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EU guidance on energy poverty

Accompanying the document

Commission Recommendation on

energy poverty

{C(2023) 4080 final}

CONTENTS

I. INTRODUCTION

Energy poverty is a situation in which households are unable to access essential energy services and products, thus affecting health, living standards and the levels of heating, cooling, and lighting of homes. It occurs when a high percentage of consumers' income is spent on energy bills, when the energy efficiency of buildings and appliances is low or when household's energy consumption needs to be reduced to a degree that negatively impacts health and well-being. Energy poverty is thus a complex and multidimensional phenomenon driven by high energy expenditure (in proportion to the household budget) also aggravated by high energy and fuel prices and their volatility, low levels of income, low energy efficiency of buildings and appliances, geographic and climate factors, household characteristics, gender, family composition, health, and specific household energy and transportation needs and practices. The recent increase in energy prices, coupled with the living cost crisis, has seen the number of people in energy poverty rise significantly to an estimated 40 million people in 2022.

The EU is strongly committed to tackling energy poverty and protecting vulnerable consumers, as part of its objective to ensure that the green energy transition is fair and just, leaving no one behind. Indeed, an effectively managed structural transition to climate neutrality contributes to tackling related societal issues, including energy poverty[1], and helps prevent societal discontent and inequity, especially in less developed Member States and regions, or in populations more affected by volatility of energy prices.

With the proclamation of the European Pillar of Social Rights in 2017, the EU committed to ensuring access to essential energy services to everyone and to provide support for access for those in need. Tackling energy poverty and supporting their access to essential energy services contribute to achieving the EU target of lifting at least 15 million people out of poverty and social exclusion by 2030 and is in line with objectives of the United Nations' 2030 agenda for sustainable development. The Commission and the Council addressed the concept through their recommendations – the former on energy poverty in 2020[2] and the latter on ensuring a fair transition towards climate neutrality in 2022[3]. The 2023 Council Recommendation on adequate minimum income ensuring active inclusion calls on Member States to safeguard continuity of effective access to essential services, including energy[4].

Energy poverty first appeared in EU energy policy in 2009 but the way it is addressed through regulatory requirements has been significantly strengthened through the 'Fit for 55' package. Energy poverty is now defined at EU level, and the EU legal framework requires that energy poverty in Member States is identified and tackled in their National Energy and Climate Plans (NECPs). Energy poor households should be prioritised for public investment or measures in energy efficiency and in further packages under legislative procedure. Specific provisions and funding have been introduced in the Social Climate Fund Regulation, and some Member States

[1] EU climate action through an energy poverty lens | Scientific Reports (nature.com)
[2] Commission Recommendation (EU) 2020/1563 of 14 October 2020 on energy poverty
[3] Council Recommendation of 16 June 2022 on ensuring a fair transition towards climate neutrality (2022/C 243/04)
[4] 2023/C 41/01

address energy poverty in their Recovery and Resilience Plans, namely through measures introduced by the REPowerEU chapters.

Moreover, to support actions at Member State level addressing vulnerable households, the Commission clarified as early as October 2021 what range of short- and medium-term measures were possible under existing EU rules. With a view to encourage additional consumer protection commitments by key market players beyond initiatives taken by governments, the Commission facilitated the signature of a Joint Declaration in December 2022[5] by key stakeholders representing consumers, regulators and energy suppliers as well as distributors to respect common principles and adopt measures supporting households to make it through the 2022/2023 winter. It is envisaged to extend the application of the commitments taken to winter 2023/2024.

This Staff Working Document accompanying the Recommendation on energy poverty aims to outline how energy poverty is addressed in the new EU legal framework. Building on the 2020 Recommendation on energy poverty, it explains how energy poverty can be diagnosed at national level. In view of the updating of Member States' National Energy and Climate Plans, it analyses in detail the various types of measures and policies that can be adopted to tackle energy poverty, including good practices thereof.

To draft this Recommendation and this Staff Working Document, the Commission carried out extensive stakeholder consultations. It consulted Member States via a questionnaire and a dedicated workshop organised in the framework of the Coordination Group on Energy Poverty and Vulnerable Consumers[6] on 21 April 2023. Eighteen Member States submitted feedback to a written consultation and 22 Member States participated in the workshop. The Commission also sent out a targeted questionnaire to stakeholders representing consumer organisations, civil society organisations, trade unions, anti-poverty groups, social housing providers, environmental campaigners, health organisations, energy cooperatives and energy providers and carried out two specific meetings to address the findings. The questionnaire enquired above all on the different types of measures to address energy poverty, about policy design and good practices. It also engaged with participants on energy poverty diagnosis, policy design and skills at the annual conference on energy poverty of the Energy Advisory Hub in Warsaw on 19-20 September 2023[7].

II. STATE OF ENERGY POVERTY

In 2022[8], more than 40 million people in the EU, which translates to approximately 9.3% of the EU population, were unable to keep their home adequately warm. This constitutes an approximate 35% rise in relative terms and 10.7 million people since 2021 (i.e. over a year).

[5] Joint common principles_15 Dec_for communication.pdf (europa.eu)
[6] Commission Decision (EU) 2022/589 of 6 April 2022 establishing the composition and the operational provisions of setting up the Commission Energy Poverty and Vulnerable Consumers Coordination Group C/2022/2082
[7] Conclusions from our annual conference in Warsaw (europa.eu)
[8] Statistics | Eurostat (europa.eu)

As shown in figure 1, energy poverty is a **phenomenon that affects all Member States, although with substantial geographical diversity, with figures ranging from 1.4 % in Finland to 22.5% in Bulgaria.**

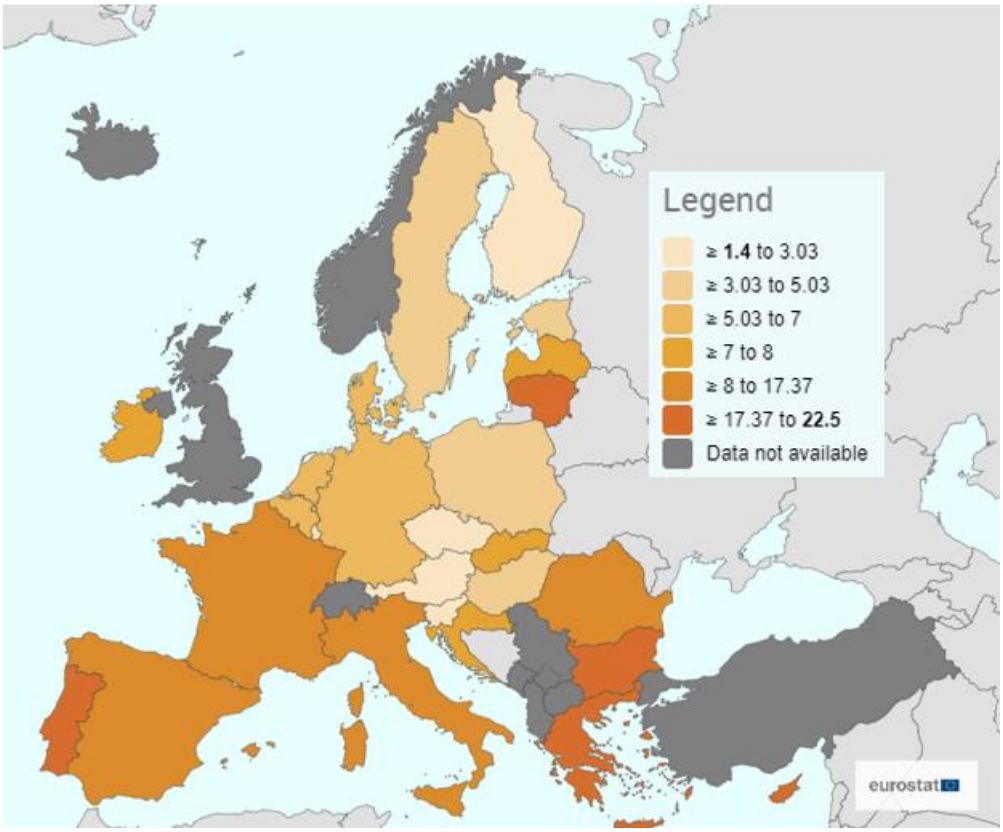

Figure 1: Inability to keep home adequately warm, 2022 (EU-SILC survey) (% of total population) Statistics | Eurostat (europa.eu)

In similar vein, in 2020, 14.8% of the EU population and 23.1 % of households at risk of poverty were living in poor quality accommodation with a leaking roof, damp walls, floors or foundation, or rot in window frames/floors, according to Eurostat data[9]. In addition, in the same year, **more than 30 million of Europeans (6.9% of the EU population) presented arrears on utility bills**[10], reflecting the inability to face high energy costs compared to income, which is one of the three dimensions of energy poverty[11]. The same inability is reflected in the Commission's forthcoming Energy Prices and Costs Report 2023[12] which identifies the share of energy expenditure (including

[9] Tenure status, types and status of dwellings are also examined in connection with the indicators of energy poverty, as the 'worst performing buildings' are very often inhabited by the energy poor. To properly interpret situation on the national level, it is necessary to understand the housing situation and the distribution of social groups by income quintile in this contexts.

[10] Large geographical variations can also be noted for this indicator, ranging from 1.5% in the Netherlands to 34.1% in Greece.

[11] To reflect the multi-dimensional phenomenon that energy poverty represents, it is important to use different indicators to assess it, such as material and social deprivation, arrears on utility bills, share of energy expenditure in total household expenditure, etc. The different available indicators are deeply analysed in Chapter III.

[12] 2022 Energy Prices and Costs Report (unpublished study by Trinomics et al.), based on Eurostat, US DoE, Enerdata (NBS, E-Stats, BEIS, KESIS), IEA data

transport) in total consumption expenditure substantially increased in 2022, with the increase is mainly driven by an increase in the prices of natural gas, road fuels and in some instances electricity. In 2022, on average across EU Member States, energy expenditure increased in 2022 by more than 30% and is estimated to reach 10% of household budgets (the maximum was a 100% increase in Estonia).

It should be also noted that in 2022, 95.3 million people (21.6% of the EU population, therefore 1 in 5 citizens) were at risk of poverty or social exclusion[13], i.e., lived in households experiencing at least one of the three poverty and social exclusion risks (risk of poverty, severe material, and social deprivation and/or living in a household with very low work intensity). More specifically, the risk of poverty or social exclusion in the EU was higher for women than for men (22.7% compared with 20.4% in 2022). The share of people at risk of poverty or social exclusion varied across the EU countries in 2022. The highest values were reported in Romania (34.4%), Bulgaria (32.2%), Greece (26.3%), Latvia and Spain (both 26%). On the other hand, the lowest shares were recorded in Czechia (11.8%), Slovenia (13.3%) and Poland (15.9%)[14]. The 2023 Commission's Report on Access to Essential Services in the EU shows that people who are at risk of poverty face a significantly higher risk of being unable to keep their home adequately warm, with an EU average of 20.2% and levels ranging from 3.9% in Finland to 50.6% in Cyprus. At the same time, the report recalls that energy poverty also affects the middle class, as around half (46%) of the EU population who could not keep their homes adequately warm in 2021 were in the middle-income deciles (the third to the eighth, inclusive).[15]

An EU project dedicated to gender aspects of energy poverty is **EmpowerMed**[16]**,** financed from H2020 programme. It focused on tackling energy poverty and improving health of people in the coastal areas of Mediterranean countries with a particular focus on women. Among others, it pointed to gender differences in physiological needs, higher life expectancy and generally inferior pensions of women, differences in forms of employment and gender pay gaps or majority of single parents being women in one of its reports[17] and issued policy recommendations for gender-just policies to reduce energy poverty[18].

Impact of high energy prices

The indicators described above have been on a downward trend over the past years but increased from 2021 to 2022. In particular, the increase of the indicators linked to the inability to pay energy bills reflects the wholesale energy prices starting in autumn 2021 and peaking in August 2022, along with the impacts of the COVID-19 crisis and of the Russian aggression against Ukraine.

[13] Statistics | Eurostat (europa.eu)
[14] Living conditions in Europe - poverty and social exclusion - Statistics Explained (europa.eu)
[15] SWD(2023) 213 final/2. Available at:
https://ec.europa.eu/social/main.jsp?langId=en&catId=89&furtherNews=yes&newsId=10595
[16] Empowermed – Empowering women to take action against energy poverty in the Mediterranean
[17] FINAL Energy Poverty Report(1) (empowermed.eu)
[18] Gender-just-policy-recommendations-EmpowerMed-FINAL.pdf

The unprecedented increase in energy prices [19] coupled with price inflation for other consumer goods disproportionally affected low income and vulnerable households due to net-loss of income, in most instances not counterbalanced by wage increases. The Commission's Joint Research Centre estimates that, since August 2021, inflation has caused an average increase of 10% in the living costs of median households and of 2 percentage points in material and social deprivation in the EU, while energy poverty and absolute monetary poverty raised by 5 percentage points [20]. This is likely to exacerbate existing social inequalities within the EU, with particularly adverse social effects in Central and Eastern European Member States where inflation rates were highest.[21].

On average across Member States, the share of energy expenditure[22] in overall household spending increased between 2019 and 2022 by more than one third (relative change of 34%), almost doubling in Estonia. In fact, Estonia, Belgium, Cyprus, Greece, the Netherlands, and Lithuania reported a higher than EU-average increase in the expenditure share of energy, which, in contrary, did not increase in Malta and Hungary (also due to energy price regulation). **Between 2019 and 2022**, **low-income groups spent on average 10 – 13 % more on energy compared to the highest income groups**, which in 2022 spent on average 5 - 7 % more on energy compared to 2019. This shows that the increase in share of expenditure used on energy is larger in low-income groups. This can be due to low-income groups not having any spare capacity to decrease their energy consumption while others can more easily heat less, use less air-conditioning, or use less electronic devices, and at the same time can afford investing into energy efficiency. Therefore, the increase is highly regressive (i.e. low-income households bear a substantially higher burden)[23].

Analyses developed under two joint projects between the Directorate-General Employment, Social Affairs and Inclusion and the Joint Research Centre of the European Commission[24] show that as a result of energy price changes between August 2021 and January 2023 (compared to the previous 18 months), energy poverty would have substantially increased across the EU if it were not for the policy interventions. The share of households which spend more than 10% of their budget on energy in the EU would have increased by 16.4 percentage points for the general EU population

[19] In the second half of 2022, average household electricity prices in the EU were increasing compared to the same period in 2021 (+4.9 EUR per 100 kWh). Average gas prices also grew in the second half of 2022 (+3.6 EUR per 100 kWh). These prices are the highest in Eurostat's record. In 2021, natural gas (33.5%) and electricity (24.6%) covered together most of the final energy consumption in households. The spike thus impacted nearly three fifths of households in the EU, as households used this energy mostly for heating their homes (64.4% of final energy consumption in the residential sector), followed by water heating (14.5%).

[20] No differentiated behavioural response is assumed.

[21] Menyhért, B., The effect of rising energy and consumer prices on household finances, poverty and social exclusion in the EU, Publications Office of the European Union, Luxembourg, 2022, doi:10.2760/418422, JRC130650.

[22] Excluding transport fuel costs.

[23] Energy Prices and Costs in Europe, EC Report, forthcoming

[24] The two projects are: "Assessing and monitoring employment and distributional impacts of the Green Deal (GD-AMEDI)" running from 2020 to 2023; and "Assessing distributional impacts of geopolitical developments and their direct and indirect socio-economic implications, and socio-economic stress tests for future energy price scenarios (AMEDI+)" running from 2023 until 2026. For more information see https://ec.europa.eu/social/main.jsp?langId=en&catId=1588.

and by 19.1 percentage points for the (expenditure-based) 'at risk of poverty' (AROP) population.[25]

Most national governments acknowledged the aggravation of the situation for consumers and introduced emergency measures to protect energy consumers, particularly during the initial lockdowns, such as disconnection bans, payment extension plans, enhancement of energy assistance programmes (i.e. social tariffs or energy cheques), energy bill reduction or cancellation, and creation of specific funds (e.g. Italy created a COVID account to guarantee the financial stability of retailing companies whose consumers were enrolling in the payment extension plan[26]).

In this context, the Commission proposed a series of coordinated actions and measures to address the problem, phase out EU dependency on Russian fossil fuels and help EU countries and citizens tackle the rising prices.

To conclude, most indicators depicting facets of energy poverty have been on a downward trend for the past years, with geographic variations, but witnessed a surge as a result of the energy crisis that unfolded in 2021 and 2022. The increase by more than a third of people's inability to keep their home adequately warm clearly shows the significant worsening of the situation between 2021 and 2022 (from 6.9% in 2021 to 9.3% in 2022). This figure captures the initial impact of the spike in energy prices that started in the second half of 2021 but does not yet factor in the impact of the more significant increase of energy prices of last winter, which will be reflected in the data of next year.[27]

At the same time, Member States have put in place a significant number of emergency measures last winter that have contributed containing the impact of the energy crisis on the most vulnerable households. The energy crisis has had a significant impact on the most vulnerable households but, to some extent, was counterbalanced by support measures put in place by national, regional and local governments.

III. ENERGY POVERTY IN THE EU LEGAL FRAMEWORK

Since the introduction of energy poverty in the Electricity Directive (Directive 2009/72/EC), **the concept of energy poverty and the approach by the European Union on how to tackle energy poverty has broadened, firmly establishing energy poverty in the narrative on a just and fair energy transition**. While initial support was mainly directed at the possibility for Member States to establish energy price regulation, the latest legal developments introduced through the 'Fit for 55' package present a comprehensive approach to tackle the root causes of energy poverty. The package introduced new provisions to prioritise energy efficiency and building renovation

[25] More information about the underlying analysis is available in the 2023 Fair Transition Working Paper "Economic and distributional effects of higher energy prices on households in the EU". Results have fed the 2023 Semester Spring Package Country Reports.

[26] https://www.arera.it/it/elenchi.htm?type=stampa-20

[27] Surveys on inability to keep home adequately warm are generally conducted in the first half of the year, in the period from January to June of the relevant year.

measures in a structural way to the benefit of energy poor households. The new framework sets up energy policy as an anchor for tackling the root causes of energy poverty, thus complementing social policy.

As seen above, energy poverty is well established and addressed in the EU law, and the responsibility of Member States to diagnose the number of energy poor on their territory and put in place measures to address it is well recognised.

The following subsections provide an overview of the EU legal and policy frameworks most relevant to both energy poverty and energy vulnerability.

1. Clean Energy Package and Governance framework

The 'Clean Energy for All Europeans' package, designed to facilitate a fair energy transition, further consolidated energy poverty as a key concept in energy policy. Particularly, through measures included in the **recast Electricity Directive 2019/944/EU and the Regulation on the Governance of the Energy Union and Climate Action 2018/1999 (**here forth the Governance Regulation), the EU legal framework embedded energy poverty as a topic that can be addressed structurally through energy policy, complementary and in addition to social policy. **It sets out the responsibility of Member States to identify and quantify the number of energy poor and provides the criteria on which the quantification should be based.**

By offering an overarching, legal and policy framework for energy and climate policymaking in the EU, the Governance Regulation provides tools to reach the EU's 2030 and 2050 targets. Core is the integrated National Energy and Climate Plan (NECP), designed to offer a comprehensive overview of policies and measures under several areas. Energy poverty was included as a standalone reporting section under the broad category of internal energy market before the European Green Deal was established.

The Governance Regulation requires that, where the number of households in energy poverty is significant, Member States must include in their NECPs an indicative objective to reduce energy poverty, provide a timeframe, and outline the relevant policies[28]. Member States are then under an obligation to report on any progress made towards the objective of reducing the number of households in energy poverty[29]. The Commission Staff Working Document (2020) 960 final accompanying the Commission Recommendation on energy poverty 2020/1563 sets how and based on which indicators Member States can identify whether the number of households in energy poverty is significant in their country. It also sets out examples how some Member States addressed this issue in their NECPs.

As a well-established, official tool for reporting, the Commission refers primarily to the contents of the NECPs. The NECPs offer an excellent opportunity to describe state of play, policies, and measures of energy poverty in each Member States and how it sits in the broader concepts of

[28] Article 3(3)(d) of the Governance Regulation
[29] Article 24 of the Governance Regulation

affordability and vulnerability. Reporting must therefore be as accurate as possible to ensure full implementation of the plan.

The first set of 27 plans submitted in 2020 were subject to an individual and collective in-depth Commission assessment[30], including country specific guidance on how Member States could make further progress in implementing the plans. Twenty-five Member States addressed different aspects of energy poverty in their plans and presented a detailed overview of policies and measures in place. Fourteen Member States reported detailed explicit indicators to analyse the impact of energy poverty on their territory and several Member States referred to the primary indicators developed by the European Energy Poverty Observatory. In this sense, eighteen Member States included the energy poverty as a distinct phenomenon; however, details on definitions, clear measurement and direct policies to address energy poverty were covered by less than a half of the Member States[31].

