support focuses on nationally implemented programmes as described in each country's NECP.
[27] The action plan will also establish a national system for planning, monitoring, and implementation measures for eradicating energy poverty.

| | | Albania | Bosnia and Herzegovina | Georgia |
|---|---|---|---|---|
| **reduction in energy poverty.** | | | | |
| | **Assessment** | **Energy poor have been prioritised in targets** | **Energy poor have not been prioritised in targets** | **Energy poor have not been prioritised in targets** |
| **National (or sub-national) technical assistance and information campaigns on energy efficiency and targeting the energy poor, including the establishment of one-stop-shops.** | **Current status** | Technical assistance related to energy efficiency targeting the energy poor is not currently available in Albania | BiH has included in the draft NECP a plan to introduce an education programme aimed at vulnerable consumers and including information about energy appliances, proper energy use, and tips on reducing energy bills in the household | Georgia has included in the draft NECP a plan to implement energy efficiency awareness raising campaigns to inform the public about financially effective and easily achievable options for energy saving in households |
| | **Assessment** | **No plans to introduce technical assistance and information campaigns** | **BiH has plans to introduce an education programme, but this has not yet been implemented** | **Georgia has plans to introduce an education programme, but this has not yet been implemented** |
| **Country has formally defined energy poverty.** | **Current status** | Albania does not yet have a formal definition of energy poverty, however this is likely to be forthcoming in the energy poverty action plan or new energy efficiency law | BiH does not yet have a formal definition of energy poverty. The BRS of the Federation of BiH lists several indicators to be used for measuring energy poverty, however a formal definition based on these criteria has not been adopted. Vulnerable consumers have been defined | Georgia does not yet have a formal definition of energy poverty. However, vulnerable consumers have been defined |
| | **Assessment** | **Definition of energy poverty under preparation** | **No definition of energy poverty and none in preparation, however vulnerable customers have been defined** | **No definition of energy poverty and none in preparation, however vulnerable customers have been defined** |

| | |
|---|---|
| **Key** | **Minimal progress** |
| | **Moderate progress** |

| | Implemented |
|---|---|

**Table 9 Assessment of EnC CPs energy poverty frameworks | Kosovo*, Moldova, and Montenegro**

| | | Kosovo* | Moldova | Montenegro |
|---|---|---|---|---|
| **Preparing a NECP, building renovation strategy or plan, which includes specific targets for the reduction of energy poverty.** | **Current status** | Kosovo* is planning to update and finalize its draft National Strategy for Renovation of Buildings<br><br>Technical support for delivering this strategy is currently being procured | Moldova drafted a long-term renovation strategy<br>Moldova has set a target to reduce energy poverty to 50% of the level of absolute poverty by 2030 | Montenegro has prepared a building renovation strategy that is in the process of being adopted |
| | **Assessment** | **BRS planned, but not yet developed** | **BRS prepared. Target to reduce energy poverty set, but metric is not clear and easy to measure** | **BRS prepared** |
| **Financial support[28] targeting the energy poor, access to finance, and targeted used of public funds.** | **Current status** | Kosovo* does not currently have financial support specifically targeting energy efficiency for the energy poor | Moldova currently provides financial support specifically targeting energy efficiency for the energy poor | Montenegro currently offers EE financial support available, although none specifically targeting energy poverty |
| | **Assessment** | **Intention to provide financial support for energy efficiency targeting the energy poor has been planned** | **Some financial support for energy efficiency targeting the energy poor has been operationalised** | **Financial support intended to be implemented but details on mechanisms not yet confirmed, and support not yet available** |
| **National energy savings targets, and associated energy efficiency obligation schemes, that prioritise reduction in energy poverty.** | **Current status** | Have not developed or prioritised the energy poor in national energy savings targets | Have partly prioritised the energy poor in national energy savings targets | Have not prioritised the energy poor in national energy savings targets |
| | **Assessment** | **Energy poor have not been prioritised in targets** | **Energy poor have been partly prioritised in targets** | **Energy poor have not been prioritised in targets** |

[28] Financial support focuses on nationally implemented programmes as described in each country's NECP

| | | Kosovo* | Moldova | Montenegro |
|---|---|---|---|---|
| **National (or sub-national) technical assistance and information campaigns on energy efficiency and targeting the energy poor, including the establishment of one-stop-shops.** | **Current status** | Kosovo* is planning to organise energy efficiency consumer information programmes that will educate citizens on how to use energy more efficiently in their homes and save money on energy bills | Moldova has not stated an intention to implement information campaigns promoting energy efficiency in the NECP | Montenegro has not introduced technical assistance and information campaigns |
| | **Assessment** | **Kosovo* has plans to introduce an education programme but this has not yet been implemented** | **No plans to introduce technical assistance and information campaigns** | **No plans to introduce technical assistance and information campaigns** |
| **Country has formally defined energy poverty.** | **Current status** | There is currently no legal definition of energy poverty in Kosovo*, however this is expected to be addressed through amendments to the Energy Law in 2025. However vulnerable consumers have been defined. | Energy poverty is defined in the Law on Energy Efficiency as "a situation in which the consumer lacks access to modern energy sources and technologies and/or has insufficient purchasing power for energy sources, particularly fuel for cooking, electricity and/or thermal energy, and/or lacks thermal comfort at home or in the building" | Energy poverty is defined in Montenegro's Law on Energy as "a state in which the household does not have access to basic energy services that provide decent standards of life and health, including adequate heating and cooling, hot water, lighting and energy to power household appliances" |
| | **Assessment** | **Definition of energy poverty under preparation** | **Energy poverty has been defined in Moldova** | **Energy poverty has been defined in Montenegro** |

| | |
|---|---|
| **Key** | **Minimal progress** |
| | **Moderate progress** |
| | **Implemented** |

**Table 10 Assessment of EnC CPs energy poverty frameworks | North Macedonia, Serbia, and Ukraine**

| | | North Macedonia | Serbia | Ukraine |
|---|---|---|---|---|
| **Preparing a NECP, building renovation strategy, which includes specific targets for the reduction of energy poverty.** | **Current status** | North Macedonia has a legal obligation to develop a Building Renovation Strategy, however such strategy has not yet been developed.<br>North Macedonia has not set a target for the reduction of energy poverty | Serbia has adopted the Long-term Strategy for Encouraging Investment in the Renovation of the National Building Fund of the Republic of Serbia until 2050.<br>Serbia has a target to reduce energy poverty by 75% by 2030 compared to 2020 | Ukraine has developed a Long-Term Strategy for thermal modernisation of buildings until 2050.<br>The strategy sets various targets for energy efficiency improvements but does not set specific targets for reduction in energy poverty |
| | **Assessment** | **BRS planned, but not yet developed** | **BRS adopted and a target for reduction of energy poverty has been set** | **BRS adopted, but a target for reduction of energy poverty has not been set** |
| **Financial support[29] targeting the energy poor, access to finance, and targeted used of public funds.** | **Current status** | North Macedonia provides subsidies for solar thermal collectors, heat pumps and windows for vulnerable customers.<br>In 2024 a programme to provide additional support to vulnerable customers was implemented. Short-term measures include protection from utility disconnections, minimum energy supply, and assistance for purchasing new high efficiency single split air conditioners for heating. Long-term measures focus on incentivising low energy consumption, retrofitting buildings, upgrading household appliances, and installing photovoltaic panels or solar thermal collectors | Serbia currently provide support for the energy rehabilitation of residential buildings, family homes and apartments, as well as for the installation of solar panels.<br>Serbia's NECP outlines a plan to support implementation of the building renovation strategy through subsidies, targeted tax deductions, credit lines, and soft-interest loads | Ukraine provides subsidies to households for partial compensation of energy costs and production of vulnerable against disconnection; however no financial support specifically targeting energy efficiency for energy poor households is available |

