CEESEU-DIGIT

Central and Eastern Europe Sustainable Energy Union's Design and Implementation of regional Government Initiatives for a just energy Transition

D4.1 JUST TRANSITION BEST PRACTICES REPORT

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Content

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1. Introduction

About CEESEU-DIGIT project

The main goal of the CEESEU-DIGIT project is the preparation of **a new type of regional energy and climate plans (ECAP) in six Central and Eastern European target areas,** which will be realized as a continuation of the CEESEU project, relying on the previously established collaborations. In addition to the mitigation measures, the documents prepared based on the new methodology **also try to place great emphasis on adaptation and landscape-level planning** compared to the existing energy and climate plans. In addition to the climate protection goals, the project also pays **special attention to vulnerable social groups and those affected by energy poverty.**

Within the framework of the CEESEU-DIGIT project, involvement of **energy poverty topic in regional energy and climate planning** has been essential aspect. This document focuses on specific situations in Croatia, Estonia, Slovenia, Poland, Czech Republic and Latvia.

A key aspect of CEESEU-DIGIT is the **Just Transition** approach, which seeks to mitigate the **social and economic impacts of the energy transition**, particularly in regions that are heavily reliant on fossil fuels or face significant socio-economic challenges. The goal is to ensure that **no community or vulnerable group is left behind** as Europe moves towards climate neutrality.

The Role of Just Transition in the Project

- **Social Inclusion:** The project promotes the participation of marginalized and vulnerable communities in energy planning. This includes **low-income households, unemployed individuals, ethnic minorities, and other disadvantaged groups** who are most affected by energy poverty.
- **Equity in the Energy Transition:** By integrating Just Transition principles into ECAPs, CEESEU-DIGIT ensures that the benefits of renewable energy, energy efficiency, and climate action are **distributed fairly**, reducing inequalities and strengthening **regional resilience**.
- **Capacity Building and Participation:** The project supports **local authorities, civil society, and community groups** in understanding and applying Just Transition strategies. By enhancing their knowledge and decision-making capacity, municipalities can create **more inclusive and socially responsible policies**.
- **Policy Alignment:** The project aligns with EU Just Transition mechanisms and the **European Green Deal**, helping local and regional governments **access funding opportunities** and implement effective **social and economic transition measures**.

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Objectives of the document

This document aims to **identify, analyse, and share best practices for energy poverty topic** in the municipal just transition planning process across Central and Eastern Europe. Developed as part of the CEESEU-DIGIT project, it draws on **experiences from six participating countries** to offer insights into effective approaches, recurring challenges, and actionable recommendations. The purpose is not only to highlight what has worked, but also to **inform future policy and planning processes** so that vulnerable groups are equitably included in the green transition at the local and regional level.

The significance of tackling energy poverty in just transition

Energy poverty is a pressing issue impacting millions of people across Europe. The challenges posed by the **green transition and the cost-of-living crisis** have further exacerbated the plight of the most vulnerable. However, amidst these challenges, there is a growing recognition of the need for a just transition, one that prioritizes social equity, workers' rights, community engagement, gender equity, digital inclusion, and environmental sustainability.

Energy poverty statistics reveal the severity of the situation in Europe. In 2019, **almost 80 million people in the European Union** struggled to pay their utility bills, showcasing the dire circumstances many faced. By the end of 2021, **one in four European households** grappled with the difficult choice between heating their homes or providing food for their families. Shockingly, **inadequate housing conditions linked to energy poverty** led to an estimated 100,000 premature deaths annually across Europe.

While the green transition is crucial for combating climate change and ensuring sustainability, it comes with its unique set of challenges. In Europe, the energy crisis in Ukraine highlighted the urgency to diversify energy sources, as the region heavily relied on Russia for fossil fuels. Simultaneously, the cost-of-living crisis exacerbated the hardships faced by vulnerable communities, as rising energy prices forced many to compromise on essential energy services. Addressing these interconnected challenges **holistically** is vital for achieving lasting and equitable solutions.

Brief review of energy poverty in the CEE context

Energy poverty remains a **critical and widespread issue across Central and Eastern Europe** (CEE), shaped by a combination of historical, economic, and infrastructural factors.

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Although the concept is increasingly acknowledged in national policy discourse, its definition, measurement, and mitigation strategies **vary significantly between countries**.

Common to the CEE region are **low household incomes, aging and energy-inefficient building stock, and a high dependency on fossil fuels for heating**, particularly coal, biomass, and outdated district heating systems. These factors, combined with rising energy prices and weak social protection mechanisms, have left large portions of the population **vulnerable to energy poverty**, unable to secure adequate warmth, lighting, and power for daily needs at affordable costs.

In countries such as **Croatia and Poland**, energy poverty is formally recognised and included in energy and climate strategies, yet implementation at the local level often remains fragmented and underfunded. In **Slovenia**, targeted support measures are emerging through social assistance channels, while **Estonia, Latvia, and the Czech Republic** continue to grapple with the absence of clear definitions and comprehensive data.

Rural populations, elderly residents, single-parent households, and ethnic minorities are among the most affected groups, often living in **substandard housing** without access to support for energy renovations. Additionally, stigma, administrative barriers, and limited outreach contribute to the underutilisation of available assistance.