Despite some good coverage for the first set of plans, overall, **the assessment of the 2020 NECPS led to a conclusion that at that time, Member States were at an initial stage of addressing this phenomenon and of preparation to take a more systematic approach to addressing energy poverty.**

The update of the NECPs, foreseen in June 2024, offers another opportunity to move further to a more comprehensive and systemic approach to tackling energy poverty and to reflect ambition of the EU legal framework in terms of energy and climate objectives. In its Guidance for the 2021 - 2030 NECP update[32], the Commission stressed that all Member States should set an objective for reducing energy poverty given the spike in energy prices witnessed since 2021, not only those that have found that they have a significant number of people in energy poverty[33]. The guidance also mentions that Member States should outline how they determined their objectives in this sense, and, in order to take account of the current energy price spike, they should use the latest available data. At last, the guidance underlines the importance of reflecting affordability measures.

In addition to addressing energy poverty as described above, the recast Electricity Directive 2019/944/EU and Gas Directive 2009/73/EC also require Member States to define the concept of vulnerable customers. They specify that this concept 'may refer to energy poverty' and, inter alia, to a ban on disconnecting such customers at critical times. **Energy poverty can be seen as a form of vulnerability, but the latter encompasses a wider range of situations** that may be but are not necessarily related to income levels. Energy poverty needs to be understood in relation to the

[30] Communication from the Commission "An EU-wide assessment of National Energy and Climate Plans Driving forward the green transition and promoting economic recovery through integrated energy and climate planning" COM/2020/564 final

[31] European Commission, Directorate-General for Energy, Bouzarovski, S., Thomson, H., Cornelis, M. et al., Towards an inclusive energy transition in the European Union : confronting energy poverty amidst a global crisis, Publications Office, 2020, https://data.europa.eu/doi/10.2833/103649

[32] Commission Notice on the Guidance to Member States for the update of the 2021-2030 national energy and climate plans (2022/C 495/02)

[33] Article 3d of Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action requests Member States to assess the number of citizens in energy poverty, establish an objective to reduce this number if significant, as well as to describe the policies and measures addressing energy poverty in their National Energy and Climate Plans.

concept of vulnerability. **Energy poverty and vulnerable customers are two distinct, but intertwined concepts.** Both need to be defined at Member State´s level. Examples may be critical dependence on electrical equipment for health reasons, or socio-demographic factors (age, education) which may be exacerbated by market-based drivers (e. g. complexity of contracts, biased comparison tools, aggressive commercial practices[34]). Consumer and energy vulnerability can therefore be regarded, in general terms as a limitation on consumers' capacity to fully access the benefits provided by the internal energy market. In particular, **vulnerability is linked to the risk of becoming energy poor, while energy poverty is a descriptive condition of the status quo**[35].

Vulnerable customers and energy poverty

Concept of vulnerable customers:

In **Gas Directive 2009/73**, Article 3 defines that "Member States shall define the concept of **vulnerable customers** which may refer to energy poverty". Article 28 of the **Electricity Directive 2019/944** also points to this reference and steps forward the vulnerability definition: "The concept of vulnerable customers may include income levels, the share of energy expenditure of disposable income, the energy efficiency of homes, critical dependence on electrical equipment for health reasons, age or other criteria." The concept of vulnerability is conceived from the perspective of a contractual "customer" relationship with an energy supplier.

Definition of energy poverty:

The definition of energy poverty on the other hand, newly adopted in the recast **Energy Efficiency Directive[36] 2023/1791** adopts an approach from the "household" perspective. It stipulates in Article 2(52) that '**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.

Definition of vulnerable household:

Finally, in the perspective of the SCF implementation, **Regulation 2023/955 establishing a Social Climate Fund[37]** introduced another definition of '**vulnerable households'**. It means "households in energy poverty or households, including low income and lower middle-income ones, that are significantly affected by the price impacts of the inclusion of greenhouse gas emissions from

[34] These might include practices that unethically exploit citizens' cognitive biases. As an example, self-interested private actors might trap vulnerable citizens into agreeing that their data can be used for commercial purposes. (source: Della Valle, N. and Sareen, S., *Nudging and boosting for equity Towards a behavioural economics of energy justice*, ENERGY RESEARCH and SOCIAL SCIENCE, ISSN 2214-6296, 68, 2020, p. 101589, JRC125190).

[35] Bouzarovski, S., & Simcock, N. (2017). Spatializing energy justice. *Energy Policy*, *107*, 640-648.

[36] Directive (EU) 2023/1791 of 13 September 2023 on energy efficiency and amending Regulation (EU) 2023/955 (recast)

[37] Regulation (EU) 2023/955 of the European Parliament and of the Council of 10 May 2023 establishing a Social Climate Fund and amending Regulation (EU) 2021/1060

buildings within the scope of Directive 2003/87/EC and lack the means to renovate the building they occupy".

Each of the definitions refers to the context in which they apply, for the purpose they serve, but are coherent. All of them need to be defined at Member State level.

Renewable Energy Directive

The Renewable Energy Directive[38] (RED) encourages access to renewables to low income and vulnerable consumers through measures with information available to all consumers, including the low income and vulnerable ones. Article 21 specifies that unjustified barriers to financing should be addressed to facilitate access. Renewable energy communities will be open to all consumers, tools will be implemented to facilitate access to information and financing.

2020 Recommendation on Energy Poverty

In order to meet the legal requirement under the Electricity Directive recast to issue guidance on energy poverty to Member States[39], it was supported by the Recommendation on energy poverty[40] and its accompanying Staff Working Document[41]. Thus, the strengthened energy legislation that entered into force in 2018 and 2019 and the ensuing the 2020 Renovation Wave Communication paved the way to an exponential recognition of the phenomenon in EU law, and the need for urgent action. This was addressed by the 'Fit for 55' package.

The 2020 Recommendation 2020/1563 and its accompanying Staff Working Document 2020/960 provided guidance on energy poverty as well as on the definition of what constitutes a significant amount of energy poor households. It identified **a set of 13 energy poverty indicators**. Member States can choose those which are available and relevant to their context in order to identify energy poverty in their territory, reflecting different facets of energy poverty, use alternative data sets to reflect local realities (i.e. overheating in summer, gender, ethnical background etc.) and cross-reference income and energy consumption data jointly in order to understand affordability challenges of households in energy poverty.

A Renovation Wave for Europe strategy

In view of the clear benefits of building renovations, the Commission published the strategy 'A Renovation Wave for Europe – Greening our buildings, creating jobs, improving lives'[42] to boost renovation in the EU. Being a European Green Deal flagship initiative, the strategy places tackling energy poverty and worst-performing building at the centre. Renovations have two

[38] Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources (recast)
[39] Article 29 of Directive (EU) 2019/944
[40] Commission Recommendation (EU) 2020/1563 of 14 October 2020 on energy poverty
[41] SWD (2020) 960
[42] Communication from the Commission « A Renovation Wave for Europe – greening of buildings, creating jobs, improving lives" COM/2020/662 final

widely recognised positive economic impacts: on the one hand decreasing energy costs and thereby alleviating energy poverty, and on the other increasing the value of more energy performing buildings and improving employment opportunities in the building sector. Other benefits include better quality of living (improved indoor thermal comfort and air quality) and shorter average vacancy periods[43].

The benefits of lower energy bills are even more relevant in a context of high energy prices. Lowering energy bills is one part of the structural solutions to energy poverty, which is more efficient than affordability measures, such as income subsidies, social tariffs, or vouchers. People facing energy poverty and those living in worst-performing buildings would benefit from targeted renovations, and, consequently, see their energy costs reduced. This would allow to shield the most vulnerable households from further market price increases and volatility.

On the other hand, landlords may be tempted to pass renovation costs to tenants to cover for their upfront investment, which is why renovations should be always coupled with an enforced social protection framework. Also, a stronger focus on addressing the shortcomings of existing worst-performing buildings could further reduce their prices in market transactions. The Communication 'A Renovation Wave for Europe' encourages Member States to address major barriers to building renovation such as split incentives between owners and tenants, decision-making difficulties in multi-owner buildings, building value not fully reflecting energy performance and general low awareness of the benefits of renovation.

2. 'Fit for 55' package

Through its holistic approach, a fair, competitive, and green transition was placed at the centre of the 'Fit for 55' package tabled in July 2021 to fully reflect the European Green Deal's defining solidarity principle[44]. The transition towards climate neutrality offers opportunities to reduce systemic inequality. New instruments and revisions to existing ones were put forward to strengthen the overall energy poverty legislative and financial framework. The package ensured that vulnerable and energy poor households are targeted to access energy efficiency and renewable energy measures that help them tackle their energy poverty, or risk at, at the root cause and to mitigate the impact of price-based measures, which, due to their regressive nature, tend to disproportionally impact low income households as they spend higher share of their income on carbon-intensive goods to meet their basic needs[45]. Together, the instruments complement and reinforce each other. The concrete provisions of relevance per instrument are detailed below starting with the revision of the Energy Efficiency Directive that for the first time introduces in the EU acquis an EU wide definition of energy poverty.

[43] Wells et al., 2015 , Scopus - Document details - Indoor air quality and occupant comfort in homes with deep versus conventional energy efficiency renovations.
Gabel et al., 2022, Scopus - Document details - IAQ and residents' health before and after renovation - The Danish HOME-Health study)

[44] EUR-Lex - 52021DC0550 - EN - EUR-Lex (europa.eu)

[45] Nature (2023) EU climate action through an energy poverty lens

Revision of the Energy Efficiency Directive

First adopted in 2012, the Energy Efficiency Directive[46] was updated in 2018 and 2023, setting rules and obligations for achieving the EU's ambitious energy efficiency targets. The Energy Efficiency Directive (EED) recast (2023/1791) is now one of the key legal acts that tackles energy poverty as a priority. It should be addressed inter alia through facilitating access to energy efficiency and services for energy poor and for population groups at risk of energy poverty.

Article 2 of **the EED recast 2023/1791 introduces an EU wide definition of energy poverty**. Such an EU wide definition provides clarity on the multidimensional character of energy poverty, contributes to a more harmonised approach to this issue across the EU and lays the foundation for a more sustainable and structural solution to tackling energy poverty, notably by reducing energy use through targeted energy efficiency measures. Member States will have two years from the publication of the directive to transpose it and comply with EU law.

The EED recast 2023/1791 specifically focuses on energy poor and vulnerable households in energy efficiency measures which Member States want to introduce. In that regard, it obliges Member States to implement policy and financing measures aimed specifically at people affected by energy poverty, vulnerable customers, low-income households and, where applicable, people living in social housing under the energy savings obligation[47]. This obligation is designed in such a manner that Member States achieve a share of the total amount of the required end-use energy savings also in these population groups. The same provisions also require Member States to ensure that their national policy mix has no adverse effects on vulnerable customers and final users, people affected by energy poverty and, where applicable, people living in social housing, and that those policies effectively alleviate and reduce energy poverty. Finally, Member States are asked to establish financing facilities, or to use existing ones, to finance energy efficiency improvement measures, use lending products, involve financial institutions, and mobilise private financing aimed at energy efficiency measures. They are further encouraged to establish a National Energy Efficiency Fund financed from national and EU sources, including from revenues from the allowance auctions pursuant to the EU Emission Trading System on buildings and transport sectors, to preferentially support energy efficiency measures for vulnerable customers, low-income households, people affected by energy poverty or, where relevant, living in social housing[48].

In pursuit of an energy transition that is fair and just, the EED recast 2023/1791 also imposes an obligation on Member States to implement energy efficiency improvement measures to **mitigate some of the distributional effects that may arise from other policies and measures**, such as taxation measures implemented according to Article 10, or the inclusion of buildings and road transport sector in a new and separate emissions trading system (ETS2), and to foster the roll-out of enabling funding, public guarantees and financial tools.

[46] Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC Text with EEA relevance

[47] Article 8 - 10, Article 2 and Article 30 of EED recast

[48] Article 28(9) EED Recast

Importance of an energy poverty definition

Defining the concept of energy poverty at national level and making it publicly available is a first step of a structured approach to anchor energy poverty into the national legislative framework, as proposed in the 2020 Recommendation on energy poverty and further in the EED recast 2023/1791. This has guided the EU's gradual acknowledgment of the problem since the integration of vulnerability of customers in the Electricity and Gas Directives[49], and the stress on the appropriate regulation and policy proposals to include mitigating measures. Lacking a definition of energy poverty at European level has led, until now, to diverging approaches at Member States´ level, which made it difficult to reconcile and compare data at the EU level. Despite this, some Member States have progressed and developed their own definitions.

In a sound policy-making, the first step is to identify the problem and its wider context, and design the right response to tackle it, be it on the local, regional, national, and/or EU level. It helps to start a debate, clarify goals and objectives, and contribute to feasibility and effectiveness of actions and solutions. It plays a crucial role in translating political commitments and aspirations into both long-term and medium-term strategies and action plans to steer the efforts of the government in pursuing these commitments.

An energy definition should lead to a more comprehensive and coherent approach to fighting energy poverty. In some Member States, it led to a coordinated approach between the national authorities and the involved stakeholders. Some Member States still miss an official definition of energy poverty, but at the same time it is evident that awareness of the issue as well as measures to address it have been in place for years. However, the existence of a definition of energy poverty improves the ability to identify the issue and adjust or propose measures and schemes to tackle it better, both in the EU and national contexts.

A Social Climate Fund Regulation

The objective of the Social Climate Fund[50], operational between 2026-2032, is to address and prevent the distributional impacts on vulnerable groups in the EU that may arise from the coverage of buildings and road transport by a new ETS2. Its size is EUR 65 billion. With Member States' national contributions agreed at 25 % of the total estimated costs of the Social Climate Plans, the Fund mobilises EUR 86.7 billion.

It provides funding to Member States to support **vulnerable households, micro-enterprises and transport users**[51]**, in particular households in energy or transport poverty, that are particularly affected by ETS2**. It finances investments in increased energy efficiency of buildings, decarbonisation of heating and cooling of buildings, including the integration of energy

[49] Directives 2009/72/EC and 2009/73/EC

[50] Regulation (EU) 2023/955 of the European Parliament and of the Council of 10 May 2023 establishing a Social Climate Fund and amending Regulation (EU) 2021/1060

[51] 'Vulnerable households', 'vulnerable micro-enterprises' and 'vulnerable transport users' are defined in the Regulation 2023/955 of the European Parliament and of the Council of 10 May 2023 establishing a Social Climate Fund (Article 2)

from renewable sources, and granting improved access to zero- and low-emission mobility and transport. Pending the impact of those investments on reducing costs and emissions, the Fund will also be able to finance temporary direct income support for vulnerable households and vulnerable transport users.

The Social Climate Plans will implement the Social Climate Fund and Member States must draft and submit them to the Commission by 30 June 2025 to access the finance. In their Plans, they must explain how the definition of energy poverty is to be applied at the national level, state linkages to the objectives set in the National Energy and Climate Plans, estimate, and identify vulnerable households in energy poverty, propose how they intend to address them through energy efficiency measures and through income support and describe how they intend to reduce energy poverty.

Since transport poverty has not yet been defined at Union level, a first definition was introduced for the purpose of this Regulation as 'individuals' and households' inability or difficulty to meet the costs of private or public transport, or their lack of or limited access to transport needed for their access to essential socioeconomic services and activities, taking into account the national and spatial context'[52]. Transport poverty is usually caused by one or a combination of factors such as low income, high fuel expenditures, or a lack of affordable or accessible private or public transport. Transport poverty can particularly affect individuals and households in rural, insular, peripheral, mountainous, remote, and less accessible areas or less developed regions or territories, including less developed peri-urban areas and the outermost regions.

Energy Performance of Buildings Directive (EPBD)

The building sector is crucial for achieving the EU's energy and environmental goals. At the same time, better and more energy efficient buildings will improve the quality of citizens' life and alleviate energy poverty while bringing additional benefits, such as health and better indoor comfort levels, green jobs, to the economy and the society. The amended Energy Performance of Buildings Directive 2018/844/EC[53], currently in force, covers a broad range of policies and support measures that will help national EU governments boost energy performance of buildings and improve the existing building stock. Member States must outline relevant national measures that help alleviate energy poverty as part of their long-term renovation strategies to support the renovation of the national stock of residential and non-residential buildings. Recital 11 of Directive 2018/844/EU also clarifies that the need to alleviate energy poverty should be taken into account, in accordance with criteria defined by the Member States. The recital further clarifies that while outlining national actions that contribute to the alleviation of energy poverty in their renovation strategies, the Member States have the right to establish what they consider to be relevant actions.

[52] Article 2(2) of Regulation 2023/955

[53] Directive (EU) 2018/844 of the European Parliament and of the Council of 30 May 2018 amending Directive 2010/31/EU on the energy performance of buildings and Directive 2012/27/EU on energy efficiency (Text with EEA relevance)

In 2021, the Commission proposed a revision of the Directive 2018/844[54] that, similarly to the recast Energy Efficiency Directive 2023/1791 and in the spirit to ensure a fair transition proposed energy poor and vulnerable households as a priority target population for the measures that mitigate possible negative social effects and maximise their social benefits, notably as regards improving living conditions in worst-performing buildings and alleviating or even preventing energy poverty.

Gas Directive

Article 3 of Directive 2009/73[55] sets out that Member States shall take appropriate measures to protect final customers and ensure that there are adequate safeguards to protect vulnerable customers. In this context, each Member State shall define the concept of vulnerable customers which may refer to energy poverty and, inter alia, to the prohibition of disconnection of gas to such customers in critical times. Member States shall ensure that rights and obligations linked to vulnerable customers are applied. Member States shall further take appropriate measures to ensure the necessary gas supply to vulnerable customers or provide support for energy efficiency improvements to address energy poverty.

In 2021, the Commission proposed a revision of the Gas Directive and the Gas Regulation[56] to support the decarbonisation of the energy sector by ramping up the production of renewable gases and hydrogen and facilitating their integration in EU energy networks. The proposal introduces provisions on energy poverty to align with comparable level of protection and requirements set out in the recast Electricity Directive 2019/944/EU.

Energy Taxation Directive (ETD)

The Energy Taxation Directive 2003/96/EC lays down structural rules and minimum excise duty rates for the taxation of energy products used as motor fuel and heating fuel, and electricity. It does not include specific provisions for exempting energy poor households of the minimum taxation levels. The proposal of the Commission for the revision of the Directive[57] includes the possibility for Member States to exempt vulnerable and energy poor households from taxation on the supply

[54] Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on the energy performance of buildings (recast)

COM/2021/802 final

[55] Directive 2009/73/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC

[56] Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on common rules for the internal markets in renewable and natural gases and in hydrogen
COM/2021/803 final

[57] Proposal for a Council Directive restructuring the Union framework for the taxation of energy products and electricity (recast), COM/2021/563 final

of heating fuels and electricity by introducing a transitional period of ten years to attain the minimum rate of taxation. The objective by the Commission to propose such targeted exemption is to help support and protect vulnerable households during the transition to cleaner energy sources. Exclusively for the purpose of this Directive 'vulnerable households' shall mean households that are below the 'at risk of poverty'" threshold, defined as 60% of the national median equivalised disposable income.

2023 Reform of the Electricity Market Design

The Commission proposed a reform of the Electricity Market[58] in March 2023 that aims to make consumer bills less dependent on volatile short-term prices, driven by high prices of fossil fuels. The proposal aims thus for greater integration of renewables and flexibility, reducing dependency on fossil fuels and to curb the impact of volatile short-term market prices on their revenues. The proposal includes consumer protection measures for example through an obligation to have fix term-fix priced contracts or increase in possibility of energy sharing and is relevant for vulnerable consumers. The main addition of the proposal for poor and vulnerable consumers is that they should be adequately protected from electricity disconnections, and they should, as well, not be put in a position that forces them to disconnect.

IV. ENERGY POVERTY DIAGNOSIS

To diagnose energy poverty, it is necessary to measure it based on indicators that can reliably and effectively capture its different facets and where possible comparable at EU level. A significant diversity of indicators and methods can be applied to study a complex and multidimensional problem which energy poverty is, and the diagnosis process is inevitably shaped by the context, available data, and the indicators chosen to conduct the analysis. The availability of data and selection of adequate indicators therefore become increasingly more relevant at European and national levels, particularly in the context of the European Semester and in the framework of the update of the National Energy and Climate Plans in 2024 and the Social Climate Plans, to be developed in the framework of the Social Climate Fund by mid- 2025.

1. Indicators to measure energy poverty

A methodology for measuring energy poverty and a set of indicators were published in the Commission Recommendation on Energy Poverty [59] and the accompanying Staff Working Document SWD(2020)960. Both documents explain the origin and source of the various indicators

[58] Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL amending Regulations (EU) 2019/943 and (EU) 2019/942 as well as Directives (EU) 2018/2001 and (EU) 2019/944 to improve the Union's electricity market design
COM/2023/148 final

[59] Commission Recommendation (EU) 2020/1563 of 14 October 2020 on energy poverty
C/2020/9600

that can be used to diagnose energy poverty and they recommend using a variety of 13 indicators to capture the different aspects of energy poverty.

The 2020 Recommendation identifies a set of key indicators of energy poverty based on available Eurostat data and based on criteria of data availability, reliability and robustness. The indicators cover the three energy poverty angles: low income (most indicators are based on 60% of median income as a reference point), high share of energy in spending and low energy efficiency, particularly in housing. The Commission stresses that no single indicator alone is sufficient to capture the multidimensional aspects of energy poverty. Hence it calls on Member States to use a multitude of indicators.

Each of the indicators has advantages and disadvantages and Member States need to take this carefully into account when using them. They might decide to use additional domestic indicators (based on the national or local level data) coming from their national statistical offices. Some Member States also use composite indicators. There are no composite indicators from Eurostat.