[29] Financial support focuses on nationally implemented programmes as described in each country's NECP

| | | North Macedonia | Serbia | Ukraine |
|---|---|---|---|---|
| | **Assessment** | **North Macedonia has a comprehensive support package, however details of the financial support are not clear** | **Serbia has plans to provide various financial instruments targeting energy poor but these have not yet been operationalised.** | **Ukraine does not currently provide financial support for energy efficiency measures for energy poor households** |
| **National energy savings targets, and associated energy efficiency obligation schemes, that prioritise reduction in energy poverty.** | **Current status** | Have not prioritised the energy poor in national energy savings targets | Have not prioritised the energy poor in national energy savings targets | Have not prioritised the energy poor in national energy savings targets |
| | **Assessment** | **Energy poor have not been prioritised in targets** | **Energy poor have not been prioritised in targets** | **Energy poor have not been prioritised in targets** |
| **National (or sub-national) technical assistance and information campaigns on energy efficiency and targeting the energy poor, including the establishment of one-stop-shops.** | **Current status** | North Macedonia has not introduced technical assistance and information campaigns | Serbia is planning to implement awareness raising activities and one-stop-shops organised to educate consumers on energy efficiency measures and how to lower consumption in their households | Ukraine has not introduced, or mentioned plans to introduce in the NECP, technical assistance and information campaigns |
| | **Assessment** | **No plans to introduce technical assistance and information campaigns** | **Plans to provide technical assistance and information campaigns but this has not yet been implemented** | **No plans to introduce technical assistance and information campaigns** |
| **Country has formally defined energy poverty.** | **Current status** | There is currently no legal definition for energy poverty in North Macedonia, however vulnerable customers are defined in the Energy Law. North Macedonia is working on a methodology for measuring energy poverty | Energy poverty is defined in the Law on Energy as "a condition in which a household lacks access to basic energy services that ensure fundamental levels of a decent living and health standard. This includes adequate heating, hot water, cooling, lighting, and energy for powering household appliances. It is caused by a combination of factors such as | While the strategy includes an action to define energy poverty, such a definition has yet to be developed |

| | North Macedonia | Serbia | Ukraine |
|---|---|---|---|
| | | unaffordable energy prices, insufficient disposable income, high energy costs, poor energy efficiency of residential units, and social status" | |
| **Assessment** | **No definition of energy poverty, however vulnerable customers have been defined** | **Energy poverty has been defined in Serbia** | **Plans to define energy poverty but this has not yet been implemented** |

| | |
|---|---|
| **Key** | **Minimal progress** |
| | **Moderate progress** |
| | **Implemented** |

## 4.1 Recommendations for amendments to legislative and policy frameworks

**All EnC CPs can make amendments to their legislative and policy frameworks to better support the use of energy efficiency to support the energy poor.**

Amendments to the legislative and policy frameworks fall into two categories: amendments to implement actions that support the uptake of EE more generally (which can be targeted towards households facing energy poverty) and amendments to better target existing support towards energy poor households. Across the CPs, there are gaps in legislative and policy frameworks regarding support for energy poverty. Countries should aim to address these gaps, and in doing so, consider if and how energy poor households should be prioritised.

In CPs already addressing energy poverty, existing activities should be assessed to determine whether they should be updated to better target energy poor households. Financial support and technical assistance should be reviewed to identify whether energy poor households are being excluded due to their specific circumstances, and how these programmes can be better targeted to support them.

An important first step in better prioritising support for households facing energy poverty is to define energy poverty in the national context. A definition is essential for identifying affected households and addressing the specific challenges they face. Definitions and associated criteria will vary by CP, and should reflect the nature of the building stock, the existing energy system of the country, and the socio-economic characteristics of the population.

**Box 7 Example definition of energy poverty**

Slovenia has legally defined energy poverty in the Decree on the Criteria for Defining and Assessing the Number of Energy poor Households (Ur. l. RS, No. 132/2022 of 14 October 2022) as:

*"households that had an **income below the at-risk-of-poverty threshold** in the year prior to the Living Conditions survey (EU-SILC) and **met at least one of the following three criteria**: they were financially **unable to keep home adequately warm**, **they were unable to pay utility bills** (waste disposal, water, electricity, heating, etc.), which also include energy services, on time due to financial difficulties (in the last 12 months prior to the survey) and/or they **had problems with leaking roofs, damp walls/floors/foundations or rot in window frames/floors in their dwellings** (lived in inadequate housing conditions)".*

This definition highlights two important elements for a national definition:

- By aligning the definition to the national definition of poverty, it is **tailored to the national context**.
- By requiring one of three additional criteria to be met, the **definition uses mixed metrics** to capture different aspects and causes of energy poverty, both financial and physical.

The definition listed above is the Republic of Slovenia Statistical Office interpretation of the criteria set out in the Decree. Per the Decree, details on how these criteria should be interpreted are required to be provided in any associated calls for tender or calls for

proposals for programmes providing support for energy poverty. The criteria as listed in the text of the Decree are:

- Material deprivation: income below the at-risk poverty threshold.
- Low energy efficiency of the household premises: the heat required for space heating is more than 150 kWh / $m^2$ per year.

  Inadequate living conditions: roof leaks, damp walls, floors or foundations, cracked window frames or floors, etc.
- A large share of energy expenditure from disposable income or exceeding the average share of energy expenditure: the share of energy expenditure exceeds at least 50% of the disposable income of a household.

The Decree also provides guidelines for the evidence that should be used to demonstrate the criteria:

- Material deprivation by means of a decision on financial social assistance, a decision on a protective allowance or other evidence showing that the income is below the at-risk-of-poverty threshold.
- Low energy efficiency of household premises by means of an energy performance certificate or other professional document that independently proves the energy efficiency of the living spaces, or by a statement by an energy consultant that the dwelling has low energy efficiency.
- Inadequacy of the living conditions with a photograph and a household statement.
- A large proportion of energy expenditure relative to the household's disposable income, with documents showing the household's monthly financial balance.

Source: Republic of Slovenia Statistical Office. 2024. The number of energy-poor households in 2024 about the same as the year before. Accessed: 05 June 2025.

Table 11 summarises recommended amendments to the policy and legislative framework in each of the CPs. Many of the recommendations are common across countries, however implementing the recommendations must take into account the unique characteristics of each CP and will therefore differ across each.

**Table 11 Recommended amendments to EnC CP legislative and policy frameworks**

| | Building renovation strategy and targets for energy poverty | Financial support[30] | National energy savings targets and energy efficiency obligation schemes | Technical assistance | Definition of energy poverty |
|---|---|---|---|---|---|
| **Albania** | • Complete and adopt updated NECP and Building Renovation Plan<br>• Include a target for the reduction of energy poverty in the updated NECP or separate policy channel as amendment to BRS likely to result in undesirable delays | • Identify potential sources of funding to facilitate financial support<br>• Consider the establishment of an energy efficiency fund<br>• Assess most critical market failures and select financial support instruments outlined in Section 3 which are most suitable to local context | • Consider the adoption of an energy efficiency obligation scheme targeting the energy poor for energy suppliers | • Introduce information campaigns and technical assistance on energy efficiency targeting also energy poor households | • Define energy poverty in the updated legislation and energy poverty action plan<br>• Specify criteria to be used for identification of households in energy poverty corresponding to the chosen definition, and outline evidence needed to demonstrate criteria |
| **Bosnia and Herzegovina** | • Introduce a target for the reduction of energy poverty through NECP or a separate policy channel as post adoption revision of BRS likely to be cumbersome | • Identify potential sources of funding to facilitate financial support<br>• Utilisation of existing funds for energy efficiency<br>• Assess most critical market failures and select financial support instruments outlined in Section 3 which are | • Set a national energy savings target prioritising the energy poor through the most suitable policy channel<br>• Consider the adoption of an energy efficiency obligation scheme targeting the energy poor for energy suppliers | • Implement plans to establish education programmes for vulnerable customers | • Legally define energy poverty<br>• Specify criteria to be used for identification of households in energy poverty corresponding to the chosen definition, and outline evidence needed to demonstrate criteria |

[30] Potential sources of funding are listed in Section 3.4.

| | Building renovation strategy and targets for energy poverty | Financial support[30] | National energy savings targets and energy efficiency obligation schemes | Technical assistance | Definition of energy poverty |
|---|---|---|---|---|---|
| | | most suitable to local context | | | |
| **Georgia** | • Complete and adopt Building Renovation Plan<br>• Include a target for the reduction of energy poverty in the Plan | • Identify potential sources of funding to facilitate financial support<br>• Consider the establishment of an energy efficiency fund<br>• Assess most critical market failures and select financial support instruments outlined in Section 3 which are most suitable to local context | • Set a national energy savings target prioritising the energy poor through the most suitable policy channel<br>• Consider the adoption of an energy efficiency obligation scheme targeting the energy poor for energy suppliers | • Implement planed energy efficiency awareness campaigns<br>• Consider implementation of energy advisers or one-stop-shops to provide further guidance and access to information, and facilitate citizens taking independent action for implementing energy efficiency | • Assess whether current definition of vulnerable customers is also suitable to define energy poverty, if not create a definition of energy poverty<br>• Specify criteria to be used for identification of households in energy poverty corresponding to the chosen definition, and outline evidence needed to demonstrate criteria |
| **Kosovo*** | • Complete and adopt Building Renovation Strategy<br>• Include a target for the reduction of energy poverty in the Strategy | • Identify potential sources of funding to facilitate financial support<br>• Utilisation / funding of the Energy Efficiency Fund for residential sector<br>• Assess most critical market failures and select financial support instruments outlined in | • Set a national energy savings target prioritising the energy poor through the most suitable policy channel<br>• Consider the adoption of an energy efficiency obligation scheme targeting the energy poor for energy suppliers | • Implement planned energy efficiency consumer information campaigns | • Assess whether current definition of vulnerable customers is also suitable to define energy poverty, if not create a definition of energy poverty<br>• Specify criteria to be used for identification of households in energy poverty |

