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LATVIAN JOURNAL OF PHYSICS
AND TECHNICAL SCIENCES
2025, N 1

DOI: 10.2478/lpts-2025-0002

ASSESSING ENERGY POVERTY IN THE EUROPEAN UNION: INDICATORS, CHALLENGES, AND POLICY SOLUTIONS

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A sharp increase in energy prices since 2021 has had a significant impact on the European Union (EU) energy market turning the energy poverty issue into an important concern. Around 42 million EU citizens or 9.3 % of the total population in the Union faced an inability to adequately heat their homes in 2022. It is a clear call for policymakers to seriously address the energy poverty aspects eliminating the negative socio-economic impact. The research aims to analyse the energy poverty concept, its main indicators and affecting factors, identifying the possible solutions for reducing energy poverty, and paying particular attention to vulnerable users. The qualitative methods were used, i.e., the authors conducted a literature review and scrutinized scientific publications, reports and legal acts. As a result of the research, the authors have characterised the energy poverty situation in different countries, identified the main areas for solving the energy poverty challenge, as well as shared experiences of different countries on the solutions taken. The authors conclude that energy poverty has a particular impact on low-income households, children, disabled people, seniors and single mothers, who may have relatively higher energy consumption and limited resources available. In this regard, countries can benefit from such measures as setting a clear definition of energy poverty and its measurable indicators, identification of supported households, on-the-spot consultations and audits, attracting local governments, and non-governmental organisations, as well as improvement of support instruments of renewable energy sources.

Keywords: *Electricity, electricity costs, energy poverty, support measures.*

1. INTRODUCTION

Energy poverty is a complex, multidimensional issue that is influenced by several factors. The European Union (EU) in its Energy Portal [1] points out that this phenomenon is mainly due to three primary factors: increased energy expenditure compared to the total household budget, low-income levels and lack of energy efficiency in housing and their facilities. These factors form the basis for understanding energy poverty. The situation of households is also affected by secondary factors such as geographical conditions, climatic characteristics, structural characteristics of the household, gender, health status and specific energy and transport needs [2]. The concept of energy poverty was introduced in 2009 by Directive 2009/72/EC [3] and requires appropriate solutions to protect end-users, particularly vulnerable users. In this context, each Member State should define the concept of vulnerable users, which also covers energy poverty and, inter alia, prohibits the exclusion of such users in times of crisis. Thus, one of the objectives of the Directive is to protect users by paying particular attention to low-income users. Directive 2019/944 [4] requires the EU Member States to define the concept of energy poverty. The European Pillar of Social Rights [5] and the United Nations Sustainable Development Goals [6] include energy among the basic services that have the right of access to everyone. The European Green Deal [7] points to a fair and inclusive energy transition process. The European Pillar of Social Rights states that energy is the basic service with the greatest differences in access to the EU. The Fit for 55 package [8] provides a comprehensive approach to reducing energy poverty. As Russia's invasion of Ukraine posed a security threat to the EU energy, the package was complemented by a REPowerEU plan [9] aimed at rapidly reducing the EU's dependence on Russia's energy supply through diversification, the development of renewable energy sources (RES), austerity measures, while also protecting users in the face of sharp price rises in the energy sector as seen in 2022 [10]. Policy documents contributing to a just social transition should include the Council of Europe recommendations [11], the Just Transition Fund Regulation [12], as well as several other documents specifically addressing energy poverty. Regulation 2018/1999 of the European Parliament and of the Council [13] obliges Member States to develop and publish indicators by which they identify energy poverty-stricken households, which are reflected in national energy plans and the options to mitigate them.

In Latvia in 2021, for the first time, the term "energy poverty" was strengthened in the law, and the Energy Law [14] was supplemented by stipulating that "energy poverty is the inability of a household user to maintain adequate temperature in a dwelling or to use services provided by energy supply merchants, or to pay for them due to low energy efficiency or because the charge for these services has a high proportion of household income". The definition of energy poverty as defined in the Latvian Energy Law is considerably narrower and more laconic than the European directives and recommendations mentioned suggest. The Latvian Energy Law also uses the term protected user, which provides social protection for certain groups of the population, however, it is not directly related to energy poverty.