The following table provides an analysis of the main EU level indicators stating their pros and cons.

	Title of the indicator	**Strengths**	**Weaknesses**	**Observations**
1.	Inability to keep home adequately warm	Updated annually. This indicator exists for different income groups – it allows to assess self-perceived ability to keep home warm only for low-income groups. It also allows to compare the results among different income groups. Above all, it is a part of the at risk of poverty and social exclusion ('AROPE') headline indicator[60] that has been underpinning the EU2020 poverty and social exclusion target and is now underpinning the new 2030 EU poverty and social exclusion reduction target.	Subjective indicator based on self-assessment. Adequacy is generally referred to and depends on individual's preferences and perceptions, which can vary among people across Member States and within the same Member State, depending on differences in temperature and habits.	The most common consensual-based indicator. The inability to keep home adequately warm indicator represents the share of (sub-) population not able to keep their home adequately warm, based on the self-assessed question in the EU-SILC survey "Can your household afford to keep its home adequately warm?" [61] In this context, adequacy is generally referred to and depends on individual's preferences and perceptions, which can vary among people across Member States and within the same

[60] Glossary: At risk of poverty or social exclusion (AROPE) - Statistics Explained (europa.eu)
[61] Glossary: Severe material and social deprivation rate (SMSD) - Statistics Explained (europa.eu)

				Member State, depending on differences in temperature and habits.
2.	Arrears on utility bills	Updated annually It captures an essential dimension of energy poverty relating to affordability. Calculated relatively straightforward from the share of households responding to the EUROSTAT survey.	Subjective indicator based on self-assessment. It does not refer solely to the energy bills. It does not depict the different types of energy needs as is the case of underconsumption of households that may not have arrears due to their energy consumption limiting behaviour.	Indicator represents the share of population / households with arrears on utility bills, based on the question "In the last twelve months, has the household been in arrears, i.e., has been unable to pay on time due to financial difficulties for utility bills (heating, electricity, gas, water, etc.) for the main dwelling?"
3.	High share of energy expenditure in income	It is a simple metric to identify households that have excessively high energy costs in relation to income	Identifies the proportion of budget spent on the energy bills in a household; however, it is based on national income levels and cannot be used for comparing energy poverty levels in different Member States. Data collected with a frequency of only 5 years	The indicator represents the proportion of households whose share of energy expenditure in income is more than twice the national median.
4.	Low absolute energy expenditure	It captures households that have abnormally low energy consumption, and it can reveal "hidden energy poverty".	It captures the economic dimension in each Member-state, specifically cases of underspending, but leaves out details, such as energy efficiency, conditions of households, and climate variability. It is measured only every 5 years.	Share of households whose absolute energy expenditure is below half the national median.
5.	Share of individuals living in	Especially when targeted to people at-risk-of poverty this indicator is	It is measured only ever 5 years (although it can be uprated by using the	The 10% threshold approximates the average median

	households which spend more than 10% of their budget on residential energy electricity, natural gas, liquid fuels for heating like heating oil, solid fuels for heating like coal or wood, and district heating)	effective at capturing vulnerable people which spend a relatively too high share of their income on energy. The fixed threshold makes this indicator particularly sensitive to cross-country differences in expenditure patterns. For example, there will be systematically more energy poor households in countries where the use of residential energy is higher (i.e., due to climate or technology) or where prices are higher due to lower purchasing power.	different components of the HICP index).	residential energy cost in the budget (i.e., total expenditure) of the poorest 30% of the EU households. For comparison, the median EU household spends 6.8% on residential energy.
6.	Expenditure on electricity, gas and other fuels as a proportion of total household expenditure	Fuels price is an important indicator for assessing energy poverty directly linked to one of the three major causes of this issue, the cost of energy. Collected bi-annually.	Contextualizing is needed to link this indicator with data of the households' fuel / technology mixes at country, regional and local level, to better understand the variety and level of use of each end use and energy carrier.	
7.	Electricity prices for household consumers – average consumption band.	Energy prices in general, and electricity prices in particular, are important indicators for energy poverty assessment, directly linked to one of the three major causes of this issue, the cost of energy. Collected bi-annually.	The share of electricity in total household energy use differs widely across member states reflecting different energy consumption patterns, equipment ownership rates, building construction standards, and climate.	The household electricity prices indicator represents the electricity prices for household consumers, band DC 2500-5000 kWh/yr consumption, all taxes, and levies included.
8.	Gas prices for household consumers – average consumption band	Energy prices in general, and gas price are important indicators for energy poverty assessment, directly linked to one of the three major causes of this issue, the cost of energy. Collected bi-annually.	Analysing in a monetary currency such as the euro enables a more direct comparison but provides no information on the relative affordability. Therefore, prices are also expressed in Purchase Power Standard.	The household natural gas prices indicator represents the natural gas prices for household consumers, band 20-200 gigajoule consumption, all taxes and levies included.

9.	Gas prices for household consumers, lowest consumption band	Essential to calculate energy expenditure, which is a variable that has been extensively and historically used in energy poverty measurements. Relevant during energy price crisis. Collected bi-annually.	Analysing in a monetary currency such as the euro enables a more direct comparison but provides no information on the relative affordability. Therefore, prices are also expressed in Purchase Power Standard .	Natural gas prices can be higher in specific countries, but the social programs and bill support should be considered when analysing energy poverty, as they can significantly mitigate the energy burden for households. For the Eurostat natural gas and electricity data collection, countries are instructed to include different forms of energy cost compensation in the final price.
10.	Share of population with leak, damp or rot in their dwelling – total population	Gives indication on one of the structural causes that affects energy poverty the quality oy dwellings. Updated annually.	Subjective indicator based on self- assessment, available in 2020 and then every three years from 2023.	The severe housing deprivation rate is presented along with the following dimensions: • age group, sex and income group (total, below 60% of median equivalised income, above 60% of median equivalised income) • income group, household type • household type • tenure status • degree of urbanisation • income quantile
11.	Final energy consumption per square metre in the residential sector, climate corrected.	It refers to one of the main causes of energy poverty energy performance of the building stock. Updated annually.	Consumption may be affected in consumer preferences, habits and needs, price levels, what the energy is used for (heating, cooling, cooking, lighting, other energy uses, such as powering appliances) and the number and type of appliances used.	

Indicators have limitations, such as data availability at European level, and they can also be affected by time lag in data collection. In case of EU Statistics on income and living conditions

(EU SILC), data[62] are collected and available in one-year cycles. The Household budget survey (HBS) data[63] are collected every five years and published only after several years of statistical validation. Furthermore, the indicators are primarily collected at the national level, with a view to a uniform European framework aiming to produce comparable data between Member States, thus not capturing local realities and contexts. There is also a voluntary quarterly data collection on living conditions over the 2021 - 2023 period carried out by Eurostat. In 2023, it includes some ad-hoc energy poverty variables (ability to keep home adequately cool, arrears on utility bills and affordability of energy consumption (covering mainly electricity, natural gas and oil to be used for heating, cooking, cooling, lighting and electric appliances) implemented in a limited number of countries.

Experimental results from the Commission's AMEDI+[64] project suggest that the incidence of energy poverty as a share of the total population substantially varies across indicators. Perception-based can be considered as lower bounds, and combining them with some expenditure-based indicators, while keeping them targeted to low and middle-income people, can help to better identify energy poor people.

A dashboard with indicators used for national and European level measurement is available on the Commission website[65] together with a guidance for addressing the measurement of energy poverty at local level. The dashboard enables comparison among different indicators for one country as well as comparison of indicators across the EU and an alignment with the local energy poverty indicators. For each indicator of the dashboard, a specific guidance on their reading and usage is provided and they are backed by a larger peer-reviewed academic report "Energy Poverty National Indicators: Insights for a more effective measuring"[66] complemented by another report published in October 2023[67]. It elaborates on the background data, their use and how each indicator can be combined and cross checked.

For measuring energy poverty at local level, the **Covenant of Mayors for Climate and Energy in Europe**, with the support of Energy Poverty Advisory Hub ('EPAH') and the Joint Research Centre, proposed a set of over 20 indicators for assessing and monitoring energy poverty[68]. Grouped into five macro-areas, these indicators can be used for the Covenant of Mayors reporting and monitoring framework serves as an instrument for planning and implementation of energy poverty measures.

2. Challenges to diagnosing energy poverty

There is a great diversity among EU countries as regards market situation, forms of energy mix and costs, average income levels and income distributions, the share of population at risk of

[62] https://ec.europa.eu/eurostat/web/microdata/european-union-statistics-on-income-and-living-conditions
[63] https://ec.europa.eu/eurostat/web/household-budget-surveys
[64] "Assessing distributional impacts of geopolitical developments and their direct and indirect socio-economic implications, and socio-economic stress tests for future energy price scenarios (AMEDI+)" running from 2023 until 2026. AMEDI: Assessing and Monitoring Employment and Distributional Impacts - Employment, Social Affairs & Inclusion - European Commission (europa.eu)
[65] https://energy-poverty.ec.europa.eu/observing-energy-poverty/national-indicators_en
[66] EPAH_Energy Poverty National Indicators Report_0.pdf (europa.eu)
[67] Report will be available on the website www.energypoverty.eu
[68] Covenant-reporting-guidelines-energy poverty-final.pdf (europa.eu)

poverty, social exclusion, the energy performance of the building stock, household energy consumption behaviour, demographics, climatic conditions, etc. There is also diversity in the approaches and policy measures that have been implemented so far to deal with situations of energy poverty and vulnerability. The causal multidimensionality of energy poverty, the variability of its expression over space and time, and its private nature translate into persisting difficulties when it comes to its measurement.

Since the publication of the 2020 Recommendation on energy poverty, some gaps have become apparent in the way Member States report on energy poverty. Most national energy poverty strategies limit their assessment and monitoring to the use of material deprivation indicators from the EU Statistics on income and living conditions. While these indicators have some advantages regarding data collection, they do not constitute a comprehensive approach to the issue and are not explicitly collected for energy poverty evaluation. They particularly fail to explain the different and complex dynamics of vulnerability to energy poverty, including their variability over space and time or other issues, such as hidden energy poverty[69]. Such poverty could be included in the metric of energy poverty with the use of relative expenditure-based indicators of households (a metric that uses the share threshold, median share, or median expenditure, but limits the space to poor households). Moreover, one single metric may be insufficient to fully capture this phenomenon. A few other variables could be useful: deprivation metrics (included in the SILC survey) and information on the Member State's energy mix.

To fully capture the phenomenon, there are other factors that need to be considered. Hidden energy poverty could be included in the metric of energy poverty with the use of relative expenditure-based indicators of households (a metric that uses the share threshold, median share, or median expenditure, but limits the universe to poor households), also combined with subjective indicators, such as those based on questions on whether energy consumption is limited to afford other basic goods. Future efforts in diagnosing and tackling energy poverty should also consider aspects related to energy efficiency, use of solid fuels or combined distribution of income and energy consumption. By utilising both EU-SILC and HBS data together, insights can be obtained regarding the vulnerabilities and impact of energy prices on various household types. This includes examining the effects of energy taxation and income support schemes, as well as other compensational measures.

It may also be interesting to consider the values of indicators among the 'at risk of poverty' (AROP) and non-AROP sub-populations as well as across the income distribution. AROP population faces a significantly higher risk of being unable to keep homes adequately warm. At the same time, the phenomenon affects a non-negligible number of people in the middle class who are not even at the bottom of the income distribution[70]. As in the case of inability to keep home adequately warm, breakdowns between AROP and non-AROP and across the income distribution

[70] For the EU27 in the year before SILC 2020: only 53% of the total population unable to keep their homes adequately warm were in the first two income deciles while 26.1% were in the income deciles 4 to 7.

show that **although energy poverty affects mostly the AROP population, a non-negligible share of the middle-class population is also affected**[71].

Another issue is the summer (or cooling) energy poverty. In Europe, heat waves become much more common[72]. While the challenges of maintaining a home warm during the winter are well documented, the cooling deficiency and heat risk require more attention.

While cooling poverty is now well captured in the EU definition on energy poverty, European wide data is only available for the year 2012, with 19% of EU population reporting 'not being able to keep their home adequately cool during summer'. This indicator was again collected in 2023, with expected publication of the results in 2024.

There is mixed evidence based on different countries and methodologies regarding the year-by-year trends on heat risk. In some cases, excess deaths remain high, especially during extreme weather events, in others there is a reduction in heat risk attributed to implementation of prevention plans, a higher level of adaptation of the local population and greater awareness of the population about exposure to heat. Air conditioning systems ownership is relatively low in Europe, but there is an increasing trend. The increase in cooling systems can pose an extra challenge to the EU's climate and energy targets as it will lead to increased energy demand during the summer months[73].

V. GOVERNANCE

As energy poverty is a multisectoral and multidisciplinary task, **working across departments at national level and governance structures at subnational level is essential to tackle the issue from various policy sectors´ perspective, in particularly from the perspective of social and energy policies**. In theory, in the ecosystem of energy poverty, experts identify the **direct stakeholders**, such as public authorities, energy suppliers, social services, NGOs, households and landlords, and **indirect stakeholders** such as the construction sector and the developers, financial institutions and banks, justice system and health or social services´ professionals. Each of these potential stakeholders can have a role to play, depending on the reality of the national, regional, or local context.[74] In addition, it is important to ensure regular dialogue of authorities with frontline workers at local level.

Various practices can be flagged as particularly positive. **Ireland implemented a cross-Departmental and inter-agency Energy Poverty Steering Group** to develop, implement, and oversee policies and measures aimed at alleviating energy poverty as a follow up of its Energy Poverty Action Plan launched in December 2022. Among the key tasks of this steering group, **dialogue with relevant stakeholders** is a relevant objective and the Irish government committed

[71] For the EU27 in the year before SILC 2020: only 48.5% of the total population with arrears on utility bills was in the first two income deciles and 27.5% of it was in income deciles 4 to 7.

[72] https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Excess_mortality_-_statistics#Excess_mortality_in_the_EU_between_January_2020_and_May_2023

[73] JRC factsheet, Energy poverty, health, excess deaths and government response, JRC135269

[74] EPAH lunch talk #5 - takeaways - Engaging all stakeholders for a comprehensive approach on energy poverty (europa.eu)

to hold an annual plenary session with stakeholders to ensure their voices are heard as part of the annual reporting process.

Similarly, the Polish Ministry of Climate and Environment set up **the Workgroup for supporting vulnerable customers and reducing energy poverty in Poland** in February 2021. Itis a platform for the exchange of knowledge and experience of representatives of central administration, local governments, the scientific community, as well as non-governmental organizations. The Workgroup developed, among other things, a definition of energy poverty as well as a "Bank of Good Practices" containing a synthesis of crucial good practices aimed at reducing energy poverty, especially for local communities. An outcome of the Workgroup is the definition of

In Slovakia, the Regulatory Office for Networked Industries (an energy regulator) established a **working group** which aims to **develop future energy poverty definition and implementation framework** drafted by the end of 2023. Its task is to draft, among others, an implementation roadmap. Besides the Energy Regulator, the working group is composed of the Ministry of Finance, Ministry of Labour and Social Affairs, Ministry of Economy, Ministry of the Environment, Ministry of Investments and Regional Development, Ministry of Education and the Slovak Academy of Science.

1. Legal framework

The Governance Regulation 2018/1999 [75] Article 10 sets that **Member States are required to establish a multilevel climate and energy dialogue.** The clear and precise definition of the objectives and the role of each entity involved in governance is key in order to avoid inertia and inaction.

The Governance Regulation establishes a governance mechanism to ensure public participation in the preparation of the NECPs, also at the level of regional cooperation and participation of stakeholders engaged in energy poverty. Article 10 sets the public consultation context, requiring that public is involved and informed. In case a national indicative objective to reduce the number of households in energy poverty is applicable, Member States should report on progress and provide quantitative information on the number of households in energy poverty and policies and measures addressing it. **The EED recast further requires that Member States take appropriate measures to support multilateral dialogue** with relevant partners, too, including owners, tenants and consumer organisations, energy providers, energy communities etc. with the aim to tackle the split incentives between owners and tenants. **Member States should also foster technical assistance for social actors to promote vulnerable customer´s active engagement in the energy market and positive changes in their energy consumption behaviour** [76] and encourage cooperation with private actors providing services such as energy audits and energy consumption assessments, financing solutions or execution of energy renovations[77].

[75] Regulation (EU) 2018/1999 of 11 December 2018

[76] Directive on energy efficiency (recast), Article 22(3)(d)

[77] Article 21 of EED recast (2023/1791)

Finally, the **Social Climate Fund stipulates that the Social Climate Plans must be consulted with regional and local representatives and with the economic and social stakeholders**[78]. The following elements must be thoroughly described: impact of including greenhouse gas emissions from buildings and transport within the scope of the ETS Directive on households and on incidence of energy poverty and explanation on how the definition of energy poverty is applied at national level. When it comes to reporting and application of partnership and consultation with stakeholders, the NECPs´ governance systems and the Social Climate Pans are to be interlinked.

National energy poverty observatories

Energy poverty observatories may be an interesting governance tool to bring together key actors and jointly implement projects. A national energy poverty observatory supports national professionals, to enhance the understanding of energy poverty in a country and can help strengthening government organisations overall, including at the local level. In addition, it can also function as a platform or a 'one-stop shop' for discussing issues and solutions. They may also participate in the national / regional or local debates by providing key insights into energy poverty while proposing policy initiatives.

Several Member States, such **France, Belgium, Italy, Spain,** and **Greece** have set up such energy poverty observatories. While many of those observatories are established at universities, as is the case for the University of Comillas in Spain, the observatory in France is led by ADEME, the French agency for environment and energy and in Greece it is established within the Centre for Renewable Energy Sources and Saving and in Italy at the Ministry for Environment and Energy Security . These centres contribute to data collection and analysis and help shape the response of Member States (for example in drafting the national energy poverty strategies, the NECPs and their updates or the national Recovery and Resilience Plans).

2. Role of various levels of governance in identifying and monitoring energy poverty

While national-level evaluations are essential to understand the problem and set the regulatory framework, regional and local assessments can provide more detailed and insightful perspectives. **Being closer to citizens, local governments are particularly well positioned to notice factors that influence energy poverty and its impacts.** Early identification of the households at risk of energy poverty can be done well by administrations at the local and regional levels and by civil organisations. All of them may have more detailed data and information regarding the population. The direct engagement with the local stakeholders and the population, through surveys, interviews, workshops, and co-creation sessions, may be important for the local diagnosis phase and to build trust.

The Energy Poverty Advisory Hub (EPAH) directly supports cities or municipalities which want to launch local actions on energy poverty and need guidance. Through its support, cities will be guided by expert organisations to take their next step in local energy poverty planning. it has

[78] Article 5 of Regulation 2023/955 of 10 May 2023

provided a handbook on how to diagnose energy poverty at local level[79] and provides free access to practical learning tools that can guide municipalities in the process to take measures to alleviate energy poverty[80].

PROSPECT and PROSPECT+ are peer-learning projects aimed to support local and regional authorities in implementing their sustainable energy and climate plans with help of innovative financing schemes. In PROSPECT, 149 local and regional authorities took part, together with 46 energy agencies and networks[81]. PROSPECT+ focuses on peer leaning in 5 areas - public buildings, private buildings, public lightning, transport and cross-sectoral issues.

Under **H2020 Energy Efficiency**, a number of projects that developed specific energy advice to energy poor / vulnerable households have been financed. For example, the **ASSIST project[82]** has managed to establish a successful model of setting-up networks of Home Energy Advisors providing advice to energy poor / vulnerable consumers to enable them to be active on the energy market and change behaviour towards a more efficient energy consumption.

The **STEP project[83]**, in which **Bulgaria, Cyprus, Czechia, Latvia, Lithuania, Poland, Portugal Slovakia and the United Kingdom** participate, trained 1000+ frontline workers, including social workers, nurses, energy ombudsmen and energy suppliers, to help them educate consumers on energy poverty. The project also developed 9 national language online training modules for these frontline workers.

VI. TACKLING ENERGY POVERTY THROUGH AFFORDABILITY MEASURES AND POLICIES

Tackling energy poverty means ensuring access to affordable and efficient domestic energy. To address households in energy poverty, Member States use a combination of approaches and actions, also described in Article 28 of the EED recast, which may vary from direct income support schemes that react to a lack of access to energy and affordability situation of the vulnerable households to structural measures with long-term effects.

In a situation of very high energy prices, it is evident that a comprehensive government response is essential to safeguarding access to energy and public health in the face of energy crises. **Addressing affordability is, in general, the first step** and, as it was seen during the recent energy prices crisis, an emergency step to address energy poverty. During 2022, price caps, the use the proceeds from the temporary solidarity contribution and other support measures have helped reduce costs for consumers in the EU. It is expected that Member States will continue national budgetary policy measures to reduce the impact of energy price hikes on citizens' access to energy and public health.