While municipalities across the region have **started to pilot innovative responses**, like one-stop-shops, consulting centres, and targeted subsidies, the overall response remains **piecemeal and project-based**. Bridging this gap requires stronger national frameworks, sustainable financing, and more inclusive planning processes that integrate energy poverty into both municipal Energy and Climate Action Plans (ECAPs) and National Energy and Climate Plans (NECPs).

Tackling energy poverty in the CEE region is essential not only for ensuring a just transition but also for delivering on climate targets in a way that is socially equitable and locally grounded.

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2. Just Transition and Defining of Energy Poverty in Regional Energy and Climate Planning

The concept of Just Transition centres on ensuring that the shift towards a low-carbon economy is equitable and inclusive, leaving no one behind. It recognizes that climate action must go hand-in-hand with social justice, addressing the needs of those most affected by environmental degradation, economic restructuring, and energy system transformation. In the context of regional energy and climate planning, Just Transition aims to balance climate ambition with fairness by supporting workers, communities, and vulnerable groups during the transition to sustainable energy systems.

The development of Energy and Climate Action Plans (ECAPs) must be a participatory process that actively includes diverse stakeholders, especially marginalized populations. Many project partners noted the difficulty in involving vulnerable groups meaningfully but also highlighted that ECAPs offer a valuable platform to strengthen citizen engagement and co-develop measures that reflect real community needs. Inclusive planning fosters stronger social acceptance of climate policies, ensures that measures are better targeted, and builds public trust and resilience at the local level.

Overview of the energy poverty definitions in partner countries

The understanding and application of the term energy poverty varies across the CEESEU-DIGIT partner countries, with most acknowledging it in national or regional contexts, though often inconsistently.

In **Croatia**, energy poverty is officially recognised and defined very recently in Law on Energy Efficiency as:

> "Energy poverty – means that a household does not have access to basic energy services, where such services ensure basic levels and a decent standard of living and health, including adequate heating, hot water, cooling, lighting and energy to power household appliances, in the relevant national context, existing national social policies and other relevant national policies, which is caused by a combination of factors, including at least affordability, insufficient disposable income, high energy expenditure, poor energy performance of buildings and poor energy efficiency of homes".

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The energy poverty topic is also tackled in revise Integrated Nacional Energy and Climate Plan (NECP) which defines several measures, mostly linked to development of plans and programmes.

Apart from this, on regional level in Medjimurje county (which is a pilot region in the project), energy poverty has been defined within CO-EMEP project as:

> "a household is considered to be energy poor if all of the following criteria are met:
> - the annual costs for providing the basic needs of the living comfort (room temperature as around 20 – 22 °C) in a residential space exceed 15% of the total annual household income;
> - the total monthly income of the household does not exceed the two median monthly salaries at the regional level + 270,00 € per each subsequent member of the household;
> - the residential space, i.e., the building in which the household members live was built in the period up to 1987, and in the period after its construction no measures were taken to improve its physical properties in terms of energy efficiency"

While developing the regional energy and climate plan (ECAP), several measures have been defined tackling energy poverty like establishment of regional information centre for energy consulting and assistance to energy poor and implementation of preliminary energy audits in energy poor households.

Poland also recognises energy poverty on national level and has the definition as:

> "Energy poverty means a situation in which a household run by a single person or by several persons jointly in a self-owned dwelling or in a single-family dwelling in which no economic activity is carried out, cannot secure sufficient heat, cooling and electricity to power appliances and for lighting, where the household collectively meets the following conditions:
> 1) Has a low income;
> 2) incurs high energy expenses;
> 3) resides in a premises or building with low energy efficiency."

This definition has also been included in the regional ECAP.

While ECAP was developed several measures tackling energy poverty have been defined. The measures include insulation of buildings, promotion of energy saving equipment, benefits,

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social tariffs and protection from energy disconnection and various educational and planning activities.

Slovenia defines energy poverty on a national level as:

> "Energy poverty is a condition in which a household with an income below the at-risk-of-poverty threshold is unable to meet its basic energy needs due to inadequate living conditions, the inability to afford these needs at accessible prices, or due to low energy efficiency of living spaces"

The same definition is also included in the regional ECAP. Even before the formal definition of energy poverty was introduced in Slovenia, some support mechanisms were developed, but from the legal recognition of the topic, new opportunities to direct national and EU funds toward its mitigation have opened.

In the developed ECAP several measures were defined linked to alleviation of energy poverty such as investments in energy efficiency of buildings.

Latvian law defines energy poverty as:

> "the inability of a household user to maintain an adequate temperature in the home or use the services provided by energy supply companies or pay for them due to low energy efficiency or because the cost of these services constitutes a high proportion of household income"

It is important to emphasize that energy poverty is caused by at least one of these reasons, not necessarily all of them. Also, it is noted that this national definition is quite narrow and roughly matches the definition of people in poverty in general as it does not include some relevant indicators. This definition is included in the regional ECAP, however, it was broaden and made more relevant for specific regional conditions.

Several measures were defined in ECAP to tackle energy poverty and they are linked to providing technical support to identified energy poor households, increase financial, technical, and informational support for the renovation and energy efficiency improvement of multi-

apartment buildings, raising knowledge and awareness as well as the development and integration of energy poverty reduction action plans into municipal investment plans.