Energy poverty rates have also been

explored in the work of various scientists, such as Buzarovsky, who defined energy poverty in 2015 as a household's inability to buy enough heat for its own needs, a problem which is linked to low-income earning and living in energy-inefficient homes [15]. In the study, "Energy Poverty and Health: Trends in the European Union before and during the Economic Crisis, 2007–2016" [16], its authors point out that people living in an environment of energy poverty are often subject to complex trade-offs between energy and healthcare pay or other essential needs. The studies carried out indicate a risk of significant exacerbation of mental and respiratory illnesses [17]. Energy poverty harms human life as it affects not only the economic aspects but also social ones and health [18]. The security of energy supply risks and costs arising from the synchronisation process, transition to RES and diversification of supply have also been analysed in other studies [2], [19]–[36].

Several projects are also devoted to energy poverty. ENPOR [37] project focuses on exploring energy poverty in the private rented sector, making it more visible and measurable and in line with the EU objectives of reducing energy poverty. The experience and current situation of Italy, Austria, the Netherlands, Germany, Greece and Croatia have been investigated. The Comact project [38] aims at improving accessibility to energy efficiency improvements for energy-saving communities living in apartment buildings. The STEP project [39] carried out in 2020–2022 is an important study. The Socialwatt project [40] was designed as a support tool for businesses and decision-makers at the local level, such as local governments, consulting companies, and builders, to effectively identify energy-poor households and develop schemes aimed at increasing the energy efficiency of their homes. The EmpowerMed project [41] focuses on the gender perspective of energy poverty policy, with particular emphasis on summer energy poverty and health. EmprowerMed has suggested that policymakers heed a whole range of recommendations, such as the health impact of energy poverty, survey visits and consultations in households affected by energy poverty, networking and training of energy consultants, including training of social services specialists, establishment of state support programmes, raising participation of citizens, gender equality issues, noting the need to balance pension income, as studies show that women receive lower pensions and are more at risk of energy poverty. The Renoverty project [42] promotes the renovation of energy and cost-efficient buildings. The project identifies barriers to reducing energy poverty: financial, awareness and access, geographic and regulatory/political. The Energy Poverty Zero project [43] focuses on deep energy renovation with scaling capabilities in poorly developed areas. The main objectives of the project include improving energy efficiency and saving energy costs for citizens through prefabricated modular systems to make deep renovation more accessible in energy-poverty-stricken, vulnerable urban areas. The objective of the JUSTEM [44] project is to help regional authorities in the EU coal energy regions assess and target equitable transition issues by introducing sustainable energy and declining the use of coal. The POWER UP project [45] supports urban efforts to plan the social role of energy market players in developing pilot schemes across Europe to combat energy poverty. Futureproof [2] is a study carried out by Latvian scientists aimed at the development and integration of Latvia's energy system in Europe to ensure a sustainable and secure energy supply in the country.

This study aims to analyse the experi-

ence of reducing energy poverty and to provide recommendations for the use of good practice. The tasks of the research are as follows:

1. to analyse energy poverty indicators in Europe and Latvia;
2. to share experience in reducing energy poverty in Europe and Latvia;
3. to formulate recommendations for the use of good practice.

The research methods used in the study are the following:

1. literature review: the study of tertiary data, including scientific literature, recommendations, policy papers, statistics and similar studies, with particular attention to the results of research projects;
2. content analysis and observation;
3. statistical analysis of secondary data, including descriptive and inferential statistics, for the processing and evaluation of quantitative data; graphical analysis to visualize trends and relationships of data.

Limitations of the research are listed below.

1. The electricity cost aspect has been considered in the context of energy poverty.
2. Energy poverty has been assessed from the perspective of households as end-users.
3. Literature in English and Latvian has been analysed in the statistical period from 2020 to the end of 2023, as a significant stage of electricity price fluctuations.
4. Options for reducing energy poverty in the EU countries have been assessed.

2. ANALYSIS OF ENERGY POVERTY INDICATORS

Energy poverty is closely linked to the problem of poverty, but the emphasis is on energy, as a necessity that includes the primary human needs. The sharp increase in energy prices since mid-2021 has had a significant impact on the EU energy market [23], [46]–[50]. More and more people are struggling to pay for energy, affecting not only low-income residents who previously spent much of their income on energy bills but also the middle income [51].