[79] How to guide energy poverty diagnosis? This new handbook can help you! | Covenant of Mayors - Europe (europa.eu)
[80] EPAH online courses (europa.eu)
[81] https://h2020prospect.eu/ and comact-d3.1-toolbox-of-financing-models-final-layout.pdf (oneplanetnetwork.org)
[82] ASSIST - Support Network for Household Energy Saving (assist2gether.eu)
[83] Results - STEP project - Solutions to tackle energy poverty (stepenergy.eu)

Nevertheless**, affordability measures do not address the root causes of energy poverty. Investments into structural measures are thus needed in parallel.** Targeted policies and interventions aiming to expand energy assistance programmes and promote energy-efficient housing can be pivotal in mitigating energy poverty and collectively alleviating the burden of excess mortality linked to it. Such measures primarily focus on reducing the need for households' energy consumption through improving the energy efficiency of dwellings and household appliances, heating system improvements, change in behaviour through energy advice and support for renewable energy sources. These are investments in structural improvements that generate a long-lasting reduction of energy expenses and generate other benefits of wellbeing, health and climate objectives. Generally, they are considered to have a long-term impact as they address the underlying causes of energy poverty.

In addition, as it set out later in this chapter, the **energy prices crisis demonstrated the need to replace price measures that are short term and can be damaging for both competition and incentives to a more structural approach, by income support, that can be needed to target unexpected price hikes especially for energy poor.**

It is however also important to underline that income support and investment measures are not to oppose each other but should be complementary in a transition to tackle the deep roots of energy poverty and allow people to move out of energy poverty. Therefore, income support measures should be designed in a comprehensive manner as short-term measures, with clear objectives and targets and should be aligned with the longer-term goal to reduce energy poverty and achieve the energy transition.

1. Affordability of energy and energy poverty

The link between affordability and energy poverty seems obvious. However, the two notions are often confused. What is important is that energy affordability is only one facet of energy poverty, which is a multidimensional phenomenon. **Affordability is a key principle of EU energy policy and is firmly enshrined in the Energy Union, the European Green Deal and REPowerEU**. The notion of affordability is widely discussed in the context of energy services and has been globally defined as the ability of households to purchase a necessary quantity or level of energy services without suffering undue financial hardship[84]. Ensuring access to affordable, reliable, sustainable, and modern energy services to achieve energy justice towards 2030 is also emphasised by the objective 7 of the Sustainable Development Goals ('Affordable and Clean Energy') and principle 20 of the European Pillar of Social Rights ('Access to essential services') and is vital for reducing existing socio-economic inequalities.

While affordability is not as such defined in the EU Treaty, it is mentioned in Article 1 of Protocol on Services of General Interest[85] as one of the shared values of the Union in respect of services of general economic interest. Affordability has been an objective from the beginning of liberalization

[84] Toward defining and measuring the affordability of public utility services (worldbank.org), 2009
[85] "a high level of quality, safety and affordability […]" https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:12012E/TXT P.262

of energy market, to be achieved by bringing greater competition into electricity and gas markets in the interest of creating more competitive markets and reductions in prices. The 2015 European Energy Union strategy[86] reiterates the necessity of "an integrated energy market […] to create more competition, lead to greater market efficiency through better use of energy generation facilities across the EU and to produce affordable prices for consumers." The strategy also recalls the fundamental approach of EU energy policy where "citizens [are to] take ownership of the energy transition, benefit from new technologies to reduce their bills, participate actively in the market, and where vulnerable consumers are protected." The crisis showed that "competitive prices" as targeted by Electricity Directive 2019/944 are not anymore only associated to fossil fuels, as the cost competitiveness of renewable energy has improved in the last decade[87].

Complexity of affordability aspects[88]

The complexity of the affordability concept gives rise to substantive and definitional issues. Different approaches to measuring affordability can produce varying estimates of the number of households in need and the dynamics over time.

There are two main approaches towards measuring affordability. **The "energy spending as a budget share" approach** is commonly used to assess affordability of energy consumption. This approach considers energy consumption to be an essential good that every household should be able to afford in order to maintain a decent standard of living. Policy makers determine a critical threshold (usually between 5% and 10%). Households exceeding this threshold are considered to have an affordability issue for energy consumption, exhibiting what is referred to as "energy poverty".

This approach is helpful in identifying households facing affordability issues but does not provide a comprehensive understanding of energy poverty. This would require additional indicators that consider accessibility of energy services (in terms of impact of limited supply or high fixed costs), energy efficiency improvements and the subjective well-being of households.

The second way to measure affordability, the **"residual income approach"**, examines the amount of income that remains for a household after payment of energy bills. It enables the identification of three distinct types of households facing energy affordability challenges, each requiring different types of interventions:

- Households that lack access to the minimum essential commodities and utilities. Income support mechanisms that are not dependent on consumption levels can effectively address energy affordability in these cases. The minimum energy requirement varies with the energy efficiency of the accommodations and the lighting, cooking, or heating technologies.

[86] EUR-Lex - 52015DC0080 - EN - EUR-Lex (europa.eu)
[87] "Competition in energy markets" OECD (2022) Competition in Energy Markets (oecd.org)
[88] Ute Dubois, Helena Meier "Energy affordability and energy inequality in Europe: Implications for policymaking" (2016)

- Households with limited income that over-consume energy. Addressing the underlying reasons for overconsumption, such as preferences, technological limitations, or inefficient equipment, requires appropriately targeted actions.
- Households with energy consumption below the minimum standard due to monetary or non-monetary constraints, such as the lack of access to gas or electricity networks. Removing these constraints should be the primary focus of interventions in these cases.

While the residual income approach is effective in evaluating energy affordability at the individual or household level, it cannot be applied to evaluate affordability at the macro-level. This limitation stems from the heterogeneity of household budgets, rendering the aggregation of micro-level indicators at the EU level unsuitable. Consequently, alternative affordability measures that rely on macro indicators must be applied (for example, it would be necessary to set the minimum reference quantities for gas and electricity and for the other goods and services consumed.

To maintain consistency with the definition of absolute income poverty, these quantities should coincide with those determining the absolute poverty line. This would allow us to identify the minimum spending level for electricity, heating and cooking necessary to achieve an acceptable standard of living.

Defining and identifying affordability of energy at national or European level is complex and impacts on the monitoring of the effectiveness or implementation of policies.

2. Typology of measures to address affordability

In some Members States, energy poverty is mainly addressed from the affordability angle. Member States implemented income and price support schemes, even before the crisis[89], targeted at vulnerable households. Income support measures are provided, inter alia, in the form of income support, vouchers and subsidies. They provide a social safety net as they can be deployed swiftly and provide immediate relief for affected households. Some Member States choose price intervention to support vulnerable consumers, mainly through social tariffs or tax reductions. The typology of the existing measures and their limitation are described below.

a. Price support measures

Price support measures can take the form of price regulation or any intervention that modifies the marginal cost of energy consumption. As such, also tax reduction or rebates on energy bills may be considered as price support measures, although they do not regulate the price.

Price regulation exists where the price of energy is subject to control by public authorities, typically the government or the National Regulatory Authority. Regulated prices stand in contrast to market-based prices, where the forces of supply and demand determine the price of energy. Regulated price schemes vary from country to country in terms of the type of energy they apply to (electricity or gas), of the customers who pay a regulated price or how the regulated prices are fixed. Depending on the country, regulated prices may apply to both electricity and gas, although

[89] Access to essential services - Employment, Social Affairs & Inclusion - European Commission (europa.eu)

in many cases the price regulation is applied for only one of these. Regulated prices may cover either all customers, be directed only at households or only at vulnerable households. The methodology for determining the regulated prices varies from one country to another.

Some countries (such as Bulgaria, France, Hungary, Romania, Lithuania, Malta, Slovakia or Poland) apply regulated prices to all households, including vulnerable ones, without making any distinction.

b. Social tariffs

Social tariffs constitute a form of price regulation that is only applicable to a limited group of consumers for purpose of protecting vulnerable consumers with limited financial means. Article 5(3) of Electricity Directive (2019/944) allows Member States to intervene in price setting for the supply of electricity to "ensure the protection of energy poor and vulnerable household customers". This derogation is subject to different criteria set in Article 5(4) and 5(5) of the same Directive, among which are the limitation in time and proportionality. It is applied by several Member States.

Examples of social tariff by Member States

Countries with social tariffs	**Elec.**	**gas**	**Type**	**Beneficiaries/conditions to benefit from social tariffs**	**Extension of number of beneficiaries during the crisis**
Greece	X		Special tariff	- main residence - The consumption of the main residence is at least 200 kWh per 4 months and the 4-month consumption does not exceed the consumption ceilings laid down for the category of beneficiary of the social tariff to which he belongs.[90] - income threshold	
Spain	X		Discount on the bill	Vulnerable customers and severely vulnerable customers. - contract with regulated prices (PVPC[91]) - power equal to or less than 10kW at their primary residence - income level threshold - pensioners in the Social Security system - large families - recipients of the minimum wage	Yes

[90] FAQ - Rae Website
[91] Precio voluntario para el pequeno consumidor

				For severe vulnerable customers, thresholds of income are lower[92]	
Belgium	X	X	Special tariff	- Beneficiary of a social subsidy (different types listed) - Tenant in social housing [93]	Yes
Portugal	X	X	Discount on network tariff (free market) or special tariff (regulated market)	People who are beneficiaries of: a) solidarity supplement for the elderly; b) social integration income; c) unemployment benefit; d) family allowance; e) the disability social pension of the special invalidity protection scheme or of the supplement to the social benefit for inclusion; (f) old-age social pension. OR Who has an annual income of up to EUR 6,272,64 plus 50 % for each member of the household without income[94]	
Cyprus	X		Special tariff evolving in stages according to consumption	- Large families (a family that receives a child benefit from the Welfare Benefits Administration Service for three or more dependent children and with an annual combined family income of up to €51.258. (+ €5.126 for every additional child) - public assistance recipients from the social welfare services. - beneficiaries of guaranteed minimum income - beneficiaries of severe motor disability allowance - beneficiaries of care allowance for quadriplegic / paraplegic persons - hemodialysis patients who are beneficiaries of the Mobility Allowance	

[92] What is social rate and how do I apply for it? | Endesa
[93] Tarif social pour l'énergie | SPF Economie (fgov.be)
[94] tarifa-social_eletricidade-e-gás-folheto_julho23.pdf (erse.pt)

				- people suffering from multiple sclerosis[95]	

During the crisis, some Member States introduced modification in their scheme to protect vulnerable consumers, enhancing the protection shield. In **Belgium**, for example, the scope for social tariff was enlarged during the energy crisis from February 2021 to June 2023. The Belgian regulator (CREG) estimates that this extension doubled the number of protected customers compared to year 2020. The number of eligible customers rose to an estimated 675 000 in gas sector and 1 060 000 in electricity[96]. This represented a large budgetary expense (EUR 265 million in 2021, EUR 1 billion in 2022).

In **Spain,** the government introduced during the crisis a new "Energy Justice Electric Bond", that offers a 40% discount on the regulated electricity tariff (PVPC) for households with low incomes, that are particularly affected by the energy crisis and therefore considered vulnerable. This bonus is temporary until 31 December 2023.

c. Rebates on bills and tax cuts or reduction on levies

Rebates on bills and tax cut are also in the category of price support measures as they are not direct payment to the end users but are intervention on the final price that they pay. They have effect on the marginal cost of energy. In general, they are not considered as price regulation as they do not interfere with market competition.

In **Italy**, the "bonus sociale per disagio economico" is a discount on bills for the benefit of a household with an ISEE indicator (Equivalent Economic Situation Indicator) not exceeding 9,530 euros, a family unit with at least 4 dependent children (a large family) and ISEE indicator not exceeding 20,000 euros, or a family holder of Citizenship Income or Citizenship Pension. This bonus is not considered as price regulation, as the share of beneficiaries is limited. However, the thresholds have been expanded during the crisis.

In contrast, in **Spain**, the "bonus social", as described above in the table of social tariffs is also a discount on energy bills dedicated to vulnerable consumers but applies to consumers in the regulated market.

Member States can intervene on levies and particularly network fees for certain categories of consumers. **Portugal** is for example using cuts on network fees as a social tariff for vulnerable consumers that buy in the free market. The same conditions as in the social tariff apply to determine beneficiaries.

[95] 35 (eac.com.cy)

[96] Neuvième rapport de monitoring concernant l'extension de l'application des tarifs sociaux électricité et gaz naturel aux bénéficiaires de l'intervention majorée | CREG : Commission de Régulation de l'Électricité et du Gaz

d. Income support measures

Income support measure is a benefit to help people with low income with their living costs. They are direct payments to the end consumers that are not going through the bill or the supplier. They can have a form of direct support, social schemes, or vouchers to low-income households.

Countries such as **Romania, Germany, Ireland, Luxembourg** or **Austria** developed direct payment schemes during the crisis dedicated to low-income households. Most of them were based on existing schemes (social or housing allowances). On the contrary, **France** opts to switch from social energy tariffs to energy vouchers, with the aim "of creating a fairer, simpler system than the social tariffs, making it possible to reach the target of four million households more effectively, at reduced management costs"[97]. Whereas the social tariffs only covered gas and electricity, the terms and conditions of the vouchers were fairer, as they covered all sources of energy production (gas, electricity, fuel oil, LPG, coal, wood). Eligibility criteria have been simplified: the eligibility ceiling used is the reference tax income (RFR) per consumption unit. The amount of the energy check is calculated according to the level of RFR of the household and its composition. Its amount is €150 on average. The voucher can also be used by the household to finance energy renovation work. During the crisis, France adopted other energy vouchers to support eligible households.

e. Affordability measures applied as an emergency response to the crisis

Since the end of 2021, the EU has faced an unprecedented energy crisis, exacerbated by Russia's unjustified military aggression against Ukraine in March 2022. A sharp rise in energy prices brought hardship for all Europeans, worsened by the fact that they had already struggled with an unstable energy market. Thanks to the Energy Prices Toolbox[98], Member States deployed more than 400 national level support measures (including bill, energy efficiency or renewable energy support) to ease price pressure on citizens and industry. Thirty-four percent of these measures were on income (and among them only 20% were targeted to the energy poor and vulnerable consumers) while 66% of the measures were on price (and among them only 8% targeted)[99].

To respond to the crisis over a one-year period and to support all citizens, measures for affordable energy required substantial amounts of money. This limited the risk of falling into energy poverty for some citizens but did not provide a structural response to energy poverty to those who were already struggling with it. According to Bruegel[100], the estimate support to the EU households between September 2021 and January 2023 was at about EUR 432 billion. This figure entails support to shield income of the households, focusing on price of energy or other short-term measures. To compare with long term investments from the Multiannual Financial Framework 2021 – 2027 and NextGenerationEU, the amount is higher than the overall 2021-2027 allocation

[97] Rapport : Le chèque énergie (ccomptes.fr)
[98] https://ec.europa.eu/commission/presscorner/detail/en/IP_21_5204
[99] National fiscal policy responses to the energy crisis (bruegel.org)
[100] National fiscal policy responses to the energy crisis (bruegel.org) Notes: Please note that a large share of untargeted, price-distorting measures do not exclusively support households but firms as well. Please also note that the calculations excluded the € 200 billion package of Germany, for which details were not available.

for Cohesion Policy and Just transition funding spending (i.e. EUR 393 billion)[101], and equivalent to the renovation of about 35 million residential building units at an average cost of EUR 10,000.

f. Limitations of the price and income support measures

All price measures change the marginal cost of energy consumption and have side effects. Keeping energy prices artificially low might hamper competition, restrict consumer choice, and remove incentives to implement structural energy efficiency measures addressing the root causes of energy poverty (especially low-income, high-energy costs and low energy efficiency). From a financial perspective, social tariffs, and price regulation lower the business case for energy efficiency and building renovations investments, reducing their bankability, while artificially extending payback times of such investments. Careful attention must be given to identifying sources of funding to cover the gap between market prices and regulated prices in order to prevent any resulting market distortion. This is also the reason why these measures create higher inflationary pressure than targeted support for those who really need it.

On the contrary, **income support measures** do not affect the energy price and as such keep the price signal. Since they are usually target specific population groups, including vulnerable households, they have less detrimental effect than general price regulation.

The financial burden represented by the support measures implemented in a non-targeted manner during the recent price crisis was highlighted by several institutions. For example, the International Monetary Fund ('IMF')[102] recommended that the policy emphasis shifts rapidly towards allowing price signals to operate more freely and providing income relief to the vulnerable in a targeted manner. In its fiscal policy for 2024[103], **the Commission also recommends to Member States that, in case further measures need to be taken in 2023 because of hikes in energy prices, these measures should be targeted to those who need it most to limit the financial and budgetary impacts**.

Targeted income measures are advisable in the short-term, as a response to the unexpected price hikes, they don't however act on the root cause of the energy poverty. Neither prices nor income measures encourage change of behaviour or incentivise energy efficiency improvements. They can also be very burdensome for national budgets and reduce public funding away from more structural measures that are capital intensive (such as building renovations). They should be carefully targeted to those most in need.

3. Providing access to energy

[101] The EU's 2021-2027 long-term budget and NextGenerationEU. Facts and figures https://op.europa.eu/en/publication-detail/-/publication/d3e77637-a963-11eb-9585-01aa75ed71a1/language-en
[102] Surging Energy Prices in Europe in the Aftermath of the War: How to Support the Vulnerable and Speed up the Transition Away from Fossil Fuels (imf.org)
[103] https://economy-finance.ec.europa.eu/document/download/cd3da41e-9b91-4b18-8e88-4dfa5c89d40e_en?filename=COM_2023_141_1_EN_ACT_part1_v4.pdf

Supplier of last resort

Access to energy in the EU is well ensured. Consumers enjoy universal service, in particular for electricity. In addition to affordability support for those in need, most **Member States put in place a supplier of last resort mechanism** to protect consumers in case of supplier failure. During the energy crisis, supplier of last resort processes underwent a "stress test", revealing some limitations[104]. All customers were at risk of losing the right of universal service, customers suffered from even higher prices and uncertainties of procedural and timing aspects of supplier of last resort services besides widespread reluctance of suppliers towards greater customer acquisition during critical circumstances. Bankruptcies also indicated that the transition to a supplier of last resort was in some cases not very smooth and led to situations where consumers were worried that they may lose access to electricity. To further protect consumers and ensure continuity of supply, with the review of the Electricity Market Design[105] the Commission proposed that all Member States shall appoint a supplier of last regime that meets certain criteria. To safeguard access to energy for the most vulnerable including energy poor households, Member States may already act building on the good practices that exist in this area across the EU.

Avoiding disconnection – national measures

According to Article 10(11) of the Electricity Directive (2019/944), suppliers need to inform consumers about alternatives to disconnection. Such alternative measures may refer to sources of support to avoid disconnection, prepayment systems, energy audits, energy consultancy services, alternative payment plans, debt management advice or disconnection moratoria and not constitute an extra cost to the customers facing disconnection. Vulnerable customers should be adequately protected from electricity disconnections and should also not be put in a position that forces them to disconnect. The Commission's assessment[106] carried out for the development of proposal for the market reform identified the risk that the interpretation and practical implementation of the Directive may lead to uneven outcomes across Member States, regarding the level of consumer protection and support available for the most vulnerable. The proposal aims to strengthen the protection to disconnection.

In **Ireland,** vulnerable customers registered as being critically dependent on electrically powered assistive devices cannot be disconnected for reasons of non-payment at any time[107]. An extended moratoria on disconnection for all domestic electricity and gas customers was enforced from 1 December 2022 until 31 March 2023. It included:

[104] COM(2023) 148: proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUCNIL amending Regulations (EU) 2019/943 and (EU) 2019/942 as well as Directives (EU)2018/2001 and (EU) 2019/944 to improve the Union's electricity market design.

[105] Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL amending Regulations (EU) 2019/943 and (EU) 2019/942 as well as Directives (EU) 2018/2001 and (EU) 2019/944 to improve the Union's electricity market design
COM/2023/148 final

[106] SWD_2023_58_1_EN_autre_document_travail_service_part1_v6.pdf (europa.eu), P. 90

[107] Vulnerable customers | CRU.ie

- Extended debt repayments for customers to allow for a minimum of 24 months to repay accumulated debt.
- A reduced debt burden on Pay-As-You-Go top ups from 25% to a maximum of 10%.
- All customers with a financial hardship meter required to be placed on the cheapest tariff available from their supplier.
- Enhanced requirements on suppliers to actively promote the vulnerable customer register and the protections it offers.

The Irish Commission for Regulation of Utilities (CRU) continues to monitor the levels of debt and arrears for customers and is looking for further review of customer protection measures that are in place with suppliers, with the first of these reviews to be undertaken in the summer before winter 2023/24.[108]

In **France** disconnection for household consumers is banned annually during winter[109] from 1 November to 31 March. During this period, reductions in delivered power are allowed, except for "protected consumers" (to 3 kVA for consumers, whose subscribed power is greater than or equal to 6 kVA, to 2 kVA for consumers whose subscribed power is 3 kVA). Outside this winter truce, for households in a situation of a more than 14-days unpaid bill, disconnections, or reductions in delivered power are allowed for all consumers provided that they are sent a notice to pay within 15 days (30 days for "protected consumers"). In case the bill remains unpaid, an additional 20 days' notice before disconnection or reduction is sent. Suppliers have also the obligation to contact local authorities to signal any customers that is at risk of being cut or reduced. A new decree[110] in March 2023 introduced the obligation for every supplier to add an additional period of reduction of power to 1kVA during 60 days before disconnection for protected customers equipped with smart meters. The main French supplier EDF decided on a voluntary basis to limit disconnection and to apply after all legal delays the reduction of power to 1 kVA for all customers equipped with smart meters[111]. According to EDF, this allows them to manage to solve 8 cases out of 10 and to find financial solutions to bring back customers to regular contract.