In **Estonia** there is a national definition of energy poverty in the Energy Sector Organisation Act by using existing subsistence benefit mechanism within Social Welfare Act:

- '*vulnerable energy consumers' means persons living alone for the purposes of the Social Welfare Act or families whose monthly income per family member during the last six months does not exceed the minimum wage;*
- *'person suffering from energy poverty' means a person living alone for the purposes of the Social Welfare Act, or a family who has, at least once during the last six months, received a subsistence benefit and whose income per family member in the last month does not exceed the minimum wage;*

The definition was not included in the regional ECAP, however addendums are planned, and this will be added as will the specific measures to tackle the energy poverty topic. The current ECAP mentions Estonia's long-term building renovation strategy which sets energy poverty measures on the paper, but currently at state level actions are related to support renovation, generally with no special renovation measures for energy poor.

The **Czech Republic** does not yet have a nationally accepted definition of energy poverty, although municipal initiatives and NGOs are increasingly addressing the issue through targeted support to vulnerable households. In the developed ECAP, the Covenant of Mayors indicators were used as well as the map of the areas where residents receive the most government financial support for housing. The plan has no defined specific measures tackling the issue of energy poverty.

Limitations and challenges in comparability

A key challenge across the region is the **lack of standardised definitions and methodologies**, which hinders comparability between countries and across regions. Different indicators, such as income thresholds, energy spending ratios, or housing conditions, are used to assess vulnerability, making it difficult to establish a coherent picture at the EU or regional level.

For instance, while **Croatia** uses a mix of quantitative and qualitative indicators in its pilot assessments, **Latvia** and **Estonia** rely primarily on social assistance data, which may not fully capture hidden forms of energy poverty. Additionally, in **Poland**, energy poverty is often

addressed under broader social policy umbrellas without specific metrics tailored to energy-related hardship.

The **Czech Republic's** lack of national definition further complicates efforts to assess the scale of the problem or design targeted policies, as municipalities are left to develop their own criteria, often with limited data.

Importance of including qualitative factors

Partners across all countries emphasised that quantitative data alone is insufficient to capture the lived experience of energy poverty. Qualitative indicators, such as thermal comfort, the presence of mould, indoor air quality, and access to efficient appliances, provide a more nuanced understanding of the problem.

In **Slovenia**, social services and NGOs working directly with affected populations have highlighted that households may fall outside of official poverty thresholds but still face severe energy-related hardship. Similarly, **Croatia** and **Poland** noted that energy poverty is often linked to poor housing conditions, such as outdated heating systems or lack of insulation, which are not always reflected in administrative data.

The inclusion of qualitative assessments through field visits, interviews, and cooperation with social services has proven critical in identifying and supporting at-risk groups. These approaches also help ensure that solutions (such as renovations or subsidies) are tailored to real household needs rather than purely statistical models.

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3. Measures Tackling Energy Poverty Within Developed ECAPs

While developing their ECAPs partners and their regions defined measures directed at energy poor households. The best practices in definition of such measures are described below.

Croatia

The ECAP in Croatia was developed for Medjimurje County, north most county bordering both Hungary and Slovenia and surrounded by rivers Mura and Drava. It has the area of 729 km2 and 105.250 inhabitants (2021.).

Figure 1 Location of Medjimurje county in Croatia

As part of their ECAP, the region developed a set of measures specifically aimed at addressing energy poverty through localized support, targeted interventions, and the promotion of energy-efficient practices.

One of the cornerstone measures is the **establishment of a regional information centre for energy consulting, envisioned as a "one-stop-shop" model**. This centre would serve as a hub for citizens who are either currently experiencing or are at risk of energy poverty, offering tailored guidance and practical advice. The focus would be on educating residents about the benefits and application of renewable energy sources and energy efficiency measures that can directly reduce their energy burden. In addition to providing technical information and assistance on available financial support (e.g. co-financing options), the measure also aims to empower citizens by increasing their energy literacy and promoting their active engagement in energy communities. Since energy agencies typically operate at the county level, they are seen

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as natural coordinators and implementers of such a service, given their expertise and existing infrastructure.

Another concrete action involves **conducting preliminary energy audits in energy-poor households**. This measure emphasizes hands-on, household-level assessments with the goal of identifying energy-saving opportunities and advising families on specific steps they can take to reduce their consumption and costs. In addition to personalized advice, the program includes the distribution of energy-saving products, such as weather stripping, LED bulbs, or efficient heating regulators, to generate immediate energy and financial savings. Recognizing that local and county budgets may be insufficient to cover such interventions at scale, the plan recommends leveraging external funding sources such as EU programs, national grants, or innovative financing models (e.g. revolving funds or green loans).

Complementing these efforts is a third measure focused on the **promotion and use of energy-efficient appliances and lighting**. This includes encouraging the replacement of outdated, high-consumption household equipment with modern, low-energy alternatives, such as A++ rated white goods and LED lighting systems. Additionally, where feasible, smart technologies that help manage household energy use more efficiently could be introduced. Although this measure holds strong potential for long-term energy savings and carbon reduction, it is contingent upon the commitment of local or regional governments to allocate a portion of their budgets. As such, a combination of funding streams, including EU structural funds, national subsidies, and potentially private sector involvement, is advised to ensure sustainable implementation

Together, these measures form a comprehensive and practical approach to mitigating energy poverty at the local level by combining immediate relief with long-term capacity building and empowerment. The success of their implementation will rely heavily on cross-sector cooperation, access to diversified financing, and the engagement of citizens as active participants in the energy transition.

Latvia

The ECAP for Latvia was developed for Vidzeme planning region situated in the north-central Latvia, north of Daugava river. It covers area of 19.770 km2 and has population of 211.309 (2022.).