In line with the EU objective of achieving climate neutrality in 2050, the European Parliament resolution on a strong social Europe for a just transition [52] emphasises fairness and solidarity as key policy principles. On the other hand, the European Commission in its Recommendation 2020/1563 [53] on energy poverty calls for careful consideration to be given to the accompanying Commission Staff Working Document, which guides the identification of energy poverty. The Recommendation defines 13 energy poverty indicators divided into four groups:

1. expenditure on energy versus household income, expressed as a percentage, with the necessary threshold defined accordingly;
2. self-assessment indicators that include household answers to questions such as whether they can afford to keep the home warm enough;
3. indicators based on objective physical measurements (e.g., room temperature);
4. indirect indicators of energy poverty such as late payments, quality of housing, etc.

2.1. Energy Poverty Indicators in Europe

Among the key primary indicators for identifying the energy poverty problem are the inability to maintain a suitable temperature in the home, housing inadequacy, and poverty and social exclusion. Recent statistics from 2022 reveal that around 42 million EU citizens, 9.3 % of the total population in the Union, faced an inability to adequately heat their homes [54]. The figure has risen significantly compared to 2021, when 6.9 % of the population was in this situation. The increase is particularly pronounced among lower-income people. Figure 1 reflects the gravity of the situation, which is a clear call for policymakers to take action to address energy poverty factors [55].

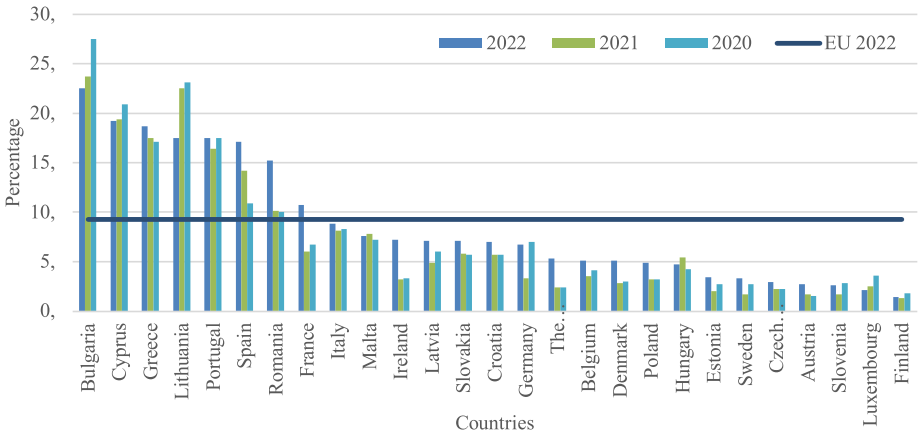


Fig. 1. Inability to keep home adequately warm for EU (%) 2020–2022.

As Fig. 1 shows, the highest rates in the EU are in Bulgaria (22.5 %), Cyprus (19.2 %) and Greece (18.7 %), while Sweden (1.4 %), Finland (1.3 %) and Austria (1.5 %) have the lowest rates.

Municipal bill debts are also an important indicator of energy poverty (Fig. 2). Most of these invoices are attributable to energy charges, and timely reimbursement of these invoices may indicate difficulties for households in paying for the services provided [56].

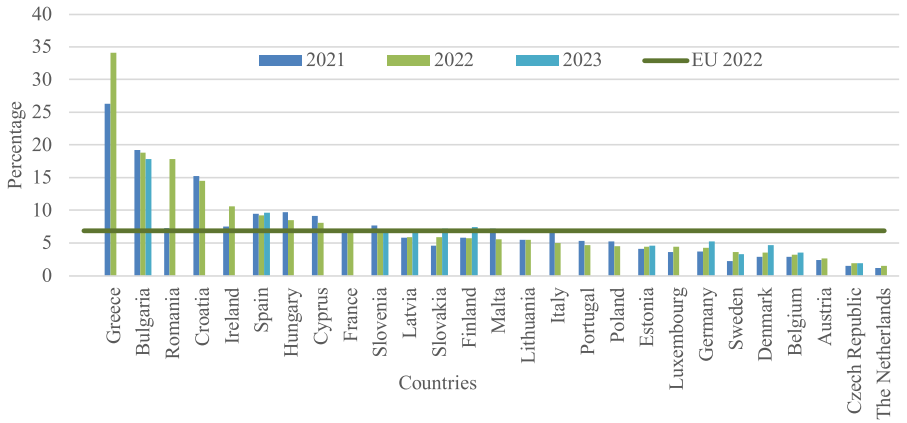


Fig. 2. Arrears on utility bills in the EU (%) 2021–2023.