| | Building renovation strategy and targets for energy poverty | Financial support[30] | National energy savings targets and energy efficiency obligation schemes | Technical assistance | Definition of energy poverty |
|---|---|---|---|---|---|
| | | Section 3 which are most suitable to local context | | | corresponding to the chosen definition, and outline evidence needed to demonstrate criteria |
| **Moldova** | • Complete and adopt Building Renovation Strategy<br>• Possibly update current definition of energy poverty to a more easily measured and monitored metric | • Identify potential sources of funding to facilitate financial support, consider reallocating social benefit currently subsidising energy consumption at least partially for this purpose<br>• Utilisation of existing voucher programme / funding of the Residential Energy Efficiency Fund<br>• Further assess most critical market failures and select financial support instruments outlined in Section 3 which are most suitable to local context | • National energy savings target and obligation scheme further prioritising the energy poor through the most suitable policy channel | • Introduce information campaigns and technical assistance on focused on supporting renovation and adoption of energy efficiency for energy poor households. These campaigns should provide accessible and easy to understand information to complement the existing information systems monitored by the National Center for Sustainable Energy | • No action needed<br>• Specify criteria to be used for identification of households in energy poverty corresponding to the existing definition, and outline evidence needed to demonstrate criteria |

| | Building renovation strategy and targets for energy poverty | Financial support[30] | National energy savings targets and energy efficiency obligation schemes | Technical assistance | Definition of energy poverty |
|---|---|---|---|---|---|
| **Montenegro** | • Adopt the drafted Building Renovation Strategy<br>• Introduce a target for the reduction of energy poverty through a separate policy channel (e.g. NECP) as amendment to BRS likely to result in undesirable delays | • Identify potential sources of funding to facilitate financial support, consider reallocating social benefit currently subsidising energy consumption at least partially for this purpose<br>• Utilisation of existing Eko fund for energy efficiency measures to target energy poor households<br>• Assess most critical market failures and select financial support instruments outlined in Section 3 which are most suitable to local context | • Set a national energy savings target prioritising the energy poor through the most suitable policy channel<br>• Consider the adoption of an energy efficiency obligation scheme targeting the energy poor for energy suppliers | • Introduce information campaigns and technical assistance on energy efficiency targeting energy poor households | • No action needed, however the definition may be updated in the forthcoming regulations on the criteria for determining energy poverty<br>• Specify criteria to be used for identification of households in energy poverty corresponding to the existing definition, and outline evidence needed to demonstrate criteria |
| **North Macedonia** | • Complete and adopt updated NECP and Building Renovation Strategy<br>• Include a target for the reduction of energy poverty in the NECP and Strategy | • Utilisation / funding of the Energy Efficiency Fund for residential sector<br>• Tailor existing and planned package of financial support for energy efficiency to | • Set a national energy savings target prioritising the energy poor through the most suitable policy channel<br>• Consider the adoption of an energy efficiency obligation scheme targeting the energy | • Introduce information campaigns and technical assistance on energy efficiency targeting energy poor households | • Assess whether current definition of vulnerable customers is also suitable to define energy poverty, if not create a definition of energy poverty |

| | Building renovation strategy and targets for energy poverty | Financial support[30] | National energy savings targets and energy efficiency obligation schemes | Technical assistance | Definition of energy poverty |
|---|---|---|---|---|---|
| | | target energy poor households<br>• Assess whether any of the financial models recommended in Section 3 can complement the existing and planned package of financial support | poor for energy suppliers | | • Specify criteria to be used for identification of households in energy poverty corresponding to the chosen definition, and outline evidence needed to demonstrate criteria |
| **Serbia** | • No Action needed | • Utilisation / funding of the Administration for Financing and Promoting Energy Efficiency<br>• Tailor existing and planned package of financial support for energy efficiency to target energy poor households<br>• Assess whether any of the financial models recommended in Section 3 can complement the existing and planned package of financial support | • Set a national energy savings target prioritising the energy poor through the most suitable policy channel<br>• Consider the adoption of an energy efficiency obligation scheme targeting the energy poor for energy suppliers | • Implement planned awareness raising activities and one-stop-shops | • No action needed<br>• Specify criteria to be used for identification of households in energy poverty corresponding to the existing definition, and outline evidence needed to demonstrate criteria |

| | Building renovation strategy and targets for energy poverty | Financial support[30] | National energy savings targets and energy efficiency obligation schemes | Technical assistance | Definition of energy poverty |
|---|---|---|---|---|---|
| **Ukraine** | • Introduce a target for the reduction of energy poverty through a separate policy channel as post adoption revision of BRS likely to be cumbersome | • Identify potential sources of funding to facilitate financial support, consider reallocating social benefit currently subsidising energy consumption at least partially for this purpose<br>• Utilisation / funding of the Energy Efficiency Fund<br>• Assess most critical market failures and select financial support instruments outlined in Section 3 which are most suitable to local context | • Set a national energy savings target prioritising the energy poor through the most suitable policy channel<br>• Consider the adoption of an energy efficiency obligation scheme targeting the energy poor for energy suppliers | • Introduce information campaigns and technical assistance on energy efficiency targeting energy poor households | • Legally define energy poverty<br>• Specify criteria to be used for identification of households in energy poverty corresponding to the chosen definition, and outline evidence needed to demonstrate criteria |

# 5 Methods for monitoring and capturing social, environmental, and economic benefits of EE

Energy efficiency improvements deliver a range of co-benefits to the economy, society, and the environment. These include:

1. Reduced household energy bills and improved energy affordability;
2. Better indoor air quality (IAQ) and improved health outcomes;
3. Job creation and economic stimulus through energy renovation programmes;
4. Lower $CO_2$ and pollutant emissions, contributing to climate targets.

These benefits are deeply interrelated. For example, an insulated and energy efficient home is cheaper to heat (economic benefit), allows families to stay warm (social benefit), uses less fuel (environmental benefit), and reduces indoor smoke exposure (health benefit).

In summary, energy efficiency measures address the challenge of energy poverty, public health, and climate change. They enable households to afford adequate energy, live in healthier, safer conditions, and contribute to a more sustainable economy. However, to ensure that these benefits are not only theoretical but realised at scale, systematic monitoring and evaluation is essential.

A robust monitoring framework is needed to track how much energy bills have decreased, how many homes have been renovated, how many jobs have been created, and what improvements have occurred in IAQ. This data allows policymakers to assess progress and adapt strategies as needed.

The following section reviews existing methodologies used in the EU, UK, and by international organisations to measure energy poverty and the impacts of energy efficiency. Based on this review, the subsequent section identifies key indicators relevant to EnC CPs, along with proposals for consistent data collection and reporting approaches. The objective of these recommendations is to enable systematic monitoring and transparent reporting of social, health, economic, and environmental outcomes resulting from energy efficiency programmes, allowing for the replication of successful measures and the identification of areas requiring further attention.

## 5.1 Review of EU and international monitoring methodologies

**The EU has developed methodologies to monitor energy poverty and assess the impacts of energy efficiency that can offer guidance for the EnC CPs.**

One of the key EU initiatives is the Energy Poverty Advisory Hub (EPAH)[31], which recommends a comprehensive suite of indicators for diagnosing and tracking energy poverty.

[31] European Commission. Energy Poverty Advisory Hub. Accessed: 15 July 2025.

Four primary metrics for the measurement of energy poverty are widely applied across EU MS:

1. The share of the population unable to keep their home adequately warm (based on self-reported survey data),
2. The share of the population with arrears on utility bills,
3. The proportion of households with exceptionally high energy expenditures relative to income (often referred to as the *energy burden*), and
4. The proportion of households with abnormally low energy consumption, which may indicate *under-heating* or *hidden energy poverty*.

**In practice, EU MS, along with UK, typically combine these metrics with other forms of data to monitor trends in energy poverty.**

Use of multiple indicators offer a multi-dimensional perspective, capturing both subjective experiences of hardship and objective patterns in energy spending. For example:

- Bulgaria and Lithuania rely on direct survey responses to track the percentage of households unable to heat their homes[32].
- France has developed composite indicators, such as the *energy effort rate* (measuring households whose energy expenses exceed a defined share of income), and a combined low-income/high-cost indicator[33].
- The United Kingdom initially applied the 10% income threshold definition (where households spending more than 10% of income on energy are considered fuel poor) and has since adopted the Low-Income Low Energy Efficiency (LILEE) indicator, which incorporates both income levels and building energy performance[34,35].

A key takeaway is that energy poverty must be distinguished from general income poverty. Effective monitoring therefore requires targeted metrics, such as those related to thermal comfort and energy affordability, to capture the full scope of the issue and guide policy interventions accordingly.