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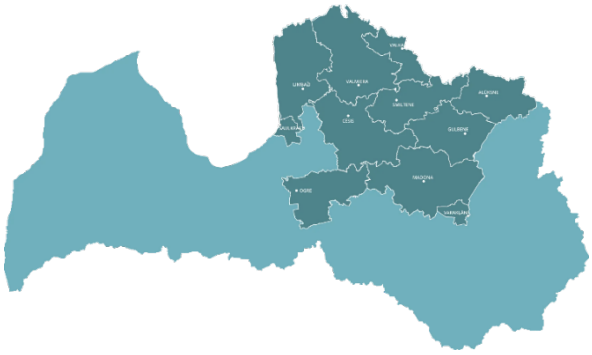

Figure 2 Location of Vidzeme planning region in Latvia

The ECAP outlines a comprehensive set of measures specifically designed to address energy poverty through structural, social, and infrastructural interventions at the municipal level.

One of the key priorities is to **increase financial, technical, and informational support for the renovation of multi-apartment buildings**. These buildings often house low-income and vulnerable residents, and improving their energy efficiency is a critical step in reducing energy costs and improving living conditions. This measure aims to make renovation programs more accessible and impactful, especially for communities facing barriers to participation.

To improve transparency and awareness, the plan calls for **better communication from energy service providers**. This includes integrating clear and user-friendly information on changes in energy tariffs, household consumption, and potential savings directly into energy bills. Additionally, service providers and municipalities are encouraged to publish this information on their websites, ensuring it is easily accessible to all citizens.

Targeted technical support will be provided to socially vulnerable individuals and low-income households to replace inefficient biomass and coal-based heating systems with cleaner alternatives. This support will also extend to implementing energy efficiency measures that can lower household energy demand and improve indoor comfort.

Another essential measure involves the **evaluation of chimney and private heating systems**. Municipalities are expected to conduct research into the condition of such systems and establish robust mechanisms for reporting and controlling point-source air pollution. This initiative also aligns with broader goals of climate adaptation, risk prevention, and increasing resilience to extreme weather events.

Improving public transport is seen as an important part of reducing energy poverty and social exclusion. The plan promotes the availability and quality of public transport services—

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particularly on-demand transport in rural areas, and seeks to enhance transport infrastructure so that all residents can access essential services, educational and employment opportunities.

To strengthen community resilience and self-sufficiency, **the formation of energy communities** is encouraged. These communities can collectively invest in renewable energy systems, increasing local production capacity and reducing dependency on external energy suppliers.

The plan also places emphasis on **identifying groups most at risk of energy poverty**, including those who are socially marginalized. It recommends a set of proactive measures to reduce their vulnerability, such as improving access to affordable and quality housing.

To ensure a timely and effective response, the **capacity of municipal staff will be enhanced**, and cooperation with social services and property managers will be reinforced. This will enable better identification of households with high energy costs or those on the verge of falling into energy poverty, allowing for early intervention, such as targeted building renovations, before the situation becomes critical.

Importantly, **municipalities are encouraged to integrate energy poverty reduction measures directly into their investment plans**, embedding them into long-term development strategies rather than treating them as isolated social issues.

Finally, the ECAP emphasizes the i**mportance of collecting and analysing relevant data and indicators** to guide planning. This will support evidence-based policymaking and help anticipate and prevent situations in which residents are excluded from access to basic services due to energy-related vulnerabilities, ensuring a truly just and inclusive transition.

Poland

Polish ECAP has been developed to cover Mazovia (Mazowieckie) region situated in mid-north-eastern Poland. It has the area of 35.579 km2 and the population of 499.725 (2019.).

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Figure 3 Location of Mazovia region within Poland

The ECAP introduces a multifaceted approach to addressing energy poverty, combining structural building interventions, social measures, and policy reforms to support vulnerable populations.

One of the central pillars of the strategy is the **systematic thermo-modernisation of residential buildings**. This measure aims to improve the energy performance of homes through insulation, window replacement, and heating system upgrades. In parallel, the ECAP encourages the introduction of passive building standards and the increased use of renewable energy sources in municipal buildings. These municipal improvements are designed to serve as role models for the broader commercial and residential sectors, demonstrating both environmental and economic benefits of energy efficiency.

In addition to structural improvements, the plan promotes the **use of energy-saving household equipment**, including energy-efficient appliances, consumer electronics, and LED lighting. Recognising that low-income households often cannot afford such upgrades, the plan stresses the need for full funding of these investments for the poorest households. Importantly, the measure also highlights the importance of user education, ensuring residents understand how to use the new technologies efficiently to maximise energy and cost savings, thus improving the long-term sustainability of these interventions.

Education is also addressed more broadly through training provided by energy consultants and building administrators. These sessions aim to equip households with the knowledge needed to reduce their consumption, improve comfort, and engage in available support programs.

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The ECAP acknowledges the psychological and cultural dimension of energy poverty, particularly the stigma and shame that often prevent affected individuals from seeking help. To counter this, it proposes **social campaigns** that normalize the issue, promote community solidarity, and raise awareness of energy poverty as a shared social challenge. Mechanisms should be established to allow anonymous requests for assistance, ensuring a non-judgmental and accessible support process.