Figure 2 shows that 6.9 % of the EU residents were in arrears for utilities in 2022, amounting to approximately 30 million households. The figure is up from 2021 (6.4 %). The highest rates are in Greece (34.1 %), Romania (17.8 %) and Bulgaria (17.8 %), while the lowest in the Netherlands (1.5 %), the Czech Republic (1.9 %) and Sweden (2.2 %). This indicator was 5.9 % for Latvia in 2022, but it reached 7 % in 2023. Municipal payments were significantly increased by the rapid increase in energy prices in 2022, when energy charges increased by more than 30 % and on average in the EU households led to a 10 % increase in municipal payments, reaching as much as 100 % in Estonia.

In 2022, 95.3 million people (Fig. 3), or 21.6 % of the EU population, were at risk of EU social exclusion and poverty. Poverty risk indicators [57] indicate the proportion of people living in households with at least one in three risks of poverty and social exclusion, which include income levels below 60 % of the median income in the country, residents who do not permit at least four out of nine basic needs and households where adults work less than 20 % of full-time working time. In 2022, the risk of poverty and social exclusion was EU higher for women than for men (22.7 % and 20.4 %) [58].

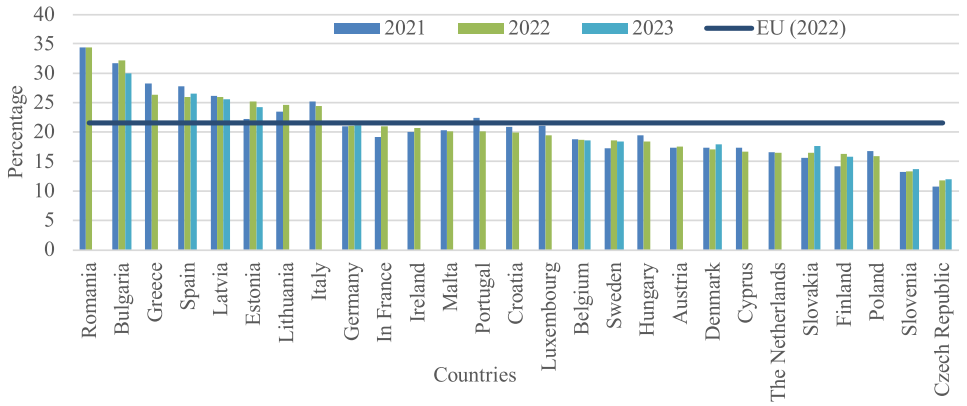


Fig. 3. Persons at risk of poverty or social exclusion in EU (%) 2021–2023.

According to Fig. 3, the highest risk of poverty in the EU is in Romania, Bulgaria and Greece, where it remained above 30 % in 2022. It is also relatively high in Latvia (26 %), Estonia (25.2 %) and Lithuania (24.6 %). In Germany, France, Ireland, Malta and Portugal, the risk of poverty and social exclusion stabilised around 20 % in 2022. In countries such as Austria, Belgium, Denmark, Croatia, Cyprus, Luxembourg, the Netherlands, Slovakia, Finland, Hungary, Poland and Sweden, the risk of poverty was below 20 % in 2022. The lowest risk of poverty in the EU was in Slovenia and the Czech Republic (below 15 %).

2.2. Energy Poverty Indicators in Latvia

Latvia's statistics measure energy poverty indicators, for example, the proportion of households who, due to lack of money, could not afford to keep their dwelling warm, etc., but they are not legally and economically further related to reducing energy poverty. Latvia is one of the EU countries with one of the lowest income levels [59].