VII. TACKLING ROOT CAUSES OF ENERGY POVERTY THROUGH STRUCTURAL MEASURES

Structural measures, meaning those measures that influence the institutional and regulatory framework and address the root causes of energy poverty (notably low income, low energy efficiency and high energy costs), **tackle the lack of access to measures that reduce energy consumption and improve energy efficiency of affected households in a sustainable way, and therefore allow a long-lasting reduction of energy bills for consumers.** Such measures generally include investments with long lasting effects into the energy efficiency of households'

[108] CRU Extends Moratorium on Disconnections for Domestic Customers | CRU.ie
[109] article L.115-3 of the Family and Social Action Code
[110] Décret n° 2023-133 du 24 février 2023 relatif à la période minimale d'alimentation en électricité et modifiant le décret n° 2008-780 du 13 août 2008 relatif à la procédure applicable en cas d'impayés des factures d'électricité, de gaz, de chaleur et d'eau - Légifrance (legifrance.gouv.fr)
[111] Disconnections are still possible for households equipped with electromechanics meters

appliances or dwellings or aim to support the move away from fossil fuels towards renewable energy solutions in the context of the energy transition which can significantly help accelerate the pace of energy poverty alleviation. For example, photovoltaic generation, despite not always covering all the energy and heating needs, enables households to fully harness renewable electricity, thereby actively facilitating the partial substitution of fossil fuels, including traditional biomass energy, by clean energy sources. Simultaneously, it can assist residents in earning additional income if they produce more energy than they consume, and thus reduce their reliance on highly polluting fuels.

Current energy efficiency financing schemes often do not target households in energy poverty as they underspend on energy and lack sufficient resources to participate in them. Also, implementing energy efficiency schemes may not necessarily result in a decrease in energy consumption, as some energy poor people tend not to adequately heat or cool their homes. Instead, it mainly leads to an improvement in the quality of service and quality of lives of the beneficiaries while the level of energy consumption remains largely unaffected.

1. Typology of structural measures

Policy makers have a wide array of policy tools to implement structural measures, including energy efficiency and access to renewables:

Grants and grant schemes are often used to help households pay for energy efficiency and renewable energy improvements. If specifically tailored for vulnerable households in energy poverty, grants can be the only option how to overcome general lack of initial investments.

Low-interest loans and initiatives, including public guarantees promoting green mortgages, can assist households in overcoming the significant upfront expenses. These loans can be either state-guaranteed or implemented through public-private partnerships. However often, loans are not the best option for supporting energy poor or low- income households as they have low credit rating due to low income and may already have ongoing loans. In addition, energy poor households may be forced to choose to regular spending for daily needs rather than investing efficiency measures with longer-term returns. By complementing grants, loans can cover any remaining costs associated with energy efficiency upgrades.

Implementing tax policies increase the cost of (fossil-fuel based) energy, which can serve as an incentive for adopting energy-efficient technologies or practices. Ideally, this approach allows consumers the flexibility to determine the most cost-effective means of reducing their energy usage. While there is evidence that these taxes influence consumers´ behaviour, the impact is likely to vary among different population and income groups, as some consumers may be willing to pay more for their energy consumption. Additionally, tax rebates or deductions can be employed to partially compensate consumers for the expenses associated with energy efficiency initiatives. Linking taxes to Energy Performance Certificate ratings can incentivise homeowners to prioritise upgrades and target those who are most financially capable of undertaking them. Without financial support to carry out efficiency improvements, tax measures may increase costs of energy use for

energy poor households, without providing them with the means to adopt consumption reduction measures.

Supplier obligations require that energy suppliers are legally responsible for, or facilitate the implementation of energy transition measures, such as energy efficiency improvements, support the access to renewables, or in some countries, deploy the rollout of smart meters. Suppliers also have an important role to play regarding demand response and dynamic tariffs.

Regulation and standards, either for buildings or household' appliances, have the power to alter the array of options available to consumers and force manufacturers, housebuilders and installers of technical equipment to innovate and employ more energy-efficient products. Coupled with labelling, they are good tools to incite consumers to make energy efficient choices, and manufacturers to develop and innovate more efficient products in order to remain competitive. More energy efficiency household appliances or dwellings are key to tackle energy poverty as they allow energy poor households to reduce their energy consumption and increase comfort and wellbeing at the same time.

Information and advisory services play a crucial role in reducing obstacles for consumers by providing clear guidance on the most effective methods for reducing energy consumption. While the specific outcomes may differ, these measures are typically affordable and can complement other policy initiatives. Establishing "one-stop shops" streamlines the process of undertaking energy efficiency improvements, making it faster and more convenient for individuals. Additionally, governments can employ various other means to disseminate information effectively, such as providing energy advice through social workers, setting up information campaigns, etc.

2. Energy efficiency measures

In addition to the general typology of measures outlined above, energy efficiency can also be achieved through other measures of which are some legal obligations as per the EU acquis.

a. Energy Savings Obligation Schemes

In the context of addressing energy poverty, adopting targeted energy efficiency measures to achieve long-term reductions in energy consumption is among the most sustainable solutions. Article 8 of the recast Energy Efficiency Directive introduces Energy Savings Obligation where Member States need to achieve yearly energy savings of 1.5% of annual sales to final consumers. They can do so, among others, by energy savings obligation schemes ('EEOS'). These legal obligations on energy providers have proven to be one of the most successful structural approaches to achieving energy efficiency[112]. To reach the target, companies need to carry out measures which

[112] COMMISSION STAFF WORKING DOCUMENT IMPACT ASSESSMENT REPORT Accompanying the Proposal for a Directive of the European Parliament and the Council amending Directive (EU) 2018/2001 of the

help final consumers improve energy efficiency. This may include improving the heating system in consumers' homes, installing double glazed windows, or better insulating roofs to reduce energy consumption.

Furthermore, by combining EEOS with other national and local funding and financing options, a more comprehensive range of support can be extended to each household. It is crucial, therefore, that national policymakers do not solely depend on EEOS assistance to tackle energy poverty, but instead establish a broader enabling framework, including one-on-one guidance, energy audits and forming partnerships with local authorities, social services, NGOs, social housing providers active on the ground, including technology providers and retailers support the installation or distribution of measures.

On the other hand, a close examination of the approaches underlines the need to reflect on the way savings are calculated in different national schemes as the EED recast makes its way to implementation. For example, in one of the Member States, 30% of households receiving a brochure on energy savings are estimated to change their behaviour, in another Member State, general awareness raising activities through events or printed materials lead to 2,5% savings, in yet another the general campaigns lead to 39.75 kWh savings per household per year.

Six Member States (**Austria, Croatia, Cyprus, Greece, France and Ireland**) have already incorporated provisions for households experiencing energy poverty into their EEOS. The EEOSs in **Ireland** and **France** focus primarily on providing insulation and heating to households experiencing energy poverty. In Ireland, heating controls and fossil gas boilers have been the predominant heating measures. In France, 51% of the White Certificates obtained from heating measures are a result of replacing fossil fuel boilers, 42% from heat pumps, and 9% from biomass boilers [113] These EEOSs have predominantly delivered individual measures rather than comprehensive retrofits of whole houses.

Nevertheless, such schemes can have regressive effects since the costs are ultimately transferred to energy bills. In addition, they do not always align with the level of support required by households facing energy poverty. Energy-poor households need a combination of measures to lift them out of energy poverty, such as insulation combined with heating / cooling measures, more energy-efficient appliances, and tailored advice to reduce the risk of falling back into energy poverty when household´s situation or energy expenditure and consumption change.

In response to the challenge, Ireland is currently in the process of redesigning the EEOS to move away from a “single measure approach”. Proposals for the design of the next phase of the scheme (2021 - 2030) establish that interventions must elevate the home's energy efficiency to a high

European Parliament and of the Council, Regulation (EU) 2018/1999 of the European Parliament and of the Council and Directive 98/70/EC of the European Parliament and of the Council as regards the promotion of energy from renewable sources, and repealing Council Directive (EU) 2015/652

SWD/2021/621 final

[113] References: Ministère de la Transition écologique (2021). Lettre d’information CEE 20210930. https://www.ecologie.gouv.fr/sites/default/files/2021-09%20lettre%20d%27infos%20VF.pdf - Minutes of French white certificates scheme’s steering committee meeting of September 2021 https://www.ecologie.gouv.fr/sites/default/files/2021-09-20%20COPIL%20CEE.pdf

standard of ‘B2’ or better, as determined by the national Energy Performance Certificate classes known as the Building Energy Rating (DECC, 2021).

The EU-funded **SocialWatt**[114] project aimed to enable parties across Europe under Article 9 of the Energy Efficiency Directive to develop, adopt, test, and spread innovative schemes to alleviate energy poverty. The tools established under the SocialWatt project aim to help utilities and energy suppliers, identify energy poor households, and develop and monitor schemes that focus on increasing the energy efficiency of these houses. The project also provided recommendations on the role of energy companies in energy poverty. Beyond that, where EEOs schemes exist, partners of the SocialWatt used the approach and equations defined in the national context to calculate "deemed" energy savings (see also further below)

b. The EU energy labelling and ecodesign legislation

The EU energy labelling and ecodesign legislation helps improve the energy efficiency of products on the EU market. Ecodesign sets common EU wide minimum standards to eliminate the least performing products from the market. The EU energy labels provide a clear and simple indication to the consumers of the energy efficiency of the product. This makes it easier for consumers to choose products that are more energy efficient and save money on their household energy bills and thereby contribute to reducing greenhouse gas emissions across the EU.

The EU legislation for energy labels and ecodesign has been estimated to bring energy savings of approximately 230 million tonnes of oil equivalent (Mtoe) by 2030. An average European household saved on average EUR 198 user expenditure in 2020, which expected to increase to EUR 312 per year per household in 2030, thanks to the improved efficiency of appliances placed on the EU market[115]. In 2022, at the height of the energy prices, it was estimated that an average European household could save on their energy bill up to EUR 2,450 if equipped with the top-class appliances.[116]

c. Dwelling and house renovations

Improving energy efficiency of buildings is key to tackling energy poverty, improving the well-being of people and residents and contributing to energy consumption reduction and energy-related greenhouse gas (GHG) emissions. Today, roughly 35% of the EU's buildings are over 50 years old and 75% of the EU’S building stock has a poor energy performance. Renovating existing buildings could significantly reduce the EU’s total energy consumption by 5-6% and lower carbon dioxide emissions by about 5%[117]. **To meet the EU climate, social and energy objectives, the current rates of renovations should at least double**[118]. For this aim, the

[114] Homepage | SocialWatt
[115] Ecodesign impact accounting annual report 2021.
[116] BEUC-X-2023-056_Energy-savings_appliances_the_silent_money_makers_in_consumers_homes.pdf
[117] In focus: Energy efficiency in buildings (europa.eu)
[118] SWD(2020) 550 final

Commission adopted in 2020 the strategy 'A Renovation Wave for Europe – Greening our buildings, creating jobs, improving lives'[119].

EU-funded support for renovations

RENOVERTY[120] aims at designing 17 scalable, single- or multi-household renovation roadmaps in 7 rural and peri-urban vulnerable areas in Central, Eastern and Southern Europe. The ambition includes renovation of more than 1.000 households, from which more than 2.500 vulnerable consumers would benefit.

REVERTER[121] focuses on developing 9 tailored roadmaps to alleviate energy poverty, including the assessment of suitable deep renovation measures for each pilot, establishment of digital one-stop-shops to offer integrated renovation solutions for energy poor households, and creation of local capacity building using energy ambassadors to engage households and training of one-stop shop personnel. Moreover, it aims to facilitate renovation of 800 houses and household engagement.

ComAct[122] focuses on making high impact / high-cost energy efficiency improvements accessible to energy poor communities in multi-family apartment buildings in 5 Central and Eastern European countries. To address energy poor consumers, the action will develop and / or adapt relevant financial schemes, optimise technical solutions (incl. renovation) and empower communities by working closely with Homeowners Associations and other local actors. In the short term, the action plans to reach energy savings of 10 GWh/year, with ca. 9 million EUR investments triggered.

Through energy renovation, the heating and cooling energy need of homes could be substantially reduced and consequently the inhabitants could afford a proper indoor climate with lower energy bills. By improving efficiency of energy use and thereby reducing excessive energy bills – which disproportionally affect vulnerable people – **building renovation can directly contribute to lifting households out of energy poverty**. Additionally, upscaling the energy renovation of buildings can generate and preserve jobs and economic activity that indirectly contributes to the welfare of population and reduces poverty. The positive effects of buildings renovations can be maximised through integrated, participative, and district-related approaches when energy renovation in energy poor districts is integrated in wider social inclusion and urban regeneration programmes. To support renovation of buildings, the above-mentioned typologies for measures under chapter VII.1 still apply. For lack of access to loans, and inability to repay loans for the investments needed to renovate buildings, **grants and grant schemes** are often the only option to help energy poor households to pay for energy-related home improvements.

Good practice of renovation support through grants in Member States

In **Austria**, the pilot program "Energy Saving in the Household: Advice & Appliance Replacement" subsidizes advice on energy saving directly in the household as well as the replacement of old or energy intensive large electrical appliances. In this way, households affected

[119] EUR-Lex - 52020DC0662 - EN - EUR-Lex (europa.eu)
[120] RENOVERTY - IEECP
[121] REVERTER Hub | Horizon Europe | Life programme | REVERTER
[122] ComAct (comact-project.eu)

by poverty are supported in reducing their energy consumption and thus in lowering their expenditure on energy in the long term.

In **Belgium**, the "Brussels green loan" foresees a zero to low loan rate to help vulnerable homeowners to pre-finance energy renovation works. Moreover, vulnerable households can access free information/coaching support. The Flanders region developed the Rental and insulation premium for dwellings inhabited by vulnerable private tenants. It entails a flat-rate contribution, as well as financial support for roof and wall insulation, and for high efficiency glazing. Finally, Wallonia provided grants for renovations according to the income level ("Primes Habitation" / Housing Grants). This can be complemented by the Rénopack scheme, which provides a 0%-interest loan to finance the remaining costs of renovation or energy-saving works in dwellings. Other support schemes are MEBAR II for households who cannot enter into deep renovation or costly actions or the Preventive Energy Action Plans (PAPE) for the most vulnerable households.

In the **Czech Republic**, the 'New Green Savings Light' programme focuses on disadvantaged households, also in energy poverty, by financing the insulation of the façade, replacement of entrance doors and windows or insulation of the roof, ceilings and floors, where the subsidy is up to EUR 6.300. There are also new subsidies for solar water heating systems (photovoltaic and photothermal), where the subsidy is up to EUR 3.800. Unlike the original 'New Green Savings' programme, applicants do not need to have savings to cover initial investments in advance, as they will receive an advance subsidy before they start building work. The amount of the subsidy can be up to 100%. In addition, a free advice network is available in the Czech Republic. These measures aim to provide more support to vulnerable households in energy poverty.

In **France**, a financial support scheme named "MaPrimeRénov" was set up in 2020. In 2021 and 2022, it has allocated around 1.3 million of grants (number of beneficiaries) for renovation and replacement of fossil fuel heating system. The amount is modulated according to the income of the household and the energy performance targeted/achieved. The more vulnerable households will also have access to a financing instrument aiming at covering the residual costs, taking the form of State-backed loans. Following the 2021 climate and resilience law, France is also deploying a network of trained persons to support renovations and provide technical and social support, in response to specific needs such as situations of energy poverty. Furthermore, to tackle the worst performing buildings, a renovation obligation is in force as of 2023 as part of the revised energy and climate law. It includes the following measures:

- Rent calculations and property. The estimates are done upon completion of renovation measures which remove the building from the 'thermal sieve/passoire thermique' category (*i.e.* classes F and G). This is banning worst-segment property owners from increasing the rent between two lettings without undertaking energy renovations.
- Energy performance diagnostics and rental contracts for housing. They must include information on the actual primary and final energy consumption of housing, and an estimate of the theoretical amount of energy expenditure.
- An obligation to display the theoretical amount of estimated energy expenditure in property advertisements.

- A renting ban (introduced gradually between 2023 and 2034), starting with worst performing dwellings in class G and ending with those in class E according to the energy performance certificates.

In **Ireland**, the Homes scheme is in place since 2000, providing free energy efficiency upgrades to households benefitting from a social welfare payment. The scheme has upgraded more than 142,000 homes since 2000. In addition, the Warmth and Wellbeing pilot scheme provides energy efficiency improvements to the homes of older people and children living with chronic respiratory conditions.

In **Sweden**, support was introduced to encourage renovation and energy efficiency measures in rented properties in areas facing socioeconomic challenges. The support is divided into two parts: one for renovation and one for energy efficiency. The renovation support, which is 20% of the costs, is given directly to the tenants as a rent rebate over 7 years. The energy efficiency support is instead calculated on the basis of the energy savings achieved after the renovation. This part of the support is given to the property owner. To be eligible for this part of the support, the renovations must improve energy performance by at least 20%. The support cannot be sought for renovation or energy efficiency alone.

Poorly and worst performing buildings, where energy poor and vulnerable people tend to live, have a high potential for improvement, but their renovation often faces persistent barriers ranging from regulatory obstacles to structural factors. Addressing these barriers call for an integrated approach that also takes account of energy poverty and affordability of housing. It could be for example a **systemic approach to thermal retrofitting and renovations of historic buildings** as up to 30 % of the housing stock in the EU is historic, *i. e.* built before 1945. While these houses and buildings are often source of pride over their beauty and draw attention of tourists, due to their age they do not often comply with modern requirements for energy efficiency and indoor climate. **The New European Bauhaus** is a creative and multidisciplinary movement that aims to bridge science and technology, art and culture, including to combine sustainability with aesthetics and inclusivity.

Classical, modern types of thermal retrofitting, serving both to protect their inhabitants in winter and in summer, is in majority cases unsuitable, as it poses risks to the integrity of the building related to moisture, which then results in frost damages, rot, or mould. The most challenging in modernising and improving energy efficiency of these buildings is therefore to apply such retrofitting measures that do not destroy the façade of the building. A solution for upgrading energy efficiency of these buildings is in fact internal thermal insulation. Systemic approach to renovation of these buildings in direction of better energy efficiency is needed in Member States if energy renovations are to succeed.

An EU financed project **RIBuild** provides guidelines for decision-makers in direction of possible internal insulation of historic buildings[123]. The result of the project has two layers of knowledge - online guides addressing entrepreneurs, architects, building owners, craftsmen etc. and a research report presenting the latest findings and a more profound knowledge on internal insulation. It aims at providing information for building owners and consultants, including information regarding

[123] RIBuild - Internal Insulation in Historic Buildings

how to determine whether the building is suitable for internal insulation, on helping with selecting an internal insulation system and on evaluating energy system potential as well as the environmental impact.

i. Split incentives

Split incentives can be a relevant barrier to the energy renovation of buildings, as underlined by 16 Member States in their long-term renovation strategies[124]. **They occur where the benefits of a transaction or investment do not directly benefit the actor who bears those costs. This typically happens between landlords and tenants** and is due to the lack of effective distribution of the financial obligations and rewards of these investments between concerned actors. It can ultimately result in inaction from either actor's side.

The EU housing sector is very diverse. Overall, in 2022, 69.1% of the EU population lived in a household owning their home, while the remaining 30.9 % lived in rented housing. However, tenancy levels significantly increase in the EU population below 60% of median equivalised income: it reached 49.2% in 2022, with homeownership at 50.8 %. In this population group, homeownership is higher in Romania (93.9%), Croatia (89.1%) and Hungary (85.4%), while renting is more common in Austria (77.4%), Germany (73.6%) and France (71.5%)[125].

The Energy Efficiency Directive recognises the importance of addressing the barrier of split incentives in the building sector and calls on Member States to take the necessary measures to remove regulatory and non-regulatory barriers to energy efficiency as regards **split incentives between owners and tenants**, **or among owners of a building or building unit, and sets out measures thereof.** In its proposal for the EPBD recast, the Commission aims to address split incentives.

Overcoming split incentives is crucial for incentivizing renovations in the rental market and tackling energy poverty, as renovations can improve energy efficiency and reduce energy expenses, thus addressing two of the main root causes of energy poverty. Moreover, most of the energy poor live in rented dwellings or worst-performing buildings, where split incentives are more common, and renovations are most needed.

To solve split incentives, an individual approach needs to be adopted to each of them as there are several types of them. **A comprehensive approach to remove split incentives should include multiple measures**, such as accurate, regular, and transparent information, redistribution of costs and savings, engagement in energy efficiency, appropriate incentives and effective enforcement of regulations or policies driving demand.

Regulatory measures applied to prevent split incentives

Minimum Energy Performance Standards (MEPS) provide a regulatory tool for addressing split incentives as, by addressing the renovation of worst performing buildings, they are expected to have higher impacts on households in lower-income deciles, in which the share of tenants (facing split incentives) and energy poor is statistically greatest. Owners would be called to ensure

[124] Long-term renovation strategies 2020, https://ec.europa.eu/energy/topics/energy-efficiency/energy-efficient-buildings/long-term-renovation-strategies_en#national-long-term-renovation-strategies-2020
[125] Eurostat: https://ec.europa.eu/eurostat/databrowser/view/ILC_LVHO02__custom_7237434/default/table?lang=en

a reasonable level of energy efficiency in rental units and their financial burden could be eased by financial incentives and / or models.