Recognizing the fragmented nature of many current interventions, the ECAP calls for a **coherent national and regional strategy** that takes an integrated policy approach. This would involve creating a technical inventory of buildings, monitoring trends in energy costs, and offering financial support in the form of tax credits and subsidies. To be effective, such a strategy must be coordinated across ministries and local governments to ensure that different tools and programs complement each other and are able to reach the most vulnerable groups.

While existing social benefits and tariffs, such as shielding allowances or fuel (e.g., coal) supplements, help to offset high energy bills, the ECAP notes that these are short-term interventions. They act as financial compensation for high costs but do not address the root causes of energy poverty, such as poor building insulation or inefficient appliances. As such, their impact is limited without parallel investments in energy efficiency.

The plan also underscores the **value of consulting support from energy advisors**, which complements financial aid by guiding citizens through the selection of programs, preparing necessary documentation, and overseeing the implementation of energy-saving upgrades. These advisors are crucial for helping vulnerable populations navigate often complex application processes and technical requirements.

Finally, the ECAP promotes preferential loan schemes and support programs aimed at improving energy efficiency and environmental performance, such as the “Stop Smog” and “Clean Air” initiatives. These national programs provide direct assistance to households in financial difficulty, including marginalized and socially excluded groups. By addressing both environmental and social goals, these programs play a key role in making the energy transition more equitable and inclusive.

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4. Municipal and Regional Measures

While national frameworks provide limited guidance or coordination on energy poverty across the CEE region, municipalities and regional actors have played a crucial role in piloting and implementing practical measures to alleviate energy poverty. These initiatives, often developed with support from EU projects, NGOs, or local partnerships, reflect the growing recognition of the need for place-based solutions tailored to vulnerable populations.

Croatia

Croatian municipalities have implemented a variety of targeted measures, particularly in collaboration with civil society organisations and local energy agencies. Notably, one-stop-shop models have been piloted to centralise support for citizens facing energy-related challenges. In cities like Gospić and Prelog, residents have received free energy audits, low-cost energy efficiency kits, and LED light bulbs to reduce their electricity bills. These efforts not only provided immediate savings but also raised awareness about behavioural changes and long-term efficiency improvements. The involvement of NGOs such as DOOR and regional agencies like MENEA has been essential in outreach and implementation.

Czech Republic

Although energy poverty is not yet officially defined at the national level, the municipality of Košťany has piloted a local subsidy programme aimed at assisting energy-poor households in improving home energy performance. This includes financial assistance for heating system replacements and basic renovation measures. The initiative highlights the capacity of even small municipalities to act when motivated by local needs and equipped with minimal but targeted resources.

Estonia

In Estonia, energy poverty is addressed within the broader social protection framework. Vulnerable households identified through subsistence support programmes are also eligible for renovation support. This includes co-financing for insulation, heating system upgrades, and energy-efficient appliances. Though not yet fully embedded in energy or climate planning, this approach uses existing social safety nets to deliver energy-related assistance, creating a foundation for future integrated policies.

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Latvia 	Latvian municipalities have introduced technical assistance programmes to support households switching from coal or biomass heating systems to more efficient, cleaner alternatives. In addition, social housing units have been prioritised for energy efficiency upgrades. Municipal social departments are often responsible for identifying vulnerable residents and coordinating assistance. Although formal energy poverty frameworks are lacking, this integration of social and technical support services shows promising local adaptation.
Poland 	Poland has advanced energy poverty alleviation through integration with broader thermo-modernisation programmes, which co-finance building renovations and heating system upgrades. Municipalities have also established consulting points to help low-income households navigate bureaucratic processes and access subsidies. Awareness campaigns, sometimes led by NGOs, have focused on engaging both youth and elderly populations, helping to disseminate practical advice on energy savings and available support. However, access to funding and technical advice still varies greatly between regions.
Slovenia 	In Slovenia, municipal-level support includes direct energy consulting targeted at individuals receiving social assistance. Through partnerships with social services and local advisors, these consultations help identify low-efficiency households and propose realistic interventions. This approach recognises the overlap between social vulnerability and energy poverty and ensures that support reaches those with the greatest need. While systemic funding remains limited, municipalities have started to institutionalise these services as part of broader welfare programmes.

These localised approaches demonstrate that municipalities, often with limited resources, can **play a transformative role in identifying and addressing energy poverty**, especially when empowered by partnerships, targeted funding, and flexible administrative tools. Expanding and scaling these initiatives will be key to building a fair and effective energy transition across the region.

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5. Sub-regional Trends, Opportunities and Threats

The responses from CEESEU-DIGIT project partners indicate notable sub-regional differences in how energy poverty is defined, addressed, and integrated into municipal and regional planning across Central and Eastern Europe. While local innovation is evident, structural challenges and uneven national support continue to shape the scope and impact of interventions.

Central Europe: Progress in Defining and Piloting Measures

Within the **Central European sub-region**, **Croatia and Slovenia** stand out for their growing recognition of energy poverty and efforts to address it through both national policy and local practice. **Croatia** has established a formal definition of energy poverty and has begun integrating it into the National Energy and Climate Plan (NECP) and local climate strategies. Pilot initiatives, such as energy audits, distribution of LED lighting and energy-saving kits, and development of one-stop-shop models, demonstrate increasing implementation capacity. Croatian municipalities, supported by NGOs and regional energy agencies, are actively testing and scaling inclusive models that could serve as replicable frameworks for the broader region.