[32] Eurostat. 2023. 9% of Eu population unable to keep home warm in 2022.
[33] European Commission. 2022. Combating energy poverty in France: a decade of experience.
[34] The LILEE indicator is a metric used to measure fuel poverty, focusing on households with both low incomes and low energy efficiency homes. A household is considered fuel poor under LILEE if they live in a home with a Fuel Poverty Energy Efficiency Rating (FPEER) of band D or below, and if their residual income after paying modelled energy costs is below the official poverty line; Source: Department for Energy Security & New Zero. 2025. Fuel Poverty Methodology Handbook (Low Income Low Energy Efficiency).
[35] Department for Energy Security & Net Zero. 2025. Review of the Fuel Poverty Strategy: consultation document (accessible webpage).

### Beyond Europe, international bodies and researchers offer guidance for the measurement of energy poverty.

The International Energy Agency (IEA) and World Bank emphasise the importance of collecting data on household energy consumption and expenditures through surveys (e.g. Household Budget Surveys, Living Standards Measurement Surveys) to calculate energy burden and identify vulnerable groups. They also highlight using health statistics (for illnesses linked to indoor cold or pollution) as an outcome indicator and tracking energy efficiency investment data to estimate jobs and emission reductions.

### The EU's regulatory framework requires systematic monitoring of energy poverty.

The EU's regulatory framework requires systematic monitoring of energy poverty. Under the EU Governance Regulation (2018/1999)[36], MS and CPs must assess the number of households affected by energy poverty in their NECPs and regularly report on progress in addressing it. Article 24 of this regulation mandates regular updates on the number of energy poor households and the measures taken to alleviate energy poverty. Complementing this, the Internal Electricity Market Directive (2019/944)[37] obliges countries to define energy poverty and vulnerable customers, considering factors such as low-income, high energy expenditure, and poor energy efficiency, and to reflect these criteria in policy design and monitoring.

A key advancement in operationalising these obligations is the **Implementing regulation (EU) 2022/2299**[38], which provides a detailed framework for NECPR, including **standardised annexes with tables dedicated to energy poverty reporting**. This regulation strengthens the requirements for consistent and comparable monitoring across MS. Importantly, starting in **2025**, EnC CPs are expected to **submit NECPR reports on a biannual basis**, aligning their efforts with EU MS. These reports must cover key areas such as the number of households affected by energy poverty, policies and measures to address it, and updates on progress made, further embedding energy poverty monitoring into the climate and energy planning cycle.

The EnC has adopted and adapted these practices. A 2022 Policy Guideline[39] proposed a set of harmonised energy poverty indicators for CPs, aligned with EU approaches, such as the **energy expenditure burden** (from HBSs) and **inability to keep home warm** (from living conditions surveys), while noting the data availability in each country. The accompanying study recommended that CPs monitor energy poverty using a set of **primary and secondary indicators**, as detailed in Table 12, to enable consistent tracking and evaluation of trends and impacts across the region.

[36] European Union. 2018. Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energu Union and Climate Action.
[37] European Union 2019. Directive (EU) 2019/944 of the European Parliament and of the Council of 5 June 2019 on common rules for the internal market for electricity and amending Directive 2012/27/EU.
[38] Implementing regulation - 2022/2299 - EN - EUR-Lex
[39] Energy Community Secretariat. 2022. Policy Guidelines by the Energy Community Secretariat on identifying and addressing energy poverty in the Energy Community Contracting Parties.

**Table 12 Energy poverty indicators proposed by EnC**

| Indicator | Type | Source | Availability |
|---|---|---|---|
| **Energy burden** | Primary | HBS | all CPs |
| **M/2 indicator** | Primary | HBS | all CPs |
| **2M indicator** | Primary | HBS | all CPs |
| **Arrears on utility bills** | Primary | EU SILC | Albania, Kosovo*, Montenegro, North Macedonia, and Serbia |
| **Inability to keep home adequately warm** | Primary | EU SILC | Albania, Kosovo*, Montenegro, North Macedonia, and Serbia |
| **Condensation, leaking roof, rot in windows or doors** | Primary | EU SILC | Albania, Kosovo*, Montenegro, North Macedonia, and Serbia |
| **Level of household electricity prices** | Secondary | EUROSTAT | all CPs |
| **Level of household gas prices** | Secondary | EUROSTAT | all CPs |
| **Average monthly net wages** | Secondary | National Statistics Offices | all CPs |
| **Annual unemployment rates by gender and aggregated** | Secondary | World Bank | all CPs |
| **Share of population living below USD 1.9 per day** | Secondary | World Bank | all CPs |

Source: Energy Community Secretariat. 2022. Policy guidelines by the Energy Community Secretariat on identifying and addressing energy poverty in the Energy Community Contracting Parties.

**The indicators outlined above can be further disaggregated to enable more accurate identification.**

For example, indicators such as inability to keep the home adequately warm and arrears on energy bills can be disaggregated by housing tenure (e.g. owner-occupied, market rental, rent-reduced or free housing) and dwelling type (such as detached or semi-detached houses versus apartments). Such detailed segmentation can support the design of more targeted and responsive assistance measures, tailored to the specific needs of vulnerable groups. The latter is particularly relevant, as highlighted in Directive 2019/944[40], which mandates protection for consumers in remote and rural areas.

Where feasible, disaggregation should be applied across the following dimensions:

[40] European Union. 2019. Directive (EU) 2019/944 of the European Parliament and of the Council of 5 June 2019 on common rules for the internal market for electricity and amending Directive 2012/27/EU.

- Income decile.
- Degree of urbanisation.
- Household size and composition.
- Employment status.
- Age, gender, and disability status.
- Tenure type.
- Dwelling type.

To ensure consistency and comparability, it is recommended that these indicators be regularly calculated by national statistical offices, following the methodology established by the EPAH.

## 5.2 Proposed Indicators for assessing the multiple benefits of energy efficiency

**To ensure effective tracking of energy efficiency benefits a set of indicators is proposed in Table 13, grouped by thematic area.**

These indicators enable a comprehensive assessment of social, economic, environmental, and health-related impacts, while also facilitating alignment with EU methodologies and enabling benchmarking across countries.

Each indicator should be clearly defined and, where applicable, aligned with EU definitions to enable cross-country benchmarking and comparability. It is essential to incorporate both leading indicators, such as investment levels and the number of homes renovated, which serve as predictors of future impact, and lagging indicators, which capture tangible outcomes such as reductions in energy poverty rates, improvements in public health, and declines in energy-related expenditures. By monitoring this comprehensive set of indicators, policymakers and stakeholders can gain a clear and evidence-based understanding of how energy efficiency measures contribute to alleviating energy poverty. This approach ensures that progress is tracked not only in terms of technical outputs, but also in terms of social, economic, and environmental outcomes.

**Table 13 Proposed Indicators for assessing the multiple benefits of energy efficiency**

| Indicator | Definition | Data source |
|---|---|---|
| **Energy poverty and affordability indicators** | | |
| **Household energy expenditure burden**[41] | Average share of household income spent on energy disaggregated by income decile (especially the lowest 20%). | HBS, conducted annually or periodically in most CPs. |

[41] Institute for Development Policy (INDEP). 2024. Energy Poverty in just transition.

| Indicator | Definition | Data source |
|---|---|---|
| | A burden exceeding 10% in lower deciles indicates a high likelihood of energy poverty. | |
| **Inability to Keep Home Adequately Warm (or Cool)**[42] | Percentage of households self-reporting that they are unable to maintain sufficient indoor temperature in winter (and summer, where applicable). | National living conditions surveys or EU-SILC equivalents. |
| **Arrears on Utility Bills** | Percentage of households that fell behind on energy bill payments within the last 12 months. | Household surveys or utility-provided data (e.g. disconnections, payment delays). |
| **At-risk of poverty rate** | Percentage of individuals living in households with an income below 60% of the national median equivalised income, after social transfers. Used as a social vulnerability indicator and relevant for understanding overlapping risks with energy poverty. | National statistical offices; Eurostat EU-SILC (or national equivalents). |
| **Frequency of Fuel Rationing**[43] | Proportion of households reporting deliberate reductions in heating (e.g. heating a single room) to save on energy costs. | Specialised modules in HBS or dedicated energy poverty surveys. |
| **Indoor environment and health indicators** | | |
| **IAQ indicator**[44] | Percentage of homes using solid fuels (e.g. wood, coal) in inefficient stoves, or where possible, measured PM2.5 levels pre/post intervention. | National census or energy survey data; pilot studies[45] for direct measurement. |
| **Health Outcomes** | Population-level incidence rates of respiratory diseases (e.g. COPD, childhood asthma) and excess winter mortality among vulnerable groups. | Ministry of Health statistics, WHO databases, or household survey supplements. An alternative metric might be number of days of work/school missed due to respiratory issues (from household surveys), which should drop as indoor conditions improve. |
| **Indoor Temperature** | Proportion of households with average indoor winter | Sample-based measurements or survey-reported data (e.g. UK model). Indicates the effectiveness of efficiency |