Investments in energy efficiency can also be stimulated by supporting the dialogue between the parties involved and the flexibility for **voluntary agreements between landlords and tenants**. Rent acts could address topics such as rent increases after renovations and rejection conditions. Condominium acts, instead, may clarify the democratic decision-making principles and the responsibilities of all parties involved, including the owners, avoiding that energy efficiency improvements are vetoed by a single owner.

Financial incentives and models to prevent and address split incentives

Financial and fiscal incentives from governments, energy suppliers and other sources are useful to overcome upfront costs barriers and incentivize energy efficiency works. **On-bill financing** allows to gain access to capital to fund building energy efficiency upgrades, in which repayments are made through the energy bill. It allocates the financing responsibility to the utility and maintains the loan attached to the property, thereby offering an appropriate solution to overcome temporal split incentives. It could be well suited for people in energy poverty. The energy utility will typically aim to respect the principle of housing cost neutrality (i.e. the monthly payments are equal to or less than the energy savings achieved through the upgrade).

Energy Performance Contracting (EPC) allows that financing, designing, and implementing energy efficiency upgrades for a building is done by third-party service providers Energy Service Companies ('ESCOs'). Investments are then repaid through a long-term contract with the building owner through the energy savings generated by the upgrades. Tenants can benefit from reduced energy costs and from improved indoor air quality and comfort. **Public-Private Partnerships (PPP)** enables funding and implementing energy efficiency upgrades to affordable housing through partnerships between the public authorities and private companies.

Information tools to prevent and address split incentives

Energy labelling allows to provide clear information on a property's energy performance, which can help overcome information asymmetries that often exacerbate split incentives. **Individual metering and sub-metering** can encourage energy efficiency upgrades in rented properties, as they provide consumption feedback and increase consumption awareness. They also allow for detailed monitoring of energy efficiency upgrades based on actual, rather predicted energy savings, and it can be used for the redistribution calculation of costs and benefits. **One-stop-shops** are businesses or offices that can facilitate access to technical and financial information and assistance in the realm of renovations. They can also mediate between landlords and tenants, helping overcome split incentives and simplify the renovation process, thus making it more attractive[126].

[126] See See Bertoldi, P., Boza-Kiss, B., Della Valle, N. and Economidou, M., The role of one-stop shops in energy renovation - a comparative analysis of OSSs cases in Europe, ENERGY AND BUILDINGS, ISSN 0378-7788, 250, 2021, p. 111273, JRC124675. And Boza-Kiss, B., Bertoldi, P., Della Valle, N. and Economidou, M., One-stop shops for residential building energy renovation in the EU, EUR 30762 EN, Publications Office of the European Union, Luxembourg, 2021, ISBN 978-92-76-40100-1, doi:10.2760/245015, JRC125380.

Voluntary approaches to prevent split incentives

Through **green leases**, a clause or separate agreement is made between the concerned actors, allowing the rent to increase to finance energy efficiency improvements to a property, still respecting the principle of housing cost neutrality principle.

ii. Renovictions

Housing affordability risks of being negatively affected by building renovation. Rents tend to be increased when a renovation is planned or carried out, leaving tenants in the position to either pay a higher fee, or leave the apartment. This may lead to so-called "renovictions". The latter is a word resulting from the contraction of "renovation" and "eviction" and indicates deliberate or indirect evictions due to rent increases caused by housing renovation.

In order to harness the full potential of the Renovation Wave in reducing energy poverty, it is important to accompany the measures and policies to improve energy efficiency of buildings with social safeguards and to prevent renovictions.

Good practices to avoid renovictions

Strong tenancy regulation is the main tool to prevent sudden evictions, including the ones resulting from rent increases following renovations. Such regulation may include tenant protection, as well as rent caps or the use of "warm" rents, which include the costs of heating and in some cases also electricity (e.g. in Sweden). Any increase in the rent is implicitly compensated by the reduction in the energy bills. Moreover, the renting contract cannot be breached unilaterally by the landlord without paying the foreseen compensations. Additional regulation may be needed to protect against arbitrary permanent evictions and should be tailored to the local contexts.

In **Belgium**, the Brussels region introduced a system of reference rates to regulate rents and prevent unreasonable rents. According to the system, a rent is considered exorbitant when it is 20 % higher than the publicly available reference rate for the same type of home. Also, there is the possibility to socialize the rent in public buildings for those on a waiting list for social housing.

In **Denmark**, rent increases in the private rental sector need to be agreed between the affected parties and are calculated on the basis of documented and agreed costs of energy improvement works. Moreover, landlords might be required to offer temporary relocations of tenants during significant renovation works. Tenants then have the right to resume living in the dwelling and the landlord can increase the rent after the renovation only following the granted permission from the Landlord Tenant Board[127].

In **Germany**, favourable loans and grants are available from the country's public bank to encourage energy renovation works for individuals, communities, and companies. Landlords are enabled to increase the rent by up to maximum 8% to compensate for renovation costs.

In the **Netherlands** there is a "points system" for determining if a house belongs in the free or in the social rental sector. It assesses housing quality and determines the maximum price for renting it, providing for a total housing cost guarantee that energy savings resulting from renovation works

[127] https://dklegalpractice.ca/EN/landlord-tenant/tenant-focused-concerns/renovictions

are greater than the increase in rent due to the renovation. Cost neutrality is therefore ensured for tenants.

In **France**, since 2017, when leases are renewed, rents can increase only by the variation in the rent reference index (IRL)[128]. The same applies in high-pressure zones in case the dwelling is rented out to a new tenant. In such areas, the increase in rent cannot exceed 15% of the actual cost of renovation including taxes.[129]

Similarly, in **Ireland**, as of 2021 the government has introduced a cap on rent increases at 2% in Rent Pressure Zones (RPZ), operating when general inflation is higher than 2%[130].

While it is essential to develop legally binding social safeguards to protect tenants from evictions and rising housing costs, as well as to support evicted individuals, ensuring their enforcement is equally crucial. A comprehensive legal framework to foster protection of the right to housing for those in need would allow to align the objectives of fighting against housing exclusion and energy poverty.

iii. Urban planning to tackle summer energy poverty

While energy poverty is mainly measured by the ability of households to keep their home adequately warm, with the impact of climate change increasing and Europe increasingly experiencing heat waves, cooling energy poverty, also known as summer energy poverty, will require increased awareness and attention by policymakers. **Traditionally seen as a problem limited to southern countries, overheating is now prevalent across Europe, exacerbated by the effects of climate change and the increasing frequency and severity of heatwaves, with significant health consequences associated with it.**

Cooling poverty disproportionately affects the most vulnerable individuals, like energy poverty, including pregnant women, children, the elderly, and those with pre-existing illnesses. It is particularly prominent in areas subject to the urban heat island effect[131].

Renovation measures, particularly building insulation measures and thermal retrofitting addressing energy poverty, also apply to cooling poverty[132] [133]. However, one difference between 'winter' and 'summer' energy poverty is that summer comfort is much more influenced by the surroundings of the building and urban setup conducive to create urban heat islands. **Some of the solutions to mitigate cooling poverty lie in urban planning or measures that need to be**

[128] Decree n° 2017-1198 of 27 July 2017 on the progression of certain rent in the event of a new rental or lease renewal, on the basis of article 18 of law n° 89-462 of 6 July 1989, Article 3: https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000035315236

[129] Ibid 8 – Article 4

[130] gov.ie - Government approves 2% cap on rent increases in RPZs (www.gov.ie)

[131] Sánchez-Guevara et al., 2019

[132] Summertime energy poverty_policy brief_v3 (engager-energy.net)

[133] Regarding building-related solutions, insulation is an important element as well as lower cost solutions such as blinds or shades that shun out the sun. Leveraging renewable energy sources, such as solar photovoltaic power is a win-win solution allowing the air conditioning systems and their flexible electrical loads to be adapted to the solar power generation peaks. District cooling is also an emerging topic, providing similar whole systems' efficiency benefits as the more established concept of district heating. Installing decentralised district cooling plants in urban areas with high cold demand density can increase flexibility of cooling supply by reducing the stress on electricity systems.

implemented at city level. Urban-scale interventions, such as the creation of green spaces, well-designed street vegetation, and green roofs or setting rules for thermal retrofitting of historic buildings, can thus contribute to reducing cooling energy demand[134] Some cities are experimenting with creating temporary solutions, such as 'heat shelters' in Lisbon or in Barcelona to provide the population with a space to escape from the heat. Given the limited capacity of such structures, it is important to prioritise access to the most vulnerable and hard-to-reach populations.

The EU-funded CoolToRise[135] project is developing an online tailored tool to identify relevant sustainable cooling solutions, including passive solutions. Technical solutions aside, like for energy poverty in general, cooling energy poverty is deeply intertwined with socio-economic, labour, and behavioural factors.

Cooling solutions must be occupant-centred rather than solely focused on technology. Passive and technical solutions to reduce cooling energy demand in buildings, which enable occupants to interact with building's systems to adapt to the indoor environment, must be taken into consideration. It is necessary to consider occupants and their profiles when choosing the most appropriate interventions. Literature has also pointed out that some of the areas, most affected by summertime energy poverty - coastal urban areas in the South-East Europe and the Mediterranean - are 'hotspots' of tourism and hence tensions between locals' and tourists' demand for housing may lead to housing unaffordability for low income, vulnerable local households. **To this end, tackling summer (or cooling) energy poverty also includes revising housing policies to ensure that tourism expansion and energy efficiency upgrades to the buildings do not increase the structural injustices, which can lead to unaffordable housing, gentrification, and segregation.**

3. Access to renewable energy

Signed in 2015, the Paris Agreement commits the EU internationally to a reduction of greenhouse gas emissions in order to limit global warming. By 2030 the EU wants to reach a share of at least 42,5% renewables in its energy mix, with the aspiration to reach 45%. This means almost doubling the present share of renewable energy in the EU. By 2050, the EU target is to be climate neutral. To reach these targets, a much stronger and flexible deployment of renewables than today is needed. Together with energy efficiency measures, **access to renewable energy is one of the key structural measures addressing energy poverty**.

In the recent crisis, the energy poor and vulnerable customers have been hit hardest by price increases, although that effect was attenuated in electricity markets that integrated increasing shares of renewables[136]. This means that the ability of consumers to access renewable energy, either directly through self-consumption or indirectly through wholesale markets, or provide demand response earlier, contributes to alleviate the impact of high gas prices via electricity markets. IEA estimates that electricity consumers could save around €100 billion between 2021

[134] Živčič L., Tirado Herrero S., 2021
[135] COOLTORISE – Raising summer energy poverty awareness to reduce cooling needs
[136] Executive summary – World Energy Outlook 2022 – Analysis - IEA

and 2023 thanks to additional electricity generation from new installations of solar PV and wind capacity[137]. . For example, throughout 2021-2022 Ecopower, a cooperative providing direct access to renewables in Belgium has been able to keep prices remarkably lower compared to market prices during the energy crisis[138]. Moreover, it has been estimated that in 2022 a collective of 40 residential consumers engaged in sharing of electricity produced 50% from solar and 50% from wind could have saved as much as 1269 EUR in Denmark, 999 EUR in Romania, 1213 EUR in France, 1045 EUR in Belgium, 1220 EUR in Italy, 1040 EUR in Greece and 765 EUR in Portugal compared to the retail market prices[139].

Even though the installation of decentralised renewables is now thriving specifically amongst households, the full spectrum of benefits has not yet been exploited: wider energy sharing is not enabled and provisions on energy communities in EU legislation have not been fully implemented so far. Moreover, **active participation in the energy market is often inaccessible to lower-income households**.

Access to renewable energy can be provided through various means, such as consumer empowerment, self-consumption, energy sharing, energy communities, collective purchasing, or demand response.

a. Consumer empowerment

Consumer empowerment measures play a crucial role in ensuring that consumers can become active catalysts in transition. They boost awareness of energy use, incentivise demand-response and energy efficient behaviour and increase social acceptance of distributed sustainable energy projects. Different consumer empowerment models can provide access to affordable and sustainable energy sources and therefore have a potential for a bottom-up approach of the energy system transformation[140]. Especially in rural communities, lack of access to reliable energy sources can lead to energy poverty. This is often due to poorer grid connection and to the higher percentage of inhabitants in socio-demographic disadvantaged conditions[141]. By harnessing renewable energy sources, energy empowerment measures can bring to the fore low-cost and environmentally friendly energy options to households. **Energy poor should not be left out of empowerment but rather be a key target for policies to put them at the centre of the energy transition.**

Low-income households face difficulties to access low-cost renewables due to the high level of capital expenditure for solar photovoltaic ('PV')[142] for example, as well as high financial entry

[137] How much money are European consumers saving thanks to renewables? – Renewable Energy Market Update - June 2023 – Analysis - IEA
[138] From fringe to mainstream: the opportunities (and risks) of a thriving community energy movement (europa.eu)
[139] Collective energy sharing: Cost-Benefit Analysis and Survey Evidence of the Willingness to Invest by Marten Ovaere :: SSRN
[140] Hinsch, Arthur, Di Nucci, Maria Rosaria, Krug, Michael, Rothballer, Carsten, & Russell, Lucy. (2023). Advancing Renewable Energy Communities in Europe. Zenodo. https://doi.org/10.5281/zenodo.7620393
[141] In 2022, the EU's at-risk-of-poverty or social exclusion rate was highest for people living in rural areas (22.1 %), followed by those living in cities (21.7 %) and in towns and suburbs (21.1 %). The variation was much larger in Eastern Countries, e.g. 47.9% of the rural population in Romania, opposed to 18.9% of the urban population; or 43.1 % of the rural population in Bulgaria, opposed to 23.7% of the urban population. Source: Statistics | Eurostat (europa.eu)
[142] https://www.irena.org/publications/2022/Jul/Renewable-Power-Generation-Costs-in-2021.

barriers for joint investment initiatives, including energy communities[143]. In addition, the access to innovative technologies can be hampered with the risk of being locked-in in outdated technologies. Self-consumer schemes, such as the installation of solar panels or other forms of renewable energy sources, should help these households to become more energy self-sufficient and reduce their reliance on external energy providers. It is important that these programmes are accessible and affordable to all households regardless of their socioeconomic status.

b. Self-consumption

Energy poor and vulnerable households living in social housing may lack necessary ownership rights and financial resources to become self-consumers. Through third party investments, solar photovoltaic installations can be installed on social housing (e.g., by social housing companies) and leased, rented, or used by this group of consumers to help access renewable energy at a fee lower than the electricity market prices. Targeted projects, aiming at providing solar electricity to people living in the social housings, can make significant difference.

An initiative of the Association of Flemish Social Housing Companies[144] encouraged social housing companies to develop an innovative business model: the companies invest in solar panels settled on the roofs of the social housings, and the tenants "only" pay a usage fee (rent) for the PVs and the produced electricity. Due to the scale of the project, the rental cost tends to be cheaper than current electricity prices. This model allows social housing companies to act like an investment bank which is at the same time engaged in collectively fighting energy poverty.

c. Energy Sharing

Energy sharing can be another effective instrument to empower consumers that do not have available space, technical capacity and / or financial means to become prosumers[145] in an easy and cost-efficient way. Energy poor and vulnerable households can access offsite renewable energy generated by other prosumers (e.g., municipalities or companies), either by leasing or renting installations, or receiving or purchasing the electricity at a price lower than retail market prices. Likewise, a single prosumer can empower other consumers, including low-income families by sharing with them excess production. Enabling energy sharing is a fundamental part of the Commission's electricity market proposal[146]. The provision of giving customers the right to deduct off-site generation from their metered consumption, could, under certain conditions, encourage local renewable energy production and efficient energy sharing, including within energy

[143] For example, in Lithuania, it costs between 1379-1400 EUR for 1kW share in solar PV park. In Germany, the average minimum financial contribution – individuals buy shares to become members – amounts to 545 €. See Hanke, F., Guyet, R., & Feenstra, M. (2022). 12 - Energy communities' social role in a just energy transition (S. Löbbe, F. Sioshansi, & D. B. T.-E. C. Robinson (Eds.); pp. 195–208). Academic Press. https://doi.org/https://doi.org/10.1016/B978-0-323-91135-1.00027-4.

[144] ASTER

[145] A prosumer is defined as an end-user who produces renewable electricity for its own consumption at a private site located within defined boundaries and can store or sell self-produced renewable electricity. While electricity can be shared within a family unit, the activities should not constitute main commercial or professional activity for the prosumer (Prosumers | Clean energy for EU islands (europa.eu))

[146] COM/2023/148 final

communities or peer-to-peer exchanges, without affecting other elements of the energy bill such as taxes, levies, and network tariffs.

When active consumers share excess electricity against a price, they sell electricity making use of peer-to-peer trading agreements. These can be longer-term micro-power purchase agreements or short-term, ad hoc contracts making use of **peer-to-peer (P2P) trading platforms**[147], without the binding mediation of traditional utilities. Such peer-to-peer markets are still at early stages of development and related platforms can be operated by either commercial parties, energy communities and / or distribution system operators (DSOs). Peer-to-peer trading allows for stable prices decouples from wholesale market prices fluctuations. When close to real-time trading and matching of self-generated electricity with consumption occurs, it provides the opportunity for energy poor and vulnerable households to search for the cheapest price available, helping them lower their bills.

While used in protected historical areas where the legal framework is not conducive to the installation of PV for monument protection services[148], P2P energy trading can also assist in identifying energy poor households and enabling both direct philanthropy by individuals and assistance from governmental and non-profit groups[149]. In many instances, P2P platforms can link people together and empower them to share energy units[150]. Some retailers have developed specific energy donation platforms (EFD[151] in France or HERON[152] in Greece), which – as a corporate social responsibility programme – strengthen the support of low-income households.

d. Energy communities

Increasing the share of citizen ownership of the energy system has the potential to create social cohesion, improve citizens' understanding of the issues related to energy, climate and democracy, and trigger energy savings.[153]. The recent crisis with incalculable energy prices and sudden disconnections has led to frustration amongst customers and a feeling of helplessness amongst vulnerable groups.

The energy communities' value driven, and community rooted business model has the potential to help tackle energy poverty, especially by acting as a stabilizer when market prices are on the rise, as **renewable energy is not perceived as a revenue model to maximise profits but to produce at cost level at times when the community members consume energy.** Energy communities facilitate the collective investment in and generation of renewable energy sources capacity of a community of consumers and share or supply electricity at cost level. As emphasized in the Renewable Energy Directive (EU) 2018/2001, energy communities can be a way to help to "fight energy poverty through reduced consumption and lower supply tariffs" – if vulnerable and low-

[147] E.g., ENTRNCE
[148] Homepage - POCITYF - POCITYF
[149] T. Morstyn and M. D. McCulloch, "Multiclass Energy Management for Peer-to-Peer Energy Trading Driven by Prosumer Preferences," in IEEE Transactions on Power Systems, vol. 34, no. 5, pp. 4005-4014, Sept. 2019, doi: 10.1109/TPWRS.2018.2834472.
[150] Peer-to-peer platforms – Shaping a democratic energy model to boost renewables (europa.eu)
[151] Don d'énergie : aide pour les factures d'électricité - EDF
[152] Share the light - HERON
[153] Energy Poverty Handbook, pp. 65-67

income households are enabled to participate. In that context, cooperation with social services is a key enabler for energy communities to be in a position to contribute to fighting energy poverty.

Even though the scientific evidence is still fragmented [154], there are indications that the implementation of energy communities can have positive spill-over effects. Besides the potential effect on reducing bills, an additional **added value of energy community projects can be the value over profit mentality, the active engagement in decision-making, grassroots knowledge, legitimacy as well as trust, empowerment, and social cohesion in a community**. As seen in several projects[155], people involved feel part of something bigger. With the help of an energy community, a clearly noticeable sense of neighbourhood and belonging is created as well as active engagement and ownership of the energy transition. In fact, more can be done to better include and empower energy poor, for example through reducing administrative costs or rewarding applications that include vulnerable citizens[156].

Most energy communities consider energy poverty to be a substantial problem, but only a small number address the issue. While a quarter of respondents to a survey by the University of Birmingham carry out significant work on energy poverty, only 5% of energy communities list energy poverty as their main priority[157]. The respondents identified certain barriers, such as the lack of householder awareness about available support or a lack of engagement capacity and reluctance to seek help due to stigmatisation. Therefore, it is necessary for energy communities to improve their methods of communicating with target audiences, among others by collaborating with other entities.

More generally, lack of information, financial issues and time constraints are seen as the main barriers for people to join an energy community[158] . Upfront fees can be an unpayable obstacle for energy poor to participate in an energy community, especially if they benefit from income support or lower subsidised energy bills. On top, energy poor households have been found to have limited time resources due to the lack of financial resources, multiple jobs or less access to childcare[159].

To allow as many people as possible to profit from an energy community, financial support schemes are necessary. Examples of support include schemes where beneficiaries receive financial compensation or zero-interest loans with a long payback period to enable them to participate in an energy community, and examples of non-financial support such as workshops on optimizing energy bills[160].