Slovenia similarly shows progress, particularly through direct support for socially vulnerable households and integration of energy consulting within municipal social services. Although a formal national definition of energy poverty is still evolving, municipalities are implementing practical support mechanisms, such as personalized energy advice, co-financed renovation measures, and awareness campaigns. Collaboration between municipalities, social institutions, and energy advisors reflects a systemic approach to addressing vulnerability in the energy transition.

Together, Croatia and Slovenia illustrate how coordinated local action, supported by civil society and regional institutions, can compensate for gaps in national frameworks and generate meaningful progress toward inclusive energy planning.

Baltics: Data and Coordination Challenges

In the **Baltic states**, partners from **Estonia** and **Latvia** highlighted significant data-related and institutional coordination challenges. While energy poverty is acknowledged in policy discussions, the lack of comprehensive, disaggregated data on affected populations impedes targeted intervention. Definitions are either vague or missing, and responsibilities between

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national and municipal authorities are not clearly delineated. Local governments often rely on social assistance registries to identify vulnerable households, which may exclude large segments of energy-poor populations who do not meet strict eligibility thresholds. Despite these challenges, municipalities are exploring practical entry points for action like support for switching heating systems or improving social housing stock.

Visegrad Countries: Local Initiatives Emerging Despite Weak National Policies

In **Poland** and the **Czech Republic**, municipal and civil society actors are increasingly taking the lead in addressing energy poverty, often in the absence of robust national policy frameworks. In Poland, local governments and NGOs are offering consulting services, awareness-raising campaigns, and support for thermo-modernisation, even as integration of energy poverty into strategic climate planning remains limited. The Czech Republic lacks an official definition of energy poverty, yet cities like Košťany are launching local subsidy schemes to support heating system upgrades. These bottom-up efforts signal a strong local commitment, but their long-term sustainability depends on stronger national coordination, funding, and guidance.

Risks of Deepening Inequality Without Integrated Support

Across all sub-regions, partners underscored a shared concern: **without integrated, inclusive, and adequately funded support mechanisms, energy transition policies risk exacerbating social and regional inequalities**. Vulnerable groups, particularly the elderly, rural poor, Roma communities, and households in substandard housing, face growing pressure from rising energy costs, stricter efficiency standards, and limited access to co-financing for upgrades.

A lack of coordination between climate and social policy, combined with **insufficient local capacities and underfunded services**, means that many of the most affected households remain unreached. Unless structural inequalities are addressed through comprehensive and inclusive policy design, energy transition efforts may unintentionally widen the gap between those who can afford to participate and those who cannot.

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6. Lessons Learned and Replicability

Across Central and Eastern Europe, **several effective strategies** have emerged in addressing energy poverty:

Community Outreach

Initiatives like Croatia's one-stop-shops and Poland's local consulting points have successfully engaged vulnerable populations by providing accessible information and services. Similarly, projects like EnergyMeasures have highlighted the importance of informal community gatherings, such as "coffee mornings," to build trust and share energy-saving practices among residents.

Intersectoral Cooperation

Collaborations between municipalities, NGOs, social services, and energy agencies have proven effective. For instance, Slovenia's direct energy consulting for social assistance recipients showcases the benefits of integrating social welfare and energy sectors to identify and support those in need.

Capacity Building

Training programs and knowledge-sharing platforms, like the Energy Poverty Advisory Hub's (EPAH) Digital Academy, have empowered local authorities and stakeholders with the tools and expertise necessary to develop and implement energy poverty alleviation measures effectively.

Despite these successes, **several challenges persist**:

Insufficient Funding

Many municipalities face financial constraints that limit the scalability and sustainability of energy poverty initiatives. The lack of dedicated funding streams hampers the implementation of comprehensive programs.

Stigma

Social stigma associated with energy poverty can deter individuals from seeking assistance. This barrier underscores the need for sensitive communication strategies and inclusive program designs that respect the dignity of beneficiaries.

Lack of Tailored Data

A significant obstacle is the absence of disaggregated and context-specific data on energy poverty. Without accurate data, it's challenging to identify affected households and tailor interventions effectively.

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Recommendations for scale-up and integration into ECAPs and NECPs

To enhance the effectiveness and reach of energy poverty interventions, the following recommendations are proposed:

- **Integrate Energy Poverty Measures into ECAPs and NECPs**: Embedding energy poverty alleviation strategies into Energy and Climate Action Plans (ECAPs) and National Energy and Climate Plans (NECPs) ensures a coordinated and strategic approach at both local and national levels.
- **Establish Dedicated Funding Mechanisms**: Allocating specific funds for energy poverty programs can provide the necessary resources for implementation and expansion. This includes support for infrastructure improvements, educational campaigns, and direct assistance to households.
- **Enhance Data Collection and Analysis**: Developing standardized methodologies for data collection can improve the identification of energy-poor households and the assessment of program impacts. Tools like the EPAH methodology offer guidance in this area.
- **Promote Inclusive and Participatory Approaches**: Engaging communities in the design and implementation of programs fosters ownership and ensures that interventions are responsive to local needs. Initiatives like EmpowerMed's collective advisory assemblies exemplify the benefits of participatory models.
- **Foster Intersectoral Collaboration**: Encouraging partnerships across sectors—such as housing, health, and social services—can lead to more holistic and effective solutions to energy poverty.

By adopting these recommendations, municipalities and national governments can enhance the scalability and effectiveness of energy poverty interventions, ensuring that vulnerable populations are supported in the transition to sustainable energy systems.