[42] ODYSSEE-MURE. 2022. Measuring and monitoring energy poverty in the EU – examples of good practices.
[43] Kvaratskhelia & Dubos. 2023. Understanding Energy Poverty in Georgia.
[44] Kvaratskhelia & Dubos. 2023. Understanding Energy Poverty in Georgia.
[45] Small-scale, targeted research projects designed to test or explore specific indicators or methodologies before rolling them out on a larger scale.

| Indicator | Definition | Data source |
|---|---|---|
| | temperatures below 18°C, as is the case in the UK[46]. | measures in improving thermal comfort. |
| **Economic and job creation indicators** | | |
| **Jobs Created in Energy Efficiency Sector** | Number of person-years of employment generated annually through public energy efficiency programmes. | Programme monitoring reports, supplemented by labour force surveys.<br>Estimations can be supported using employment multipliers (studies show the creation of 12.5 net jobs for every million EUR invested, including 3.7 direct jobs, 3.8 indirect jobs, and 5 induced jobs[47], while others state 15-19 jobs are created per 1 million EUR invested[48]). |
| **Investment in Energy Efficiency** | Annual public and private investments in residential energy efficiency improvements, expressed in EUR per capita. | Public budgets, donor programme financial reports, and private sector co-financing estimates. |
| **Energy Cost Savings Achieved** | Aggregate and per household financial savings resulting from energy efficiency interventions. | Technical programme evaluations or engineering estimates based on measured savings (e.g. savings/year EUR per household). |
| **Energy and Emissions Indicators** | | |
| **Energy Savings (Consumption Reduction)** | Reduction in residential sector energy consumption (kWh) attributable to energy efficiency measures. | Pre- and post-retrofit energy audits, utility data, or aggregated modelling; evaluations from energy efficiency obligation schemes. |
| **Emissions Avoided** | Annual reductions in $CO_2$ and other air pollutants (e.g., PM2.5, $SO_2$, $NO_x$) resulting from decreased energy consumption, emphasising both climate and public health co-benefits. | Energy saved × emission factors (based on national energy mix). |
| **Renewable Energy Uptake in Low-Income Households** | Number of low-income households adopting renewable heating technologies | Government or donor-funded programme registries. |

[46] Hueber et al. Determinants of winder indoor temperatures below the threshold for healthy living in England.
[47] An estimated 31,000 net jobs (comprising direct, indirect, and induced employment) are projected to be created with a total investment of 2.4 billion EUR. This translates to approximately 12.5 net jobs for every million EUR invested, including 3.7 direct jobs, 3.8 indirect jobs, and 5 induced jobs. Source: Smart Balkans. Governments' support to improving energy efficiency as a response to mitigating (future) energy shocks. Western Balkan 6.
[48] World Bank. 2013. Scaling Up Energy Efficiency in Buildings in the Western Balkas. Interim Report.

| Indicator | Definition | Data source |
|---|---|---|
| | (e.g. heat pumps, solar water heaters) with support mechanisms.<br>Indicates structural transition aligned with long-term sustainability goals. | |

**To populate the above indicators consistently, robust data collection processes are needed.**

Recommended processes for collection of data are outlined in Table 14. Details on some recent programmes and activities in the EU looking at developing methodologies and processes for monitoring of benefits from addressing energy poverty are provided in Annex A1.

**Table 14 Proposed processes for collection of data.**

| Process | Description |
|---|---|
| **Leverage existing surveys** | Most CPs regularly conduct national surveys such as HBS, Labour Force Surveys, and Demographic and Health Surveys. These instruments can be cost-effectively expanded with targeted modules on energy poverty and indoor living conditions. For instance, adding questions on the ability to keep warm, primary heating source, and utility bill arrears to the HBS or EU-SILC-equivalent surveys allows for regular, disaggregated data collection. The HBS is particularly valuable for analysing energy expenditure and calculating energy burden indicators across income groups[49]. In many CPs, such data is already collected and simply requires targeted analysis, such as assessing the average energy share of income among the lowest income quintile[50]. |
| **Utility data and energy regulator reporting** | Energy regulators and utility companies hold critical data on household energy use, connection status, and payment arrears. To leverage this, countries should establish regulatory frameworks that require or incentivise utilities to report aggregated data on key indicators, such as disconnections due to non-payment, recipients of social tariffs, and average consumption by household type. Regulators can compile and publish this data annually. For example, reporting the number of households benefiting from lifeline tariffs versus those facing disconnections can highlight affordability gaps. Utility data not only complements survey findings but also offers timely insights into short-term impacts and emerging crises. |
| **Programme monitoring and evaluations** | All publicly or donor-funded energy efficiency programmes, including housing renovation and appliance replacement schemes, should include a robust monitoring and evaluation (M&E) component. This requires collecting baseline and post-intervention data via energy audits, beneficiary surveys (e.g., on comfort and bills), and, where possible, metered consumption. Key outcomes such as energy savings per household, cost reductions, and improved indoor conditions should be |

[49] Balkan Green Energy News. 2021. Solutions for energy poverty in Energy Community – study.
[50] Bouzarovski et al. 2023. Energy poverty in the Energy Community region: Interrogating policy formulation and coverage.

| Process | Description |
|---|---|
| | aggregated and publicly reported. Over time, this builds an evidence base of programme impacts. For example, national Energy Efficiency Funds could publish annual performance reports demonstrating how insulation measures reduce fossil fuel use and help alleviate energy poverty. |
| **Health and environmental data linkages** | Collaboration with health and environmental authorities is key to assessing the wider impacts of energy poverty and efficiency measures. Health ministries should report annually on outcomes potentially linked to inadequate heating, such as respiratory illnesses, carbon monoxide poisoning, and cold-related mortality. Environmental agencies should track air quality trends, particularly PM2.5 levels, in areas where interventions reduce reliance on wood or coal heating. While establishing causality is complex, improvements in indoor and outdoor air quality can serve as proxies for health and environmental co-benefits. |
| **Centralised data platform** | Each CP should establish a centralised platform to track energy poverty and energy efficiency indicators. This platform could be managed by the Ministry of Energy, Ministry of Social Welfare, the national statistics office, or a dedicated energy poverty observatory. It should integrate data from household surveys, utility records, and programme evaluations. The EnC Secretariat's existing IT infrastructure for energy and climate reporting could be expanded to accommodate these indicators. To ensure consistency, a standardised reporting template should be adopted across CPs, enabling annual submission and publication, aligned with EU practices under the Governance Regulation. Public dashboards or observatory websites should be used to enhance transparency and support stakeholder engagement. |
| **Quality control and consistency** | To ensure data reliability and comparability, all methodologies should be clearly documented and consistently applied across surveys and reporting cycles. Enumerators must receive targeted training, especially for sensitive topics like utility arrears or thermal discomfort, which are often underreported due to stigma or misunderstanding. Strengthening data collection protocols in this way will improve the accuracy and integrity of the monitoring framework. |
| **Benchmarking and learning** | Collected data should be systematically used for benchmarking across EU MS and EnC CPs. For example, if Serbia reports that, on average, 10% of households cannot keep warm compared to 26% in North Macedonia, this discrepancy warrants further analysis. Contributing factors may include variations in social support effectiveness, survey design, or targeting of vulnerable groups. Such comparative analysis is essential for refining national definitions, improving measurement methods, and supporting evidence-based policy adjustments. |
| **Reporting frequency** | The reporting frequency should be regular, ideally annually, to capture trends and allow timely policy response. Annual energy poverty monitoring reports could be published by each government, summarising the indicators (much as labour force or inflation reports are routine). Such evidence-based storytelling can galvanise public and political support for further energy efficiency measures. It also helps identify which benefits are or are not being realised (e.g. if IAQ indicators show little improvement, perhaps clean cooking solutions need to be introduced along with insulation). |

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By implementing these data collection and reporting processes, countries will build a robust monitoring framework that underpins effective policy. However, establishing these frameworks

is not without challenges. The next section examines the common barriers to implementing energy poverty monitoring in the target countries and proposes solutions to overcome them.

## 5.3 Analysis of current monitoring and data collection

**The nine EnC CPs vary in their current capacity and practices for monitoring energy poverty and the impacts of energy efficiency, but all are in early stages of developing systematic frameworks.**

Table 1514 below provides a comparative overview of the present state in each country. Despite growing political attention and strategic commitments, most EnC CPs still lack integrated systems for monitoring energy poverty and the impacts of energy efficiency measures. Where vulnerable customer registries exist, they are rarely linked to energy efficiency programmes or used to address structural drivers of energy poverty.

**Systematic monitoring frameworks remain underdeveloped, with countries relying primarily on short-term subsidies and fragmented data sources.**

Western Balkan countries like North Macedonia and Serbia collect partial data through household surveys and social welfare systems but lack full institutionalisation. Eastern partners such as Moldova and Ukraine have introduced reforms and temporary mechanisms under crisis conditions, but these need to be stabilised and integrated into national planning.