[154] Mona Bielig, Celina Kacperski, Florian Kutzner, Sonja Klingert (2022). Evidence behind the narrative: Critically reviewing the social impact of energy communities in Europe, Energy Research & Social Science,Volume 94, https://doi.org/10.1016/j.erss.2022.102859.
[155] POWER UP - Energy Cities (energy-cities.eu)
[156] See Della Valle, N. and Czako, V., Empowering energy citizenship among the energy poor, ENERGY RESEARCH and SOCIAL SCIENCE, ISSN 2214-6296, 89, 2022, p. 102654, JRC127631.
[157] CEES survey finds that few ECs are tackling energy poverty (energysolidarity.eu)
[158] DIALOGUES-D3.3.-What-forms-of-citizenship-in-European-energy-initiatives-Deterrents-and-enablers-to-further-support-a-just-energy-transition.pdf (dialoguesproject.eu)
[159] Hanke, F., Guyet, R., & Feenstra, M. (2021). Do renewable energy communities deliver energy justice? Exploring insights from 71 European cases. *Energy Research & Social Science*, *80*, 102244.
[160] Sun4All | Home (sunforall.eu)

The Belgian municipality of Eeklo implemented an innovative business model combining revenue from an existing wind turbine with financial schemes to allow vulnerable households to participate in an energy community[161].

In **Portugal**, where renewable energy communities are only sporadically present, a pilot project[162] tries to empower people through a bottom-up approach with direct involvement of the citizens, local non-profit associations, and local governments. It enables energy poor families to join energy communities without the need for initial investments and a very low (rather symbolic) annual fee. At the same time all members have equal voting rights and benefits in the community. This model of a fully non-profit local energy community shows the need of an active involvement of a well-established network of local partners, including local authorities.

To exploit the full potential of energy communities that target energy poor and vulnerable households, governments and organisations should prioritize policies and initiatives that support the development of such communities and specifically target low-income households and worst performing buildings. This includes providing funding and technical support to help communities establish and maintain renewable energy infrastructure, as well as promoting the use of renewable energy sources through education and awareness campaigns. Further importance should be given to teaching relevant skills required to properly address energy poverty in the context of energy communities. Additionally, policies that incentivize the adoption of renewable energy technologies and provide targeted support to energy communities can help to accelerate the growth of these non-professional and often local entities and thus help increase their impact in reducing energy poverty.

For a successful implementation of projects, a strong partnership made up of relevant umbrella organizations, civil society organisations, NGOs, regional energy agencies, local authorities and municipalities, research organisations and energy cooperatives is important[163]. It is crucial to bolster municipal initiatives to organize and maintain the emergence of regional energy players with social objectives by teaming up with relevant stakeholders and energy poor households[164]. Some projects even specifically dedicate a certain number of profits to programmes, designed to assist members of a community in energy poverty in various ways (e.g., better insulation or other energy efficiency improvements, training on energy saving behaviour)[165]. A dedicated donation fund[166] can also be a model to fight energy poverty by collecting either micro-donations or direct energy donations from consumers on the bills of participating members. Donated funds can then be used to tackle energy poverty more structurally in the long term.

Even though many of these projects are modest in scale, policymakers should nonetheless consider them important because they actively include people in the transition process towards clean energy.

[161] Power Up in Belgium – Power Up (socialenergyplayers.eu)
[162] EPAH TA_Lumiar_poster (europa.eu)
[163] Front page | POWERPOOR
[164] POWER UP - Energy Cities (energy-cities.eu)
[165] Home | Repowering London
[166] Énergie Solidaire | Accueil (energie-solidaire.org)

e. Collective purchasing

Another empowering measure is enabling collective purchase. High upfront investment costs as well as lack of trust or even inconvenience are main barriers which stop consumers from investing in renewable energy and / or efficient energy technologies. Organising collective purchase schemes is aimed to overcome these barriers and help consumers reduce their energy bills by improving the energy performance and comfort of their homes. The tools developed are mainly cost / savings calculators.

CLEAR-X project funded from H2020 Research and Innovation Programme[167] will engage 38,000 consumers in total in collective purchase campaigns, giving them access to lab-tested products, a selected installer, and a trusted third-party contact point throughout their purchase journey. Consumers will be supported throughout the purchase journey by creating 'purchase and install' packages, offering after-sales advice and developing online digital tools adapted to national contexts to drive more energy efficient behaviour. Even though these collective purchasing schemes do not yet specifically target energy poor, they are an important way to facilitate access to renewable energy.

f. Demand response

Demand response helps to manage electricity demand by adjusting or shifting consumption based on grid conditions or price signals. Through prices or monetary incentives, customers are encouraged to shift their electricity demand to times when there is more electricity, or when demand is lower. Such incentives may have the form of price-based programmes based on price signals and tariffs to help consumers shift their consumption, or direct payments through incentive-based programmes.

A right measure here may be dynamic tariffs. They allow for flexible pricing based on demand and availability of electricity. However, to allow for a more spread use of these measures, wider spread and knowledge of digital tools is crucial, enabling data aggregation, remote monitoring, and micro interventions. Customers, including energy poor, should therefore be addressed with adequate support in a systemic way to understand these tools (which includes focusing on their digital literacy).

Smart metering systems, **thanks to the accurate and close to real-time readings they support, allow consumers to monitor their actual energy usage and waste throughout the day**. As a result, they help consumers take control of their energy behaviour, and adjust their consumption to keep their costs in check, while they put an end to estimated bills and the grievance of back billing. This is of utmost significance for energy poor households, who often grapple with tighter financial constraints and are disproportionately impacted by fluctuations in energy prices. Moreover, when coupled with complementary digital tools like in-home displays, energy management systems, and software applications, smart metering systems equipped with the right functionalities as mandated in the EU legislation[168], and therefore fit for the purpose, can facilitate

[167] CLEAR-X
[168] Article 20 of Electricity Directive (EU) 2019/944; Gas Package proposal (COM/2021/803 final)

active participation in automated energy efficiency programmes, demand response initiatives and other value-added services. Energy poor households should not be left out of access to such technologies that would support them in reducing or better managing their energy consumption, as well as unlock opportunities for them to reap benefits from ongoing advancements in energy technology and digitalisation[169].

VIII. TRUST, ENGAGEMENT AND COMMUNICATION

Effective communication and information sharing play a crucial role in addressing energy poverty. The lack of access to affordable (renewable) energy is a widespread problem that affects people worldwide. Communication can help to ensure that those who are affected understand the cause and potential solutions. Many communities, especially those in socio-economically and socially disadvantaged areas, typically do not have access to broader energy knowledge. Therefore, providing energy advice, including on energy bills, and sharing knowledge about energy-saving practices is crucial to optimizing energy bills and therefore helping people save money and meet their energy needs.

The energy crisis showed that many consumers are not aware of the main features of the tariff they are on.[170] While Article 10 of the Electricity Directive (2019/944) sets the key information to be provided in electricity contracts, further attention should be paid to the contract design, including its reader friendliness, length, and clarity. This is particularly true for those consumers that are vulnerable and for the energy poor who may have less understanding and trust in the market. **Clear and easy to understand energy billing and energy contracts are a means to support consumers, including energy poor, to reduce their consumption and thus their energy bills**[171].

With the energy bill being one of the main communication channels between an energy supplier and a consumer, it could be used to convey not only the minimum requirements for billing and billing information set by the Electricity Directive , but it could serve as a vehicle to provide action-oriented information regarding simple steps to reduce energy consumption and increase efficiency or further details on public one stop shops / energy advisers for support of consumers.

On top, consumers, namely consumers in energy poverty and in vulnerable situations, should have access to energy offers that meet their needs and are clear. Such offers could include incentives for consumers to adjust their consumption or dynamic price caps to avoid bill shocks. They should

[169] Digitalising the energy system - EU action plan (COM/2022/552/2)

[170] For instance, Norwegian consumer organisation Forbrukerrådet (Norwegian Consumer Council) ran a survey tracking Norwegian consumers' experience with electricity markets. In 2021, when asked what kind of tariff was foreseen in their electricity contract, almost 70% of the respondents said that they did not know, or they mentioned tariff structures that were not available on the market. Also, a survey carried out by the Belgian National Regulatory Authority CREG showed that half of the consumers was not aware whether they had a fixed or variable priced contract. BEUC-X-2022-111_An_Electricity_Market_that_Delivers_to_Consumers.pdf

[171] Behavioural economics can provide evidence-based insights on how to regulate energy information provision (i.e. framing, format etc) and how to boost citizens' energy literacy. These measures would also enable to reduce the risk that the energy poor face aggressive commercial practices that exploit their cognitive biases (i.e. the so-called "sludges"). See: DellaValle, N. and Sareen, S. (2020). Nudging and boosting for equity? Towards a behavioural economics of energy justice. *Energy Research & Social Science*, 68:101589

also receive clear information on related pre-contractual information so that they can make informed decisions and easily choose the best deal for them. A tool comparing offers of suppliers, including those for dynamic electricity price contracts, is a part of the Directive 2019/944 on common rules for the internal energy market for electricity. Guiding people through this tool may provide significant savings on energy bills.

The role of energy companies[172]

Energy companies tend to be the first contact points for consumers, and they know first when consumers struggle with paying their bills on time. They are capable of identifying and contacting people at risk of energy poverty. However, they might not be able to fully assess energy poverty because of the lack of income data and data on the housing efficiency. Partnerships between energy companies, national observatories on energy poverty, NGOs and / or municipalities could help overcoming this issue and provide a clearer picture of the energy poor.

Energy poverty alleviation is in the interest of energy companies as well, as they could avoid the costs of handling bills debts and disconnection. Preventive and support measures could, in fact, be more cost-effective for both energy companies and households. Moreover, providing customer support can lead to an increase in trust and loyalty, which would benefit the image of the energy company and potentially expand the pool of clients.

Moreover, energy companies are well placed for providing energy expertise and tailored advice based on the data they collect, as well as to scale up information and communication campaigns.

Information campaigns targeting energy poor can further help raise awareness of energy poverty and of the steps which everyone can take to address it. The energy crisis has seen several such campaigns in the EU, adapted to local context, culture and available resources. Another way of supporting marginalized groups' well-being is setting up low-threshold exchanges, especially to make people more aware about energy efficiency. As part of a regular 'open house', energy experts share advice on energy tariffs or discounts on energy bills in a welcoming and informal setting (e.g. energy cafés[173]).

An EU funded project Sun4All[174] provides complementary energy advice and training to optimize energy bills and alleviate energy poverty to the participants and the broader community, reaching up to 6,000 additional consumers with its activities.

TRIME, a pan-European project[175], addressed tenants in social housing with the aim to help them reduce their energy usage and as a result their cost of bills. In its context, an energy saving advice model was designed. It was built around "energy ambassadors", a network of tenants who voluntarily supported their neighbours.

[172] See also Connecting Obligated Parties to Adopt Innovative Schemes towards Energy Poverty Alleviation (socialwatt.eu)
[173] www.crewenergy.london
[174] Sun4All | Home (sunforall.eu)
[175] TRIME – TRIAS MORES ENERGETICA - EFL European Federation for Living (ef-l.eu)

Under the H2020 project STEP-IN[176] home advisor visits and energy cafes were organised for vulnerable households in 3 pilots - mountainous area in Greece, Manchester urban area, and Hungarian rural area.

Many countries also establish so-called **one-stop shops**, which serve as integrated consumer advice centres providing knowledge or technical assistance to consumers. JRC Report[177] defines them as "… advisory tools that facilitate access to financial mechanisms, assist consumers in relation to technical and financial issues and guide them through a number of key stages in the renovation process (…)". They offer a single entry to customers and can help them through all aspects of the renovation process, including its financing.

Examples of advisory services and one-stop shops in EU Member States

From the perspective of Member States, all submitted long-term renovation strategies (LTRS) include the development of advisory services and policies to inform citizens about energy-efficient renovation opportunities and tools.

The **Austrian** long-term renovation strategy provides information on many regional assistance services. One example is the energy consultancy in Burgenland, which is a one-stop-shop giving people free and independent advice for construction and renovation projects in private residential areas. Free advice includes comprehensive information on energy issues relating to the construction and renovation of buildings, heating and air conditioning of buildings, and electricity applications. Coordinated information is available in the areas of thermal insulation, windows, heating systems, financial support, energy saving tips, photovoltaics, storage systems etc. A wide range of brochures and guides is available free-of-charge for all topics. The energy consultations can take place on-site, in the offices of the district authorities, in the office of the Burgenland Provincial Government or in a municipal centre. Questions that need to be answered quickly are often answered by a telephone through a service hotline, or by email. People can also sign up for advice online or by phone. A cost-optimal and environmentally-sound renovation and new construction plan is then drawn up together. At the end of the service, customers receive a record of the advice given.

Through the Open Partnership Dialogue action, stakeholders, local and state representatives, academia, construction and energy professionals were connected and had the opportunity to contribute to the development of the Long-term renovation strategies in **Croatia**. An online energy-saving tool[178] has been set up in **Cyprus**, to help the public to easily identify the costs and benefits of different energy saving and renewable energy measures in homes. Energy consultation and information centres (EKIS) in **Czechia** provide a free public service supporting the introduction of energy saving and renewable energy. This service will be extended to building owners.

[176] Effective analysis & tackling energy poverty (step-in-project.eu)

[177] JRC Science for Policy Report, Accelerating energy renovation investments in buildings - Financial and fiscal instruments across the EU, Economidou, Marina Todeschi, Valeria Bertoldi, Paolo, 2019.

Economidou, M., Della Valle, N., Melica, G., Valentini, O. and Bertoldi, P., Financing energy renovations at local and regional levels, EUR 30815 EN, Publications Office of the European Union, Luxembourg, 2021, ISBN 978-92-76-41141-3, doi:10.2760/52526, JRC123755.

[178] Energy Saving Tools (cea.org.cy)

Denmark developed 'Better Home', a market-driven scheme of the Danish Energy Agency focusing on energy renovation of buildings. It aims to ease renovation of energy systems for building owners (mostly homeowners) by creating a one-stop-shop for energy renovation The owner meets one certified installer who becomes the single point of contact for the whole process and who accompanies the homeowner throughout the renovation and who follows-up afterwards. For the installers, BetterHome clusters suitable projects and offers training, guidance and support to them so that they improve their knowledge and skills over time. BetterHome has also developed a digital platform for the installers that allows them and their clients to follow all the steps in the process of the energy renovation in a highly interactive and visual manner.

The State Shared Service Centre built in **Estonia** provides support for improving the energy performance of central government buildings – both when renovating existing buildings and when building new ones. It also provides local government with support to make their buildings energy efficient.

In **France**, a network run by the French Agency for Ecological Transition , the National Habitat Agency and the National Agency for Housing Information called FAIRE[179] is a one-stop-shop comprising 1000 experts / 450 contact points. The network includes building and real estate professionals, NGOs, local and regional authorities, and energy companies who work together to identify relevant solutions for household renovation and to help households put them in practice by increasing their confidence and knowledge, including on how to access funding. In addition, a national renovation observatory has been put in place and will monitor the 'renovation equivalents' per year, the annual energy consumption of existing building stock, the share of building stock per energy performance class and per heating system. In addition, a standardised technical sheet for energy performance contracting services (CPE services) was created at the end of 2018 to encourage the use of energy performance contracts for new installations.

Latvia has its "Let's live Warmer" campaign which aims to inform citizens about energy efficiency, the economic returns of investments and other positive benefits. In addition, the "most energy efficient building in Latvia" campaign seeks to promote good practices in the field of energy efficiency of buildings through the construction, renovation and reconstruction of buildings and raising public awareness of the thermal insulation of buildings. "Myenergy" in **Luxembourg**, a national structure for promoting a sustainable energy transition, provides information and support for the efficient use of energy. It is Luxembourg's one-stop-shop for building renovations. The 'myrenovation' application is to be further developed to close information gaps on funding and financing schemes.

The 'renovation accelerator' promotes the aggregation of projects into bigger investments that are easier to finance in **the Netherlands**, allowing large-scale renovation of rental homes. As part of this initiative, a regional support programme has been set up and offers a stimulating learning environment which brings together housing associations' demand for (hybrid) heat pumps, insulation and other reduction measures. EUR 130 million will be available for the renovation accelerator until 2024. Some more tools that exist in the Netherlands include

[179] Faciliter, Accompagner et Informer pour la Rénovation Énergétique

- the Regular Explorer home which allows owners to calculate the costs and benefits of energy saving measures for their home. They can also get advice on the measures may implement to attain a higher energy performance class (*e.g.* from F to D, or B to A).
- the Energy Savings Explorer for Offices provides office owners with information on how to qualify for energy label class 'C'. It provides information on the investment costs, the annual savings in energy costs, the payback time, and the environmental effect (CO_2 reduction per m^2).
- the Knowledge and Innovation Platform for Sustainable Social Real Estate where eleven sectors are in the process of drawing up roadmaps – the central government (the Central Government Real Estate Agency), municipalities (VNG), provinces (IPO), the police, representatives of the educational sector (from primary, secondary, senior secondary vocational, higher professional and university level), the healthcare sector and the sports sector. The platform is not intended to support the preparation of the roadmaps, but to help individual institutions make their buildings sustainable.
- the Gas-free district knowledge and learning programme aims to not only provide technical solutions and information on cost and financing, but to also help with management and organisation, data-based planning, legal aspects and communication and participation.

Portugal is simplifying and dematerializing the licensing processes and harmonizing the documents related to the building process, through the reduction of bureaucracy and context costs associated with licensing. In **Slovakia,** an innovative television programme called "Energy" broadcasts on a monthly basis topics dedicated to energy efficiency and up-to-date information on improving energy performance. The series provides the necessary information to owners in all areas related to renovation, maintenance and administration. The ENSVET - Energy advisory network for citizens in **Slovenia** strengthens professional support to co-owners in planning energy renovations of multi-apartment buildings as independent expert support for decisions to increase the energy efficiency of the building.

Spain has a wide network of local and regional one-stop shops ('ventanillas únicas') that provide the public with various services (including financial and technical advice). In addition, a number of campaigns to raise the public's awareness on energy-efficient behaviour and opportunities, and provide information on available financial support (*e.g.* thematic guides released by the government of Navarra under the SustaNAPlity European project, web portals on building renovation such as. the 'Observatorio Ciudad 3R', and the 'Ni un hogar sin energía' project, developed by ECODES).

The National Renovation Centre (NRC) in **Sweden** works with businesses and academic institutions to improve knowledge and provide operators in the building industry with the information necessary to carry out renovations efficiently. The aim is to make existing buildings more environmentally, economically and socially sustainable from a life-cycle point of view, while improving or retaining their function so that they meet the requirements of users and the authorities.

IX. SKILLS

To address energy poverty in the context of the Green Deal and a just transition towards clean energy sources, **a new set of skills must be ensured at all administrative levels**, particularly at the level of the national policy makers, public servants, specialists, and frontline workers in municipalities. Additionally, a basic set of skills - including traditional skills, but also new comprehensive skills - must be guaranteed for energy poor consumers to be able to take the most appropriate actions to better tackle the issue of energy poverty. In this context, a cross-policy action is needed to invest in skilled workforce as a strategic asset – to increase the number of workers and re-skill those already present in view of attracting, retaining, and reskilling in evolving trades related to clean energy transition. Often this goes back to necessity to coordinate across policies (energy, environment, employment, education, migration) and governance levels (EU, national, regional, local).

Policymakers should address these specific needs for skills by designing policies and programmes at national as well as local level. The capacity building should be accompanied with enhancing the competences and adding the necessary skills for policymakers and civil servants to understand and address the multidimensional aspects of energy poverty as well as to address them through clean energy transition, RES deployment, energy efficiency as well as innovation, interoperability, and a multisectoral and multilevel governance system.

Promoting 'green skills' for all professions in the construction and building sectors

BUILD UP Skills initiative[180] puts together results of 10 EU-funded projects focusing on innovative training to building sector professionals to better achieve green goals.

In **Austria**, the Energy Academy offers a comprehensive training programme on energy technology, energy management, energy advice, construction, renewable energy, and energy efficiency. The target groups include energy managers in companies, municipalities, and institutions, building and home technology specialists, planners, energy consultants, energy auditors and interested members of the public. There are currently more than 30 seminars on different topics available online[181].

Cyprus participates in the European 'SME Power Efficiency' project, which aims to help SMEs improve the skills and competences of their staff, develop specific training programmes for energy managers, undergo energy audits and, above all, to take action and implement the proposed energy saving measures. The actions financed under the project include the development of a free certified education and training programme aimed at training energy managers in SMEs.

In **Czechia**, the EFEKT programme contributes to the system of education that supports the construction sector. It covers the organisation of courses and seminars and other training and

[180] Construction skills: leveraging new skills for the building sector to deliver on the European Green Deal (europa.eu)
[181] www.energyacademy.at.

information actions, such those that upgrade the qualifications of energy specialists and those that support the professional activity of installing renewable energy installations, as well as the communication of legislative changes in the field of energy management and energy efficiency.