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7. Conclusions and Policy Recommendations

The analysis of energy poverty practices across six Central and Eastern European (CEE) countries confirms that while progress has been made at the local level, **structural and systemic challenges remain**. Energy poverty is increasingly recognised, but its effective mitigation requires stronger integration into broader climate and energy frameworks, with targeted support for vulnerable communities.

To advance a fair and inclusive energy transition, the following **policy recommendations** are essential:

Embed Energy Poverty Indicators in Planning

Energy poverty should be **systematically addressed** in both local and national strategies by integrating tailored indicators into Energy and Climate Action Plans (ECAPs) and National Energy and Climate Plans (NECPs). These indicators must go **beyond income levels** to include qualitative factors such as housing conditions, thermal comfort, and social vulnerability, enabling better identification, tracking, and evaluation of affected populations.

Provide Technical and Financial Assistance for Vulnerable Households

Dedicated programmes must **support low-income and energy-poor households** through free energy audits, targeted subsidies, renovation grants, and advisory services. Technical support should be accessible via **local contact points or one-stop-shops**, while financial instruments must be easy to navigate and inclusive. These services need to be **tailored to specific needs**, particularly for groups like the elderly, rural households, and ethnic minorities.

Strengthen Local Governments' Capacity Through Tools and Partnerships

Municipalities often lead in energy poverty alleviation despite limited resources. Their **capacity should be enhanced** through training, knowledge-sharing platforms (e.g. EPAH Digital Academy), inter-municipal cooperation, and partnerships with NGOs and social services. **Institutional support and national policy alignment** are necessary to enable replication of successful models and long-term programme implementation.

Enhance Funding Accessibility and Transparency

A major bottleneck remains lack of stable and accessible funding. **Clear, transparent, and simplified funding schemes** should be established at national and EU levels, prioritising **vulnerable populations and under-resourced municipalities**. Earmarking EU funds for

local energy poverty projects and ensuring procedural support will help maximise impact and reach those most in need.

In conclusion, tackling energy poverty in the CEE region demands integrated planning, inclusive governance, and sustained investment. These steps will ensure that the energy transition is not only green but also socially just and resilient.

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Annex 1 - EU-Funded and Pilot Projects

CROATIA

Project CO-EMEP

- Level of influence: Local and Regional
- Energy poor target group (if specified): Home owners who are facing the energy poverty problem
- Funding mechanisms used: ERDF, Interreg CBC HU-HR
- Implementing organisation/institution: Medjimurje Energy Agency Ltd. (CRO)
- Link to the activity: https://www.menea.hr/co-emep/

Description:

The CO-EMEP project - Improvement of cooperation for better energy management and reduction of energy poverty in HU-HR cross-border area, aimed to improve the capacities of local and regional public institutions in the HU-HR cross-border area to address energy poverty effectively. It focused on fostering collaboration between stakeholders, raising awareness of fuel poverty and improving institutional capacity in energy planning and management. The project also targeted homeowners affected by fuel poverty, with an emphasis on efficient energy management. In addition, it aimed to improve the efficiency of public administration and the use of resources for sustainable solutions. Six activities were carried out, including defining fuel poverty, developing mitigation planning guidelines, identifying problem sectors, creating an online energy management tool, and piloting actions such as energy audits in energy-poor households. These efforts were intended to create a lasting impact in the fight against energy poverty in the region.

Project POWERPOOR

- Level of influence: National
- Energy poor target group (if specified): Energy poor citizens
- Funding mechanisms used: Horizon2020 programme
- Implementing organisation/institution: Society for Sustainable Development Design (DOOR)

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- Link to the activity: https://powerpoor.eu/

Description:

The main objective of the project POWERPOOR - Empowering Energy Poor Citizens through Joint Energy Initiatives, was to develop support programmes to empower energy poor citizens and to encourage the use of joint energy initiatives leveraging innovative financing schemes. POWERPOOR facilitates experience and knowledge sharing, the implementation of behavioural changes and small-scale no regret energy efficiency interventions as well as the uptake of renewable energy sources through energy communities and cooperatives, increasing the active participation of citizens. Pilot energy poor support programmes are designed, developed, and implemented in eight countries across Europe (Bulgaria, Croatia, Estonia, Greece, Hungary, Latvia, Portugal, and Spain), led by a network of trained and certified Energy Supporters and Mentors. The Energy Supporters and Mentors support energy poor households to implement behavioural changes and low-cost, no regret, small-scale energy efficiency interventions, as well as encourage them to participate in joint energy initiatives or leverage innovative financing schemes.

ESTONIA

Project ENPOR

- Level of influence: Regional
- Energy poor target group (if specified): tenants in private rented sector
- Funding mechanisms used: Horizon2020 programme
- Implementing organisation/institution: Tartu Energy Agency (TREA)
- Link to the activity: https://ieecp.org/projects/enpor/

Description:

Project ENPOR - Actions to Mitigate Energy Poverty in the Private Rented Sector, aimed to overcome challenges of identification and quantification of energy-poor households in the private rental sector as well as to deliver energy efficiency measures to these households due to structural problems like information deficits, split incentives, and more. Through the activities, project made energy poverty in the PRS visible (and as far as possible quantifiable) and tested energy efficiency support schemes to address it, identifying energy poor tenants (and respective homeowners) as well as understanding and addressing their needs.