In 2021, 418 thousand or 22.5 % of the population were at risk of poverty in Latvia [60]. The Central Statistical Bureau (CSB) also provides a detailed analysis of data on the financial capacity of different types of households to cope with expenditure. The categories are broken down by household composition and financial capacity and the figures are expressed as percentages. Indicators are divided according to the type of household and the possibilities – whether it is relatively easy for them, with little difficulty, with difficulty, with great difficulty, whether it is easy or very easy to deal with expenditure. In 2023, for example, one person (65 years and over), one adult with children, one person (16–64 years), a couple without children, and a couple with three or more children could pay the costs with great difficulty or difficulty. Regarding the measurement of energy poverty indicators, although Latvian legislation restricts the way energy poverty and household support measures are detected, the Latvian NECP for 2021–2030 is intended to reduce it to European averages [61]. According to the NECP, the primary indicator of energy poverty is the provision of heat housing. In contrast, in the context of Section 120 of the Energy Act, a household affected by energy poverty is one registered as in need or deprived of renting a social apartment. Latvia states in the NECP that in the period up to 2030, the proportion of households deprived of sufficient heat in the dwelling will be reduced below the EU average. Consequently, the 2030 target is for this indicator to be less than 7.5 % in Latvia (in 2022 it was 8.6 % on average in Latvia). Latvian statistics record, but do not apply, energy poverty support solutions to households that could not afford to keep their home warm due to a lack of funds (Fig. 4) [62].

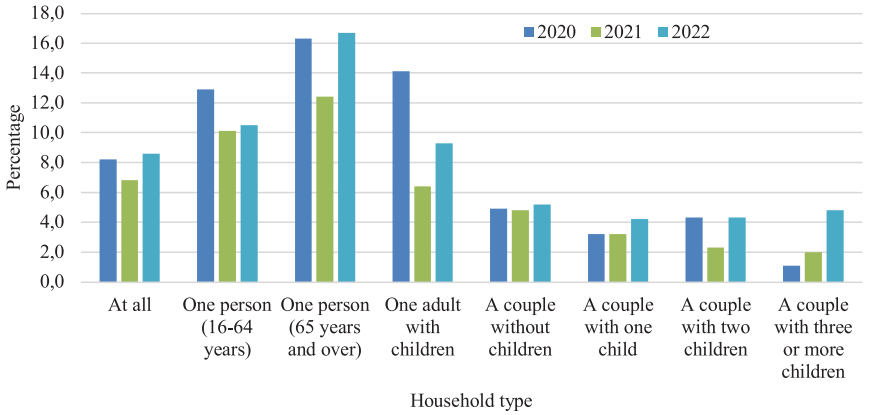


Fig. 4. Proportion of households unable to afford to keep their home warm due to a lack of money in Latvia (%), 2020–2022.

Figure 4 shows that in 2022 there were 8.6 % of such households in Latvia, but in some household groups this figure reached 16.7 % (one person over the age of 65). Overall, the proportion of households unable to keep their home warm rose by 27 % in 2022 compared to 2021. Although Latvia's average is lower than the EU (9.3 %), the indicators are significantly higher in some socially vulnerable household groups. One person over the age of 65 is most affected by this problem. In 2022, 16.7 % of households in this group were unable to afford to keep the home warm, up to 34 % in 2021. In 2022, 4.3 % and 4.8 % of couples with two and three or more children were unable

to provide sufficient heating, compared to 2.3 % and 2.0 % in 2021.

Regarding another indicator recommended by the EU, which is also registered in Latvia, it should be noted that on average in Latvia this indicator was 7.0 % in 2023, which is slightly above the EU average (6.9 %). This figure has increased since 2021 (5.8 %) (Fig. 5) [63].

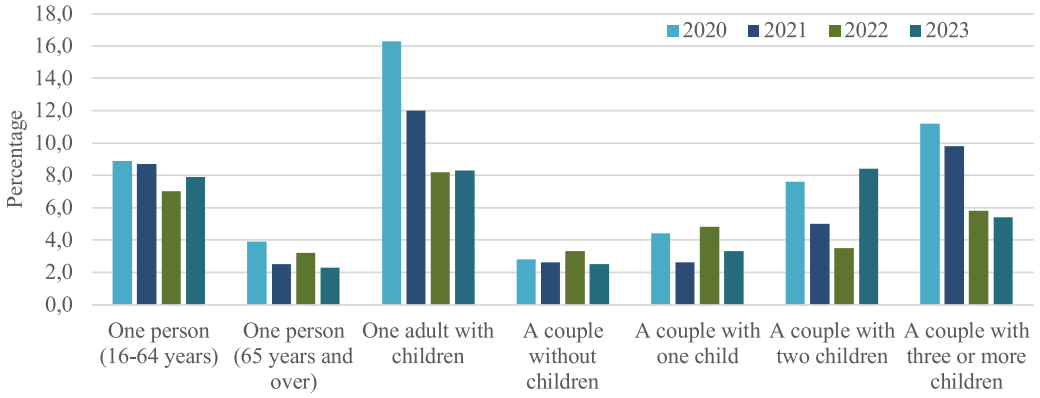


Fig. 5. Arrears on utility bills in Latvia (%), 2020–2023.