**A recurring challenge is the absence of clear methodologies, data disaggregation, and long-term performance tracking.**

This challenge is especially regarding co-benefits of energy efficiency such as improved indoor comfort or reduced arrears. A result of this gap is undermining the ability of governments to design targeted interventions or evaluate impact.

Based on the understanding of where each country stands recommendations for policymakers, regulators, and civil society on how to integrate these monitoring frameworks into national and regional strategies to ensure energy efficiency efforts translate into measurable reductions in energy poverty are provided in the following subsection.

**Table 15 Status of monitoring systems and data collection in energy poverty and efficiency by country**

| Country | Energy Poverty Monitoring System | Registry of Vulnerable/Energy Poor | Energy Efficiency Impact Monitoring |
|---|---|---|---|
| **Albania** | Partial monitoring system, survey-based data (e.g., HBS), limited disaggregation.<br>An action plan for reducing energy poverty is under development, drawing on EU best practices. A national system is planned, targeting 213,000 households with an estimated annual state budget allocation of 1.76 billion ALL (approximately EUR 14.22 million). | No, vulnerable groups supported via social assistance, but not systematically identified in energy terms. | Monitoring of energy efficiency impacts is foreseen under the future system. |
| **Bosnia and Herzegovina** | Fragmented monitoring system, multiple ministries collect relevant but unlinked data.<br>The draft NECP defines policy measures that will contribute to lowering energy poverty. Mapping and educational programmes are planned. | No, entity-level welfare databases exist, but no unified or energy-specific registry. | EE measures noted in strategies, fragmented monitoring system. |
| **Georgia** | There are several mechanisms in place to protect vulnerable citizens from high prices for electricity and gas. Data on energy poverty is regularly collected and analysed, with a baseline incidence of 43% in 2017 and a national target to reduce this below 15% by 2030. Key drivers include poor building energy performance, inefficient distribution networks, and reliance on unsustainable fuel sources such as fuel wood.[51] | Database of socially vulnerable families, used for targeting energy vouchers and subsidies. | Integrated monitoring via NECP; energy audit data collected; awareness campaigns in place. |
| **Kosovo*** | The NECP addresses energy poverty by planning a policy design for a consumption-independent support scheme for vulnerable consumers, based on data collection and the development of a clear definition of vulnerability. While this broader framework has not yet been fully implemented, progress has been made. In September 2023 Kosovo* launched the Programme for the Protection of Vulnerable Electricity Consumers, | No, vulnerable consumers are identified through social welfare system using income-based criteria, but the definition is not linked to energy needs. | The Monitoring and Verification Platform (MVP) led by Ministry of Economy and Ministry of Environment implemented; energy audits and Energy Efficiency Action Plan (EEAP) provide partial data; no centralised tracking. |

[51] The NECP does not explain how the number baseline was assessed.

| Country | Energy Poverty Monitoring System | Registry of Vulnerable/Energy Poor | Energy Efficiency Impact Monitoring |
|---|---|---|---|
| | which uses income-based eligibility criteria. Specifically, households with an average monthly income of less than 150 euros per person, for example, a family of four earning under 600 euros, can qualify for support. | | |
| **Moldova** | Energy poverty tracked via social programmes.<br>Energy poverty will be combated by identifying consumers who are at-risk of energy poverty, designing mechanisms and databases, assessing qualitative and quantitative aspects of energy vulnerability, and implementing measures to contribute to energy poverty reduction. Programmes for thermal insulation of buildings in energy poor communities will be established. The objective is to reduce energy poverty by 50% of the level of absolute poverty in 2030. To be included in EE National Energy Efficiency Information System. | Energy Vulnerability Reduction Fund (EVRF) and social benefits registry is established through legal reform. | To be monitored via new information system. Energy savings tracked via NECP and EEAP.<br>An Energy Efficiency MVP was developed. |
| **Montenegro** | There is no poverty reduction strategy and no long-term measures for alleviating energy poverty in Montenegro. No monitoring system in place, energy consumption data is collected, and social tariff coverage monitored. | No, social protection system provides limited energy assistance; registry development underway. | Monitoring via EE programmes and audits; coverage data limited.<br>An Energy Efficiency MVP was developed, but not operational. |
| **North Macedonia** | A methodology for identifying energy poverty has been developed but is not yet officially approved. It defines households as energy poor if their monthly income is less than 300 EUR after paying energy bills, effectively establishing an affordability threshold for energy-related expenses. | Social Welfare Centre verifies household conditions for the right to guaranteed minimum assistance and maintains a database of households eligible for energy support based on income and housing. | An Energy Efficiency MVP was developed, however it is not it is not fully operationalised or used systematically. |

| Country | Energy Poverty Monitoring System | Registry of Vulnerable/Energy Poor | Energy Efficiency Impact Monitoring |
|---|---|---|---|
| **Serbia** | Serbia is preparing an action plan to combat energy poverty by 2030, which will outline specific policies, measures, and quantified objectives. The plan includes training professionals to identify energy poor households, addressing stigmatisation, promoting gender equality, and establishing monitoring tools through the NECP. Serbia's ambitious goal of reducing energy poverty by 75% by 2030 compared to 2020 will be achieved through a set of financial, regulatory, and educational measures. A Coordination Group has been established to oversee implementation, supported by planned awareness campaigns, guidance materials, and training programmes. | Yes, registry linked to electricity bill discounts and monitored by energy regulator; improved tools planned. | Smart metering and NECP monitoring tools being prepared[52]. An Energy Efficiency MVP was developed. |
| **Ukraine** | Planned via thermal modernisation strategy (define energy poverty, including quantitative and qualitative indicators that justify categorisation, assess the level of poverty, and determine the desired level of reduction). | Includes vulnerable and displaced households; linked to social assistance and energy subsidies. | Thermal modernisation of buildings, energy efficiency, implementation of smart digital solutions, and information campaigns are measures included in an overall plan for overcoming energy poverty. |

[52] European Bank for Reconstruction and Development. EDS Smart Metering Expansion. Accessed: 15 July 2025. & European Commission. 2023. Smart Metering Serbia. Accessed: 15 July 2023.

## 5.4 Actionable recommendations for monitoring energy poverty

To enhance the monitoring frameworks and ensure that energy efficiency improvements drive tangible reductions in energy poverty, the following actionable recommendations are offered for policymakers, energy regulators, and NGOs in the CPs:

### Establish clear definitions, assess EP and set targets.

Governments should formally define energy poverty in their national context, drawing on EU definitions, assess the number of households in energy poverty, and set targets for its reduction. All countries should include this definition in the relevant law or strategy and commit to specific targets (as per the example of Serbia, “reduce the share of population unable to keep homes warm from 30% to 15% by 2030”). This creates accountability and drives the development of monitoring tools to track progress toward the target. It also aligns with EU Governance Regulation requirements, preparing these countries for future reporting as EU members or EnC commitments.

### Integrate monitoring and reporting into NECPs.

Policymakers should use the NECP process to institutionalise energy poverty monitoring and reporting. Each country’s NECP should contain a dedicated section on energy poverty which outlines the indicators to be tracked, baseline values, and planned updates. The NECP should also integrate energy efficiency action plans with social policies, ensuring that the impact on energy poverty is evaluated for each planned measure.

### Strengthen institutional capacity and assign responsibilities.

Governments should designate a lead agency/national observatory to coordinate energy poverty monitoring with the statistics office, regulator, and relevant ministries. Institutional roles must be clearly defined (e.g., survey data from statistics, arrears from regulators, health indicators from the Health Ministry). Regulators should be legally mandated to collect utility data, while ministries share information on support schemes. Capacity building can be supported through international programmes, and funding sourced from national budgets or donors. Strong coordination enables more targeted and effective policy responses.

### Develop an energy poverty & efficiency monitoring system (dashboard).

A centralised online dashboard should be developed to compile key indicators such as energy poverty rates, retrofit numbers, energy savings, job creation, and emissions reductions. Public access to selected data can enhance transparency and engagement. The EU’s EPAH dashboard[53] serves as a useful model, and a regional version could promote peer learning and healthy competition among CPs.

[53] National indicators | Energy Poverty Advisory Hub

### Enhance data collection through surveys and energy audits.

Existing surveys should include energy poverty-related questions, and periodic dedicated surveys should assess energy use, housing conditions, and comfort. Policymakers should also mandate pre- and post-retrofit evaluations for public energy efficiency projects, enabling standardised, aggregated impact tracking. NGOs and academic institutions can support data collection, such as through citizen science initiatives, which also help raise public awareness of energy efficiency benefits.

### Leverage technology and innovation.

Policymakers should promote innovative technologies to enhance monitoring. Smart meters and Internet of Things (IoT) sensors[54] can help identify households at-risk through consumption patterns, while mobile apps or SMS surveys can collect rapid data in remote or crisis-affected areas. Tools like satellite imaging and thermal scans can help map poorly insulated neighbourhoods, indirectly indicating where energy poverty might be concentrated. Pilot projects using such technologies should be supported and scaled if proven effective.