SLOVENIA

Project EmpowerMed

- Level of influence: Local
- Energy poor target group (if specified): Women in coastal areas of Mediterranean countries
- Funding mechanisms used: Horizon2020 programme
- Implementing organisation/institution: Focus Association for Sustainable Development
- Link to the activity: https://www.empowermed.eu/

Description:

The overall objective of project EmpowerMed - Empowering women to take action against energy poverty, is to tackle energy poverty and to help improve health of people in the coastal areas of Mediterranean countries, with a particular focus on women. Specifically, the project aimed to raise public awareness on energy poverty and the means for its alleviation, focusing on the specifics of coastal areas, gender and health aspects, implement practical solutions tailored to empower households affected by energy poverty and formulate local, national and EU policy recommendations and promote solutions to tackle energy poverty. The activities that contributed to the achievement of those goals were energy visits to households, installation of saving devices and promotion of energy measures, energy advice training to build capacity of actors and partners, collective assemblies on energy and health, workshops, advocacy campaigns and development of recommendations to tackle energy poverty among several key actors.

POLAND

Project CEESEN-BENDER

- Level of influence: Local
- Energy poor target group (if specified): vulnerable homeowners and renters living in Soviet-era multiapartment buildings

- Funding mechanisms used: LIFE programme, Clean Energy Transition sub-programme
- Implementing organisation/institution: Mazovian Energy Agency (MAE)
- Link to the activity: https://ceesen.org/about-ceesen/ceesen-bender/

Description:

The main goal of CEESEN-BENDER is to empower and support vulnerable homeowners and renters living in Soviet-era multiapartment buildings in 5 CEE countries: Croatia, Slovenia, Estonia, Poland, and Romania. The project helps them through the renovation process by identifying the main obstacles and creating trustworthy support services that include homeowners, their associations, and building managers. Within the project activities ownership structure and physical characteristics of buildings in the 5 pilot sites in targeted regions (Estonia, Slovenia, Poland, Romania, and Croatia) are analysed to comprehensively understand the underlying obstacles that impede or halt homeowner associations, landlords, and property managers from pursuing energy renovations. Also, both legislation and financial, and technical administrative obstacles for the renovation in pilot countries are identified. The identification of obstacles from the homeowners' perspective helps the creation of tailor-made solutions not only for homeowners but also for building managers, landlords, municipalities, and other relevant stakeholders involved in the renovation process.

CZECH REPUBLIC

The Boiler Subsidies

- Level of influence: Regional
- Energy poor target group (if specified): low-income households
- Funding mechanisms used: NextGenerationEU
- Implementing organisation/institution: The State Environmental Fund
- Link to the activity: https://novazelenausporam.cz/jak-na-to/vymena-kotlu/

Description:

The primary objective is to promote the transition to more environmentally friendly heating systems in accordance with the Air Protection Act, which bans the use of old boilers after

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September 1, 2024. This will be done by providing financial support to households, especially those with limited resources, to replace their old boilers.

Activities include the provision of boiler subsidies, targeted especially at low-income households, where up to 95% of eligible costs will be covered, with a maximum of CZK 180,000, depending on the type of new heating source. In addition, the New Green Savings Program is offered for property owners with non-environmentally friendly heating systems. Regional authorities will start receiving grant applications gradually from summer 2023, providing detailed information about the process both online and at regional offices.

New Green LIght to Savings

- Level of influence: National
- Energy poor target group (if specified): Households and communities
- Funding mechanisms used: From the revenues of the EU ETS allowances auctions
- Implementing organisation/institution: The State Environmental Fund
- Link to the activity: https://www.sfzp.cz/en/

Description:

The project focuses on strengthening cost-saving measures and improving optimal insulation in homes to promote more sustainable practices and mitigate climate change. It seeks to improve administrative procedures for accessing subsidies and ensure continued long-term support. Planned activities include anticipating the communication of changes in subsidies, the use of specific financing for energy savings in homes, and the expansion of the supply of subsidies and unit amounts. In addition, new programs will be implemented to facilitate access to subsidies, especially in apartment buildings, and existing subsidies will be improved, including the option of replacing old gas boilers and providing additional bonuses to low-income households. Support for energy source substitution will be intensified and the subsidy for insulation will be increased. The project will also continue to promote projects in disadvantaged regions and offer new programs for young families. These activities are primarily aimed at contributing to the renovation of the Czech housing stock, improving the quality of life and promoting more sustainable and energy-efficient practices.

LATVIA

Solutions to Tackle Energy Poverty (STEP)

- Level of influence: National
- Energy poor target group (if specified): Consumers living in or at risk of energy poverty
- Periodicality of activities: More than 1
- Funding mechanisms used: Horizon2020 programme
- Implementing organisation/institution: LPIAA
- Link to the activity: https://www.stepenergy.eu/en/

Description:

The main objective of the Solutions to Tackle Energy Poverty (STEP) project is to combat energy poverty through collaboration between consumers, organizations and the promotion of energy saving. This is achieved through information campaigns and the implementation of energy efficiency measures in vulnerable households, in order to improve the quality of life of those affected. In addition, it disseminated successful practices at national and European level to address this problem in a sustainable way.

To achieve these objectives, STEP will carried out a series of activities, including the formation of strategic alliances between consumer groups and leading organizations, the implementation of information campaigns targeting people experiencing fuel poverty, the implementation of practical energy efficiency measures in vulnerable households, and the organization of seminars to share experiences and effective policies. In this way, the project addressed fuel poverty in a comprehensive and sustainable manner, promoting positive change in the community.

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