According to Fig. 5, the proportion of households with arrears for different payments due to a lack of money is seen to have fallen in 2023 compared to 2020. One adult with children (8.3 %) and a couple with two children (8.4 %) have the most arrears. Conversely, the couple without children (2.5 %) and one person over 65 (2.3 %) have the lowest arrears. This shows that the most vulnerable household is one person with children. However, the existence of utility arrears only partly reflects the existence of energy poverty, which also depends on spending priorities. The interviews show that elderly people pay communal payments very disciplined and fear the consequences of not paying them.

The proportion of people at risk of poverty or social exclusion (Fig. 6) [64] is another important indicator that the EU attributes to the detection of energy poverty, which is also used in Latvia.

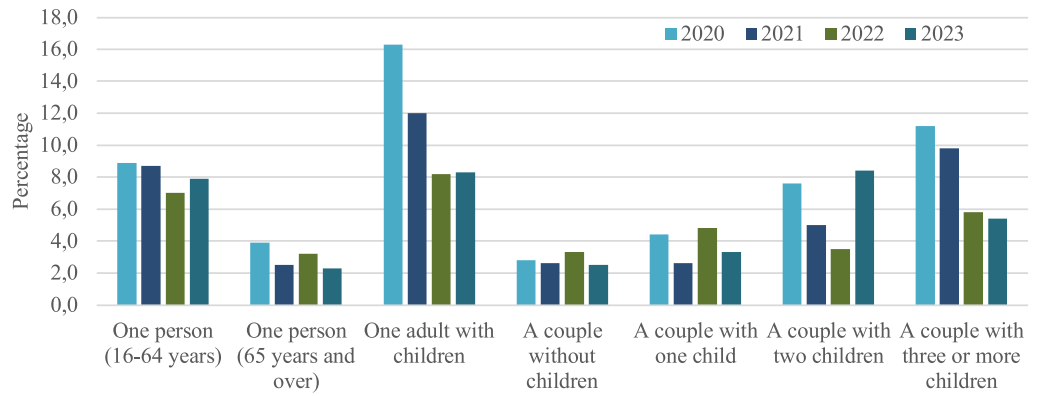


Fig. 6. Persons at risk of poverty or social exclusion in Latvia (%), 2021–2022.

Figure 6 shows that in the period of 2021–2022 the proportion of people at risk of poverty or social exclusion was particularly high among the unemployed (62.7 %), pensioners (47.9 %) and non-employed (47.1 %). The rate is also high among the self-employed (25.7 %) and even workers (10.2 %).

3. EXPERIENCE OF REDUCING ENERGY POVERTY

The section explores the experience of several EU Member States to make recommendations on good practice.

3.1. Reducing Energy Poverty in Europe

The Polish Energy Act [65] defined energy poverty by including three criteria in 2022: low income, high-energy costs and low-energy housing. However, there are difficulties with methodologies that prevent full support. There is no coordinated and uniform policy in the country to alleviate energy poverty. Poland is subject to a social tariff on electricity for the disadvantaged. Energy allowance and housing support, which are paid to low-income households monthly, are also envisaged. In Poland, a pre-paid electricity meter is installed free of charge, enabling the household to control energy consumption in the interests of both the household itself and the electricity trader, thus avoiding unforeseen costs. The Energy Efficiency Law of Poland sets energy efficiency targets and binding requirements in Poland, including elements such as certification of new heating systems [66]. By 2027, remote heat and water consumption measurement systems must be installed on apartment buildings. Energy supply companies are obliged by law to carry out energy efficiency projects for end-users and to provide confirmation of a specific saving. Given the use of coal, support for RES is offered in Poland, as regards heating and replacement of old heating systems under the Clean Air programme [67]. The programme provides financial support for at least 30 % of investments in heat pumps and PV systems for households with an annual income of up to PLN 100,000 (EUR 22,000).