In **France**, the PACTE (2015-2019) programme aims to assist construction professionals in building their skills in the area of energy efficiency. The aim is to improve quality in construction and renovation works so that, ultimately, the construction and renovation of buildings is better, faster, and cheaper. The actions supported include the development of digital site plans for site staff (tools that have an educational and pictorial presentation on the rules of the art), and the development of tools for measuring the intrinsic energy performance at the reception of a building or specific projects for a particular type of material. The programme supported around 40 projects in mainland France to improve the skills of building professionals, and about 40 projects designed to adapt techniques to local characteristics and to structure the regional sectors. Moreover, since 2007, the FEE Bat programme (training of professionals in energy saving in buildings) has made it possible for construction professionals to grow their skills. Financed by Electricité de France ('EDF') within the framework of the energy saving certificate scheme, it has allowed more than 175,000 active professionals to get training so far and continues to train around 1,000 interns each month.

Malta developed the Skills Building initiative in the construction sector: by 2025, the government will develop a scheme to train and certify professionals and tradesmen of various levels in order to obtain a mandatory skill card which would need to be presented to work in the respective sectors. Certification will be extended to installers of several technologies and a life-long-learning approach will be adopted through regular training sessions addressed to skill card holders.

In **the Netherlands**, the Declaration of Intent on the Labour Market and Training aims to prepare future construction professionals to carry out deep renovations. Moreover, with the 'green deal for the development of decentralised sustainable heating and cooling technologies', significant steps are being taken to educate specialists who can design, build, and maintain the sustainable systems of the future.

Poland has an ongoing monitoring system for the demand for jobs and skills in the energy efficient construction sector and renewable energy sources in order to prepare the workforce for the sector. In addition, Poland continuously strengthens the verification system of the competence of workers in the construction sector with regard to thermal performance of buildings, installation technology and heat sources in cooperation with employers, educational institutions and the scientific community. In 2016, Poland started to put in place an Integrated Qualifications System (IQS), which describes, organises, and gathers various qualifications in one, publicly accessible register, the Integrated Qualifications Register..

Training of energy efficiency professionals and energy consultants

In **Austria**, the Styrian Energy Advisory Network (netEB) aims to provide clear guidance and improve the quality of energy advice. Although the selection of energy consultants is very wide, they are often specialised in only one field and therefore not sufficiently trained to provide comprehensive advice. All consultants included in the network are appropriately trained and

subject to a pre-defined quality control. Through regular training and information sessions, they are up-to-date with the latest energy-related issues.

In **Czechia**, energy specialists will be authorised by the Ministry to carry out energy audits, issue energy performance certificates and carry out inspections of heating and air-conditioning systems. In order to ensure that authorised energy specialists have the necessary expertise, Czech legislation requires energy specialists to follow continuous training activities and to obtain a certain number of credits within the legally defined period.

To achieve sufficiently skilled workforce, a supply push should strive for updating educational curricula to reflect the evolving market, provide wider training offers, ensure an agile vocational education and training, provide for short-term trainings (*e.g.* through micro-credentials), focus on vocational education and training and attract new talents by (re-)branding the image and employment conditions of technical crafts and jobs. Supply push needs to be combined with a demand pull for clean energy solutions to foster skill supply (inform consumers, establish local one-stop-shops for energy renovations, provide for criteria in funding programs and monitor their implementation).

Skills to diagnose energy poverty

The key skills to address energy poverty by directly approaching the households relates to ability to recognize energy poverty in the first place, to provide precise and tailored advice in an easily understandable and accessible way, and to provide the necessary support for the implementation of the advice. **As municipalities play a key role in directly addressing energy poverty and delivering services to energy poor, they could, ideally in cooperation with social workers on the ground, address energy poverty in the local context and solutions.** Front line workers, such as social or health care workers that are in direct and regular contact with energy poor people play a crucial role in the identification, and mitigation of energy poverty. Recent projects and initiatives dealing with energy poverty at local level have highlighted the concrete knowledge and capacity gaps of social workers - social operators on the ground miss (technical) energy-related specific knowledge while technical operators lack social and communication capacities related to (energy) poverty issues. Combining these set of skills or covering gaps in the operators´ and social workers´ knowledge should be subject to relevant training (and possibly creation of a new job profiles).

Lille Metropole in France created Amelio Pro[182], a website and advisory and support service offering advice to low-income households on eco-solutions, supply of small energy-saving equipment, and recommendations as regards social policy. Operation managers, thermal engineers, occupational therapists, social workers, and lawyers work together to provide free information, advice, and support to facilitate metropolitan residents' renovation projects. In the medium term, the project offers tenants and landlords mediation and finance for small works. Since its establishment in 2014, more than 20,000 households have been advised, and in 2022, it witnessed an increase of requests by 38% compared to 2020.

[182] Nos conseillers vous accompagnent dans votre projet de travaux de rénovation ! - AMELIO Pro, La rénovation énergétique de votre logement par la Métropole Européenne de Lille

In **Portugal**, a consumer organisation DECO[183] developed "energy and housing desks" with municipalities, to advice consumers on home energy renovations. The project was supported by H2020 programme.

Member States may consider implementing the Council Recommendation of 16 June 2022 on individual learning accounts[184] to accelerate the participation of civil servants and social workers in training opportunities. Paid educational leave should be particularly considered. The implementation of the Council Recommendation on a European approach to micro-credentials for lifelong learning and employability[185] would enable the recognition of skills developed by civil servants and social workers through short training opportunities. The Council Recommendation of 20 December 2012 on the validation of non-formal and informal learning[186] supports the validation of skills the civil servant and voluntary workers may have acquired through work or life experience.

It is also **important to develop measures to ensure that a basic set of skills is possessed by energy poor consumers** to take the most appropriate actions for them to reduce the impact of the energy poverty. They need to be empowered to be able to benefit of the advantages that the green and digital transition have to offer, enabling them to participate in the energy transition in a way that they can change and actively demand changes in the relevant social, economic, and technical contexts[187]. Such skills thus include, inter alia, information and awareness of technological innovations, information about energy bills and consumption, knowledge of and skills to apply their rights (for example tenancy or consumer rights), information related to energy efficiency and renewable energy opportunities, moving away from a 'passive' consumer to 'active' consumers etc.

X. EU INSTRUMENTS AND FUNDING IN SUPPORT OF ENERGY POVERTY MEASURES

At least 30 % of the total amount of the Union budget under the multiannual financial framework for the years 2021 – 2027 188 and of the total amount of the European Union Recovery Instrument[189] and at least 37 % of the total amount of the Recovery and Resilience Facility[190] should be spent on mainstreaming climate objectives. This equals to about 87 billion per year. Even though this amount is significant, **it will only cover less than 10 % of the investments**

[183] STEP project policy recommendations and success stories from the ground, May 2022
[184] EUR-Lex - 32022H0627(03) - EN - EUR-Lex (europa.eu)
[185] pdf (europa.eu)
[186] EUR-Lex - 32012H1222(01) - EN - EUR-Lex (europa.eu)
[187] Empowering energy citizenship among the energy poor - ScienceDirect
[188] Council Regulation (EU, Euratom) 2020/2093 of 17 December 2020 laying down the multiannual financial framework for the years 2021 to 2027 (OJ L 433 I, 22.12.2020, p. 11).
[189] Council Regulation (EU) 2020/2094 of 14 December 2020 establishing a European Union Recovery Instrument to support the recovery in the aftermath of the COVID-19 crisis (OJ L 433 I, 22.12.2020, p. 23).
[190] Regulation (EU) 2021/241 of the European Parliament and of the Council of 12 February 2021 establishing the Recovery and Resilience Facility (OJ L 57, 18.2.2021, p. 17).

needed to fulfil the EU's 2030 energy efficiency and climate targets. To meet the targets, estimates speak of the need to invest around EUR 1 trillion per year until the year 2030[191].

From what the EU finances, the Multiannual Financial Framework 2021 – 2027 contributes with a significant share to implementing energy efficiency measures with help of cohesion policy focusing, through its objective 2, on energy and climate investments. It is financed from **the European Regional Development Fund** ('ERDF') and **the Cohesion Fund** ('CF'). The just transition and energy efficiency measures in coal-mining regions have dedicated instruments, the three pillars of **the Just Transition Mechanism**, including **the Just Transition Fund** ('JTF'). Vulnerable households (partially including those in energy poverty) are supported from **the European Social Fund Plus** ('ESF+'). Between 2021 – 2027, the four Funds (the ERDF, CF, JTF and ESF+) dedicate approximately 39.7 bn EUR into investments focusing on energy efficiency and decarbonisation, including high-efficiency co-generation, district heating and cooling or renewable energy resources.

Additional funding is available under the **Recovery and Resilience Facility** financed from the NGEU. Here, Member States allocated approximately EUR 73 bn EUR to energy efficiency measures, including building renovations.

The **ETS** feeds the **Modernisation Fund**[192], which is financed from auction revenues from greenhouse gas emission trading. On top, the ETS Directive stipulates that revenues generated from the auctioning of emissions allowances that accrue to Member States must be spent entirely on climate and social purposes. Such climate-related purposes encompass, among others, improving energy efficiency, district heating systems and insulation, supporting efficient and renewable heating and cooling systems or supporting the deep and staged deep renovation of buildings. This money may also support better skills to contribute to a just transition to a low carbon economy[193]. The auction revenues from ETS2 will be also used for financing EUR 65 billion allocation of the **Social Climate Fund** and Member States will use revenue from ETS2 allowances to cover the required 25 % national contribution to this amount in their Social Climate Plans[194].

As indicated above, the EU resources are not sufficient and **energy efficiency investments will require further national and private financing**. Private investments should be mobilised through financial instruments, lending products and combined schemes (grants, financial instruments, loans etc.), although some risk-mitigation measures may be necessary from the administrations, such as guarantees. By guaranteeing lending operations or subsidising zero-rate loans, Member States could multiply the effects of the EU funds at a reduced costs compared to the exclusive use of grants and subsidies. Other available financial tools may include subsidised renovation measures or the use of energy savings for repayment (limiting upfront investment e.g., to available grants), micro-credits backed by a guarantee fund to promote fair cost-sharing between

[191] Special Report 18 of the European Court of Auditors „EU climate and energy targets – 2020 targets achieved, but little indication that actions to reach 2030 targets will be sufficient" Special report 18/2023: EU climate and energy targets – 2020 targets achieved, but little indication that actions to reach the 2030 targets will be sufficient (europa.eu)
[192] Member States eligible for the Modernisation Fund are Bulgaria, Czech Republic, Estonia, Croatia, Latvia, Lithuania, Hungary, Poland, Romania, Slovakia.
[193] ETS Directive, Article 10(3)(h) and (k)
[194] ETS Directive, Article 10(3)

owners and tenants, on-bill and on-tax financing schemes, blended loans and guarantees from public and private sources or energy awareness campaigns.

When it comes to financing measures aimed at energy poor, **the primary obstacle to implementing energy efficiency measures**, including transition to renewable energy sources, **is the lack of access to capital due to their low credit rating**. Therefore, **vulnerable groups in energy poverty should preferably have access to grants.** This may help them lower the costs of their investment and fill in the missing up-front capital. On top, energy poor can be provided with additional financial bonuses if more energy efficiency measures are carried out, thus incentivising extensive refurbishments.

Grants and subsidies should have easy administrative rules and the lowest administrative complexity possible. They should be accompanied by other initiatives, such as **targeted information campaigns, communication** and **empowering measures**.

Strengthened legal framework to enable access to financing

The recast of the Energy Efficiency Directive puts special emphasis on the role of financing. *It* focus*es* on the cost-effective use of the EU budget and national resources for energy efficiency[195]. EED refers to blending of grants, technical assistance, and loan guarantees, as well as introducing a clear provision calling for the set-up of project development assistance facilities. Member States are encouraged to support the uptake of innovative energy efficiency financial products and tools. Targeted energy efficiency financial products offered by private financial institutions can become widely accessible to the EU businesses and citizens in a non-discriminatory manner.

The Private Finance for Energy Efficiency, which addresses the limited access to adequate and affordable private financing for energy efficiency investments, is a blended financial instrument established in 2014 and combining a guarantee from the LIFE programme with EIB loans and technical assistance to financial intermediaries implementing the instrument. Thanks to preferential conditions, financial intermediaries are required to adjust their pricing under their Energy Efficiency Loans in order to pass on any financial advantage to the final recipients. By 2021, the EUR 100 million programme has a targeted portfolio size of more than EUR 750 million, of which 300 million euros have already materialised in energy efficiency investments.

The FI-model of the EIB introduces minimum savings thresholds to justify or determine the amount of grant that could be used to ensure more effective use of public resources. The threshold could be fixed to reflect the specific regional and national conditions so that it does not discourage deeper renovations and takes into account achieving other social and economic objectives, in particular those related to fighting energy poverty or including climate adaptation elements in the comprehensive renovation.

Île-de-France Energies, a public-private company, was launched in cooperation with the Intelligent Energy Europe Programme which has both funded the structure from 2014 to 2017 and hosted a European Network of like-minded experiments. Île-de-France Energies has been a

[195] Article 30 of Directive 2023/1791

pioneer in leveraging innovative financial tools such as third-party financing for the renovation of condominium, including those in precarious economic situation. The company designs the project, estimates energy savings, consults works companies, develops a financing plan encompassing every public grant available with borrowing options for the remaining amounts. Île-de-France Energies has also benefitted from a EUR 100-million credit line by the EIB through EFSI.

ELENA technical assistance facility advises and supports the setup of local aggregators for renovation projects. On average, 1 EUR of EU money attracts 34 EUR of private financing, including co-financing from the European Investment Bank (EIB). Projects vary and can include social housing, private buildings, but also district heating. For example, the ELENA Technical Assistance supported the development of an investment programme for the integration of PV into social housing in **Flanders** as part of their aims to reduce energy costs for tenants. The programme aims to install over 157 MW of building integrated PV and invest approximately EUR 209 million over a period of 4 years. The support included establishing a Social and Cooperative Special Purpose Vehicle that prepares, accelerates and enhances investments in renewable energy in the social housing sector. An estimated 12,000 to 15,000 properties are targeted for PV installations, representing 8 – 10 % of the total residential stock owned and managed by social housing companies.

In **Croatia**, in the context of the **SocialWatt** project, HEP ESCO (as part of the HEP group, which is a national energy company), successfully advocated to use part of the Solidarity Charge Fund (paid by energy suppliers and usually subsidizing part of the energy bill of vulnerable households) to support renovations. As a result, the Social Housing Renovation Programme was launched by the government. HEP group contributes to fiscal measures to alleviate energy poverty and is also an obligated party under the energy savings obligation scheme ('EEOS') of the country. Among the fiscal measures, the HEP group contributes to the Solidary Charge Fund and pays EUR 0,004 per each kWh spent in households (c. EUR 22,5 million per annum). The fund is used to pay a part of the electricity bill (recently also gas and heating bill) of vulnerable households.

An independent study revealed that almost 1/3 of funds (approx. 6,5 million Euro per annum) remained unspent. Therefore, HEP ESCO recommended to allocate the unspent funds to specific energy efficiency projects for energy poor households. In order to advocate for this, HEP ESCO initiated discussions with the Ministry of Energy and Sustainable Development on how the solidary charge could be better used. This activity resulted in the decision to devote some of the funds provided by HEP to the implementation of actual energy efficiency interventions.
One of the interventions that is currently being implemented is the Government Programme for alleviating energy poverty in social housing buildings (officially launched at the end of 2021) which is expected to conclude by the end of 2025. The programme aims to renovate 397 social housing buildings from 2022 to 2025. Interventions include the installation of renewable energy sources in residential buildings located in supported areas and areas of special state care. Under the programme, approximately EURO 47 million will be invested in energy efficiency and renewable energy, out of which about EURO 6,7 million per annum will be from the "unused" solidarity charge funds (funded by electricity suppliers). The programme is managed by a government agency but was triggered, financed and fully supported by HEP. The future of the scheme beyond 2025 will depend on its' success and Government priorities and policies.

An interesting example of innovative financing focusing explicitly on energy poor is tested in the **POWERPOOR European project** [196] **financed from H2020 Research and Innovative Programme**. Its main aim is to support programmes / schemes for energy poor citizens and support alternative financing schemes such as energy communities, cooperatives, or crowd funding. Energy support programmes in support of energy poor are tested with participation of 14 partners (mainly regional organisations and European associations) in 11 EU countries - Belgium, Bulgaria, Croatia, Estonia, Germany, Greece, Hungary, Latvia, Luxembourg, Portugal and Spain. A good collaboration with municipalities has resulted in the creation of local energy poverty alleviation offices, one-stop-shop of information on how to mitigate energy poverty.

Energy Performance Compensation (Energiesprong in the Netherlands) is an Energy Performance Contracting (EPC) model that finances renovations by future energy cost savings plus the planned maintenance and repairs budget over the next 30 years while respecting the principle of housing cost neutrality. It overcomes split incentives as it shifts the financial burden of renovations from the social housing provider or building owner to the private company performing the retrofits, removing the requirement for the provider to provide up-front funding.

Energy renovation of social housing (Energirenovering af almene boliger in Denmark) finances energy-efficient renovations of public housing, combining funding sources, such as grants and low-interest loans, and performance-based financial models with the overall aim of making energy renovation.

Live better: financial aid from ANAH (Habiter mieux: L'aide financiere de l'ANAH in France) is funded by the French government and administered by local authorities. It offers financial assistance for energy-efficient renovations to low-income households. It provides several financing options, such as subsidies, zero-interest loans, and tax credits. This allows tenants to access these financial options, improve the energy efficiency of their dwellings and decrease their energy costs.

Walloon regulatory framework in Belgium, provided in the Walloon Region, aims at supporting owners, including landlords and other investors, in improving the overall energy performance of their buildings. It includes several tools, such a system of adjusting the rent according to the energy performance, communication and promotion campaigns, incentives, or relocation of tenants during major works.

Homeowners' associations in Poland provide energy renovations in the country for their members. These associations are able to put consumers together and borrow money at reduced interest rates due to the collective, reduced risk. Even though a member household does not pay its community fee on time, there are other members of the association that by far cover the amount of the repayment. Those associations de facto act as private guarantee funds. They are able to protect vulnerable consumers, as only the homeowners´ association manager knows about the socioeconomic issues of the individual members. Loans to these associations come for example from the EIB and BNP Paribas Bank Polska guarantee agreement worth EUR 166.7 million from which estimated 15.000 clients should benefit[197]. Targeting homeowners, farmers, and housing

[196] https://www.powerpoor.eu/
[197] BNP Paribas Bank Polska and EIB join forces for energy efficiency investments in Poland

associations, the programme supports the installation of renewable energy sources such as photovoltaics in individual homes and micro-farms, as well as finance building refurbishment measures that lead to higher energy efficiency and reduced energy bills in multi-home apartment buildings. Such measures include energy efficient windows or facades, heating and ventilation systems, or renewable energy sources integrated into the buildings.

An EU-funded programme in the City of Valladolid in Spain makes use of innovative financing. While a part of the funding for energy renovations comes from the EU funds, another 25 % of the costs is split between a low-interest loan from a bank and an investment from the energy company that is doing the renovation. The energy cost goes down in the building, but the residents pay continuously the same fee that they used to, which is around EUR 80 per month. The difference between the new, lower cost of the energy and the unchanged bill that the residents pay pays the bank loan and the energy company and provides some profits for both over the next 20 years.

XI. CONCLUSIONS

Energy and climate policies, especially in relation to the most vulnerable and energy poor people, will remain high on the political agenda in the coming years. Addressing energy poverty is key to achieve a just green and energy transition and can bring benefits both in the short and long-term. The situation of energy poverty calls on policymakers in Member States to act. They should primarily focus on structural measures that can help address the root causes of energy poverty through structural measures. Nevertheless, in times of energy prices spike, accompanying targeted affordability measures may be needed for immediate financial relief, especially when vulnerable households cannot access structural support.

Many Member States have already taken initiative and worked on diagnosing and addressing energy poverty in their national framework. The EU governance framework puts specific emphasis on households in energy poverty and vulnerable consumers, contributing to an integrated and more focused approach across the EU and to a just and fair transition. The EU has put in place a number of instruments, from the 'Fit for 55' legislation to financial aid, to help Member States in their efforts and support citizens. Several EU initiatives also contribute to improving data collection and research on energy poverty, supporting local projects and sharing good practices.

Member States are encouraged to use this guidance for effectively updating their NECPs as regards the energy poverty dimension and develop measures to tackle this phenomenon tailored to their national contexts.

Helping vulnerable households in energy poverty requires European and national policy mixes that combine technical, social, and energy-centred policy making, also aiming at developing educational, behavioural and energy-related skills. These policy mixes should be assessed against potential negative impacts, especially on the most vulnerable. Trust, engagement, and quality communication are crucial to reach the vulnerable groups who often lack resources, information and time to implement energy efficient measures in their homes and access renewable energy.

Capacity building and skills development for civil servants at national, regional, and local levels, working on energy poverty, will therefore become even more critical, along with the need to improve data collection and research at all levels. Knowledge transfer from academic experts and projects on the ground to policy and decision makers across different administrations will be a significant factor in mitigating energy poverty and tackling related challenges.

Member States will need to explore and exploit the full potential of different tools providing finance and assistance to households in energy poverty. The EU provides Member States with significant resources in the form of grants and loans. While grants may primarily address the needs of vulnerable households in energy poverty, other sources for energy efficiency measures and access to renewables will have to be sought, mobilizing private investments and combining different financial means. Moreover, specific efforts should be devoted to address barriers related to access to funding and information on energy efficiency measures, including renovations in the housing and rental sectors.