### Coordinate regionally and ensure peer learning.

The EnC Secretariat can convene an annual Energy Poverty Monitoring Forum where all nine CPs present their latest data and share experiences. This peer review mechanism will incentivise each country to strengthen its monitoring frameworks and enable mutual learning based on best-performing approaches. The Secretariat could also produce an annual regional comparative report (as an extension of this analysis) summarising progress, identifying gaps, and highlighting effective practices, thereby maintaining momentum and visibility. At the policy level, it is recommended that a common set of core indicators, such as those outlined in this report, be formally adopted by the EnC Ministerial Council. This would establish a standardised regional monitoring framework, ensuring that all CPs commit to reporting on harmonised indicators. Such formalisation would enhance comparability, promote accountability, and support integration with EU monitoring practices.

### Engage NGOs and community organisations in monitoring and outreach.

NGOs and civil society actors play a vital dual role in energy poverty monitoring, facilitating grassroots data collection and contributing to accountability and policy refinement through independent analysis. Policymakers and development partners should actively support community-based energy surveys conducted by NGOs, particularly in underserved or vulnerable areas. To promote transparency and public engagement, NGOs and media stakeholders should have access to anonymised, disaggregated datasets via open data platforms. Monitoring results, such as improvements in IAQ after stove replacements, can form the basis for public awareness campaigns and advocacy. Civil society can also help validate reported outcomes and identify data gaps, including overlooked issues such as gender-differentiated impacts. For example, organisations may highlight how women, especially those spending more time at home, are disproportionately affected by energy

[54] Devices that collect real-world data (such as temperature, motion, humidity, light, or gas levels) and transmit it over the internet or a local network to other systems for monitoring, analysis, or automated response.

poverty[55]. Policymakers and regulators should view NGOs as strategic partners, involving them in working groups, sharing preliminary data for feedback, and supporting independent research. Their active participation strengthens the relevance, credibility, and human-centred design of energy poverty monitoring frameworks across the region.

**Use monitoring results to inform policy adjustments and target investments.**

Embed annual policy reviews into NECPs and energy strategies. Monitoring results should trigger real-time policy responses, whether by scaling successful interventions or redesigning underperforming ones.

Adopting these recommendations will enable Albania, Montenegro, Kosovo*[56], North Macedonia, Moldova, Ukraine, Bosnia and Herzegovina, Serbia, and Georgia to build and integrate robust monitoring frameworks into their energy and social policies. Doing so is essential for accountability and effective policymaking, it will ensure that the goals of eliminating energy poverty and achieving a just, green transition are supported by data and reality on the ground. Policymakers will be better equipped to target interventions, energy regulators will ensure markets serve vulnerable consumers, and NGOs will have the information needed to advocate for communities.

# 6 How to integrate and operationalise the EE1st principle into plans and strategies

The energy efficiency first principle is defined in Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action[57] as:

*" 'EE1st' means taking utmost account in energy planning, and in policy and investment decisions, or alternative cost-efficient energy efficiency measures to make energy demand and energy supply more efficient, in particular by means of cost-effective end use energy savings, demand response initiatives and more efficient conversion, transmission and distribution of energy, whilst still achieving the objectives of those decisions".*

Implementation of the EE1st principle in buildings with a focus on the energy poor, can to a very large extend be achieved by implementing the policy recommendations outlined in Chapter 4 of this report. Each of these actions will prioritise and support the implementation of energy efficiency, and, by extension, therefore prioritise energy efficiency in planning decisions. There are, however, further actions that EnC CPs can take when adopting the

[55] Kvaratskhelia and Dubois. 2023. Understanding Energy Poverty in Georgia.
[56] This designation is without prejudice to positions on status and is in line with UNSCR 1244 and the ICJ opinion on Kosovo Declaration of Independence
[57] European Union. 2018. Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action, amending Regulations (EC) No 663/2009 and (EC) No 715/2009 of the European Parliament and of the Council, Directives 94/22/EC, 98/70/EC, 2009/31/EC, 2009/73/EC, 2010/31/EU, 2012/27/EU and 2013/30/EU of the European Parliament and of the Council, Council Directives 2009/119/EC and (EU) 2015/652 and repealing Regulation (EU) No 525/2013 of the European Parliament and of the Council.

policy recommendations to operationalise the EE1st principle when adopting these policy recommendations.

### When developing building renovation strategies, ensure the strategy prioritises the most efficient sources of energy supply alongside energy savings.

Building renovation strategies must be developed with a holistic view of the energy systems within which the buildings exist. For example, when considering building fabric improvements, potential improvements to the overall energy performance of the building, including the efficiency of energy supply, must also be taken into account. Appropriate building heat efficiency improvements will depend on the source of supply, and the most efficient solution to improve the overall energy performance might involve changing the supply source as well as improving building thermal efficiency, rather that considering only the thermal efficiency.

### Existing financial support can be restructured to target energy efficiency, and remove incentives to increase consumption.

Chapter 3 of this report outlines financial support mechanisms that the EnC CPs can use to support the renovation of buildings in energy poor households. However, the majority of existing financial support for energy poor households focuses on subsidising energy bills. Subsidies on energy bills reduce the cost of energy consumption, and will therefore provide an economic incentive to increase energy consumption. Subsidies for energy bills could be in part reallocated towards financial support for energy efficiency. Thereby helping to address energy poverty, without providing inefficient and perverse economic incentives. However, care must be taken so as to not remove subsidies from households where those subsidies are essential to accessing a minimum level of energy consumption for wellbeing.

### Energy efficiency obligation schemes require energy suppliers to consider energy efficiency, rather than focusing solely on energy supply.

Energy suppliers traditionally focus solely on the delivery of energy, and therefore conventional growth strategies are likely to focus on increasing energy supply. Energy efficiency obligation schemes require suppliers to also consider improvements in energy efficiency for their customers, and therefore better align their objectives with both energy supply and energy demand. The use of on-bill financing can further integrate energy suppliers into the implementation of energy efficiency measures.

### Provision of information will be essential to help households better understand energy efficiency first, and to adapt to changing support.

Energy poor households are likely to be focused on their energy consumption. Building an understanding that improving energy efficiency, rather than simply energy consumption, is essential to changing behaviours and gaining buy in for energy efficiency schemes promoting energy efficiency among these households. Furthermore, any restructuring of financial support must be clearly communicated. Energy poor households may be resistant to perceived loss of financial support should subsidies towards energy bills be reallocated. Reallocation towards energy efficiency or buildings improvements, and the associated net benefits to households, should be clearly and proactively communicated to households.

### Energy efficiency for energy poverty must be addressed holistically, with alignment across various strategies and plans.

As seen in the points discussed above, operationalisation of the energy efficiency first principle in buildings requires a holistic approach where actions and measures are not considered in isolation. This must be taken into account across different strategies and plans (including NECPs, building renovation strategies, just transition plans, and energy poverty action plans) so that the overall most efficient package of solutions is adopted. Successful implementation will therefore require close communication and collaboration among the government departments responsible for delivering each strategy or plan. Information sharing will be essential to ensure that plans are not developed in silos; and that actions contrary to the Energy Efficiency First principle are not taken.

# Annexes

## A1 Quantifying wider impacts of energy efficiency methodologies and tools

Energy efficiency improvements yield a host of wider social, environmental, and economic impacts, often called multiple benefits of energy efficiency. Modern methodologies and tools have been developed to quantify these impacts in support of the EE1st principle. In this annex key frameworks and indicators from three relevant initiatives have been highlighted: the MICATool/SEED-MICAT project, the ODYSSEE-MURE multiple benefits facility, and findings from the ENEFIRST project on EE1st.

### Multiple Impacts Calculation Tool (MICAT) and SEED-MICAT

The Multiple Impacts Calculation Tool (MICATool)[58] is an open-access, web-based platform developed under the EU Horizon 2020 project MICAT and further advanced through the LIFE-funded SEED-MICAT initiative. It is designed to support policymakers at local, national, and EU levels in identifying and quantifying the multiple benefits of energy efficiency measures beyond energy savings alone. By doing so, it contributes directly to operationalising the EE1st principle in planning and investment decisions. Key impacts considered include:

- **Greenhouse gas (GHG) emissions reductions.** Quantification of the reduction in $CO_2$ and other GHG emissions attributable to decreased energy use.
- **Air quality and health.** Estimation of reductions in air pollutant emissions (e.g. $SO_2$, $NO_x$, and PM2.5) and corresponding health improvements, such as avoided premature mortality, respiratory illnesses, or hospital admissions.
- **Energy cost savings.** Calculation of energy bill reductions for households, businesses, and public institutions, enabling users to track the economic relief provided by energy efficiency investments.
- **Disposable income and poverty alleviation.** Through modelling energy cost savings by income group, MICAT infers the impact of efficiency measures on household disposable income. While the tool does not directly estimate how many people exit energy poverty, it provides critical inputs, such as energy savings per income decile, that can be linked to national energy poverty thresholds to evaluate mitigation effects.[59]

[58] MICATool. What is the MICATool. Accessed: 30 May 2025.
[59] The MICATool does not directly estimate or claim how many people are lifted out of energy poverty, but it does provide quantitative results, for example how much money households save on energy by income group. These savings figures can then be used in external poverty analyses to estimate whether the reduced energy burden is enough to move a household above an energy poverty threshold (e.g. spending less than 10% of income on energy). In short: 1. MICAT provides

- **Macro-economic Impacts.** Estimation of job creation (e.g. in renovation or equipment manufacturing), GDP growth, and impacts on public budgets, including reduced expenditure on subsidies or health services due to lower energy demand.