Germany [68] is characterised by a multifaceted approach to tackling energy poverty, especially for people with disabilities. National policies include regional initiatives as well as the non-governmental sector. Energy poverty is recognised as a social problem linked to poverty reduction and social inclusion. Affordable energy is one of the central objectives of Germany's energy transition strategy. The state is helping to cover outstanding energy bills. Consultation support is provided without social support. Local initiatives are common in Germany, with several programmes providing for free or subsidised energy audits, often carried out by volunteers and trained professionals. The country also has a social tariff in place for certain vulnerable user groups. In some cities, households receive benefits for renting more energy-efficient housing. To limit user disconnection from the network, smart meters are tried to limit energy consumption. The StromSparCheck project [69] is a nationwide power-saving support platform that helps local governments and organisations create their own energy audit programmes. The project is based on giving free advice to low-income households about energy saving and choosing services. More than 500,000 people

have received energy-saving advice, with an average savings per household of about 0.6 t/year in CO_2. In Germany, households have access to programmes that facilitate the installation of small solar PV systems. For example, the KfW programme offers loans of up to EUR 100,000 at an interest rate of 0.35 % per annum and a maturity of up to 20 years.

Bulgaria [70] is one of the most affected countries by energy poverty and has received increased attention recently. The concept of energy poverty is not defined here, the problem is being addressed as part of a broader social policy towards vulnerable users. Nationally, most of the solutions focus on improving housing, such as homes with energy classes E, F, and G receive 100 % of the cost of energy efficiency improvement projects. Bulgaria has introduced social tariffs on electricity for low-income residents, as well as defining other categories of households for whom such a tariff is provided. Social tariffs in Bulgaria are a successful way to alleviate energy poverty for vulnerable households, particularly in the context of the liberalisation of the electricity market and the abolition of regulated tariffs. The solution was to introduce a compensation mechanism covering up to 70 % of the share of the electricity tariff for deprived households with electricity consumption below 100 kWh per month for elderly people over 70 living alone, disabled people, families with a disabled child and those receiving targeted heating benefits. Individual counselling and education for citizens are available in Bulgaria. For defined categories of low-income groups, a heating benefit is available during the winter months, as well as emergency benefits are paid to them once a year, including for compensation of electricity charges. On 30 June 2023, the Energy and Water Regulatory Commission set the renewed feed-in tariffs for electricity produced from renewable energy sources, including biomass, guaranteeing a fixed duty rate per unit of electricity produced [71]. In addition to the feed-in tariff, the Commission shall fix the premiums that energy producers receive from a fund, which serves as a supplement to the feed-in tariff in question. These premiums are based on the reference price set by the Commission as the expected market price, for example, for PV energy producers this price is set at 128.09 EUR/MWh.

In Lithuania, the definition of energy poverty has not been strengthened in legislation, but the methodology recommended by the EU is used in statistics and calculations. In 2021, Lithuania carried out a project "Namų ukiai energetikos transformacijos kotexe" [72], which launched a targeted fight against energy poverty in Lithuania. The project included data mining and analysis to create a system to measure energy poverty in the country and increase the country's effectiveness in reducing it. This resulted in two indicators for measuring energy poverty: household indicator, with a proportionally high share of income for energy and the number of households with no means of adequately heating the dwelling. These data are then used to develop targeted policies to reduce poverty. Since 2005, the government has been carrying out a residential renovation programme that includes building insulation and renovation of heating systems. In Lithuania, energy efficiency obligations have been imposed on energy traders by a special contract to conduct consumer education. In 2020, a programme was opened in Lithuania to support Lithuanian households in switching to PV panels (30 %) and heat pumps (40 %).

The Cypriot Ministry of Economics, with the participation of municipalities and the non-governmental sector, is implementing a 2021 to 2026 project "Tackle Energy

Poverty in Households with Disabled People and Support Social Integration" [24], aimed at achieving the country's NECP objectives and reducing energy poverty by preventing social exclusion in the transition to a climate neutral economy. Within the framework of the project, it is planned to change roof insulation, lighting, and specialised equipment, and purchase energy-efficient household appliances. Subsidies amount to 80 %. The project aims to reduce household energy consumption by at least 35 % in the long term, from 3,900 MWh to 2,535 MWh, saving 1193 t CO_2 emissions.