- **Energy system benefits.** Insights into reduced peak energy demand, enhanced energy security, and decreased dependence on energy imports, although these are modelled as more indirect benefits.

By translating energy efficiency investments into measurable co-benefits, the MICATool supports more holistic cost-benefit analyses and enables the integration of multiple impact assessments (MIAs) into strategic planning processes.

For EnC CPs, the tool represents a practical method to quantify the broader societal impacts of energy efficiency, including its role in alleviating energy poverty and promoting a just transition[60].

The Support Energy Efficiency Deployment with the Multiple Impacts Calculation Tool (SEED-MICAT) is an EU-funded project running from December 2023 to November 2026, under the LIFE programme (Grant Agreement No. 101120599). Building upon the foundation of the MICAT project, SEED-MICAT aims to enhance and expand the capabilities of the MICATool, a user-friendly, open-access platform designed to quantify the multiple impacts (MI) of energy efficiency measures across social, economic, and environmental dimensions[61].

The primary objective of SEED-MICAT is to support EU MS and local authorities in integrating these multiple impacts into the implementation of the EE1 principle. To achieve this, the project introduces the INSPIRE Replicability Methodology, a structured framework for assessing the potential to replicate energy efficiency policies across different national and local contexts. This methodology evaluates policies through five dimensions, Sociocultural, Institutional, Technological, Environmental, and Economic (SITEE), using a combination of solution-specific and contextual variables, thereby facilitating the integration of MIAs into policy design and decision-making processes[62].

A significant innovation of SEED-MICAT is its extension of the MI framework to include renewable energy sources, enabling the comparison of different pathways to climate neutrality. This allows policymakers to assess and contrast multiple scenarios, such as an efficiency first versus a supply-oriented pathway, and evaluate the broader societal benefits associated with each. Additionally, the project is enhancing the MICATool with a new policy evaluation module and improving its usability for national and regional applications.

In the context of energy poverty, SEED-MICAT offers a robust analytical method to quantify how energy efficiency interventions deliver tangible social benefits, including improved affordability, better health outcomes, and reduced inequality. The tool quantifies energy affordability improvements, such as reductions in the percentage of income spent on energy for an average household, a direct indicator linked to energy poverty. It can model scenarios with targeted measures (like insulating low-income homes) and reveal co-benefits such as emissions reductions, health improvements from better indoor environments, and financial

energy cost savings by income group. 2. Users (e.g. researchers or policymakers) can apply national definitions of energy poverty to assess if those savings would be enough to say that a household is no longer energy poor.

[60] MICATool. What is the MICATool. Accessed: 30 May 2025.

[61] ISINNOVA. SEED MICAT. Accessed: 30 May 2025.

[62] SEED-MICAT. 2024. D 6.1 – The SEED MICAT Replication Methodology.

savings for low-income families, thereby contributing to poverty alleviation and inequality reduction. The results are provided in physical terms (e.g., number of respiratory illnesses avoided, jobs created) and, where possible, monetised, facilitating integration into cost-benefit analyses. This approach aligns with the EED Article 3(5a), which calls for cost-benefit methodologies to include wider benefits of efficiency from a societal perspective[63].

### ODYSSEE-MURE Multiple Benefits and EE1st Tools.

ODYSSEE-MURE is a long-standing EU project and database that monitors energy efficiency trends and policies across Europe. It provides a robust platform for evaluating energy savings using both top-down (from the ODYSSEE tools) and bottom-up (from the MURE tools) approaches. In its latest phase, the project has enhanced its analytical capabilities by integrating with the MICATool, enabling a more comprehensive assessment of the multiple benefits of energy efficiency[64].

Integration of the two platforms links energy savings data, top-down and bottom-up, with the MICAT multiple impacts framework to estimate broader societal outcomes such as avoided emissions, health improvements, and economic benefits. The methodology follows a clear logic: energy demand reductions from efficiency measures serve as the starting point, to which impact conversion factors are applied. This approach supports policymakers in moving beyond energy metrics to quantify the full value of energy efficiency interventions. Additionally, the integrated framework supports the EE1st principle, by providing a practical methodology for associated comparative assessments, for example, evaluating whether investing in low-income home retrofits delivers greater total benefits than new power generation.

From a monitoring perspective, ODYSSEE-MURE provides tools and templates that could be effectively leveraged by CPs. In partnership with the platform, CPs can:

- Monitor energy efficiency progress (e.g. changes in primary energy intensity, renovation rates etc.).
- Assess multiple benefits (e.g. avoided emissions, job creation, healthcare savings).
- Track energy poverty-related indicators (e.g. household energy cost burdens).

Country scoreboards and policy profiles developed for EU MS could serve as models for the CPs. The ODYSSEE-MURE project, open to CPs since 2022, offers a valuable platform for advancing evidence-based energy policymaking. It provides access to comprehensive databases, standardised methodologies, and analytical tools that enhance comparability and consistency in tracking energy efficiency across countries. It is therefore recommended that all CPs join and make full use of the project's resources and accumulated experience. This is particularly important for Bosnia and Herzegovina and Ukraine, which are not currently participating. The tools and best practices available through ODYSSEE-MURE can

[63] IEECP. SEED-MICAT. Support Energy Efficiency Deployment with the Multiple Impacts Calculation Tool. Accessed: 30 May 2025.
[64] Farunhofer ISI. 2024. ODYSSEE-MURE – Monitoring the Energy Efficiency Pillar for Climate Neutrality. Updated Facility on Multiple Benefits of Energy Efficiency.

significantly support CPs in aligning with EU standards and improving the quality and scope of national monitoring systems.

### ENEFIRST and Broader Benefits Monitoring.

The Horizon 2020 project ENEFIRST was developed to support policymakers, stakeholders, researchers, and analysts in making the EE1st principle operational. The project focused specifically on the building sector and its energy supply systems, particularly the power sector and district heating. ENEFIRST combined in-depth policy analysis with quantitative assessments of EE1st implementation, supported by continuous engagement and exchange with key stakeholders[65].

One of the project's central aims was to explore how EE1st can be practically applied, including how to account for broader societal benefits in decision-making processes. ENEFIRST examined methods for monitoring the wider benefits of EE1st, with a specific emphasis on energy poverty reduction as a key societal impact. Key takeaways relevant to monitoring and policy integration include:

### Policy integration.

ENEFIRST emphasised that implementing EE1st is not just about new policies, but about embedding the principle into existing planning and regulatory processes. For monitoring, this implies existing reporting mechanisms, such as NECP progress reports, regulatory impact assessments, and utility investment plans, should be adjusted to include multiple benefits metrics. For example, a utility's investment plan should reflect how energy efficiency alternatives were considered and what co-benefits (such as reduced customer bills or fewer service disconnections) were achieved.

### Energy poverty as a metric for EE1st.

With the update of the EED, MS are required to address impacts on energy poverty when applying EE1st. ENEFIRST supports the development of clear and quantifiable metrics to fulfil this requirement. Countries prioritising efficiency programmes should monitor the number of vulnerable households benefiting and track changes in their energy situation. Conversely, if a supply-side project is chosen over an efficiency alternative, the forgone benefits (e.g. continued high bills for X households) should be acknowledged.

### KPI Framework.

The project suggests developing a set of KPIs for EE1st that include broader impacts. For energy poverty, possible KPIs include:

- Reduction in the share of income spent on energy by low-income households (before vs. after efficiency measures).

[65] ENEFIRST. 2022. Putting Energy Efficiency First into Practice.

- Change in number of households experiencing energy poverty as defined by national criteria, attributable to energy efficiency programmes.
- Improvement in housing energy ratings among bottom-income deciles (with a focus on upgrades to the worst-performing homes).
- Avoided social costs such as decreased public expenditures on emergency energy aid or utility bill compensation.

These recommendations underscore the importance of integrating social equity considerations, such as energy poverty, into the implementation and monitoring of EE1st policies, ensuring that energy efficiency delivers measurable societal benefits alongside environmental and economic gains.