In Spain, the project "Apoyo a las familias en riesgo de exclusión social por parte de las administraciones regionales y locales de La Rioja" [73] aims to mitigate the impact of energy poverty. The uniqueness of the project is that this municipal-funded project involves identifying poor families helping through non-governmental organisations and strengthening cooperation between state and local governments. Energy audits have been carried out within the framework of the project, consultations have been provided, as well as financial support has been provided. Amendments to regional legislation have been developed and made within the framework of cooperation to ensure rapid provision of assistance to the target audience.

The Czech Government is implementing a programme to reduce energy poverty in New Green Savings Light [74]. The programme offers support to households receiving an old-age pension, a third-grade disability pension or housing benefit. For small-scale energy-saving measures such as roof insulation, floor insulation, window replacement and exterior door replacement, applicants receive up to 150,000 Czech crowns (around EUR 6,394). Importantly, funding is already available at the start of the project. As of April 2023, applicants also received a subsidy of 90,000 Czech crowns (approximately EUR 3,835) for PV systems. The programme also includes free counselling options. Good national practices are summarised in Table 1.

Table 1. An Overview of Experiences from Other Countries

Country	**Good practice**
Poland	Social tariff on electricity, energy benefits and housing support for low-income households. The Clean Air programme provides financial support for heat pumps and PV systems.
Germany	A multi-faceted approach, including national and regional initiatives, the non-governmental sector. Free or subsidised energy audits and consultancy. The StromSparCheck project is about saving power.
Bulgaria	Social tariffs on electricity for low-income households. 100 % support for energy efficiency improvement projects for low-energy homes. Personal consultancy and heating benefits during winter months.
Lithuania	Residential renovation programme. Imposing energy efficiency obligations on energy traders. Grant programe for transition to PV panels and heat pumps.
Cyprus	Project Tackle Energy Poverty in Households with Disabled People and Support Social Integration. Replacement of roof insulation, lighting, and specialised equipment with an 80 % subsidy.
Spain	The Apoyo a las familias en riesgo de exclusión social project includes energy audits, advice and financial support. Cooperation with non-governmental organisations and amendments to regional legislation.
Czech Republic	New Green Savings Light programme with support for old-age pension, disability pension and housing benefit recipients. Subsidies for RES systems and free counselling.

As Table 1 shows, the most common best practices in reducing energy poverty include introducing social tariffs and energy benefits for low-income households, energy efficiency improvement programmes, and providing free or subsidised energy audits and advice. Support for the use of renewable energy technologies and targeted programmes for vulnerable groups are also essential. The combination of these measures helps ensure a sustainable energy supply and reduce energy poverty across different groups of society.

3.2. Experience of Latvia

Latvia's National Development Plan 2021–2027 [75], and Latvia's Sustainable Development Strategy until 2030 [76] determine important areas for further development of the country, which are the reduction of social exclusion and poverty, improvement of energy efficiency, the introduction of renewable energy resources, as well as areas for improvement of housing quality. These documents specify the responsible institutions and the areas of their activities in achieving the objectives. The relevant decisions are enshrined in the Latvian legislation, such as the Energy Efficiency Law [77], and the Construction Law [78], which lays down principles and objectives of energy efficiency policy, and energy efficiency requirements for buildings, heating and cooling systems. Several social support instruments have been introduced in Latvia, which have an indirect impact on reducing energy poverty, for example, the Law on Measures for the Reduction of Exceptional Increase in Energy Resource Prices [79] provides for reducing the negative socio-economic impact of the increase in energy prices on low- and medium-low-income households by granting aid in the form of a reduction in the fee for the natural gas, thermal energy, electricity and decentralised fuel consumed. These measures were implemented in 2022 to protect households from the sharp rise in energy carrier prices.

The Latvian legislation also provides for social support for various vulnerable groups, such as the Law on Social Services and Social Assistance [80], the Cabinet Regulation Regarding the Assessment of the Material Situation of a Household and Receipt of Social Assistance [81], which provides support for persons and low-income families to ensure that their basic needs are met. At the same time, Latvian municipalities are entitled to decide on the aid to be granted and the amount thereof to vulnerable households by striking regulations. Services and discounts for protected users are an important social support tool to offset energy charges. The Electricity Market Law stipulates that a protected user is a poor or low-income family (person), multi-child family or family (person) in the care of whom there is a disabled child or a person with disability group I who uses electricity in their household for their own needs (final consumption) [82]. As regards the protected user, the law provides several reliefs, which affect discounts not only in the application of tariffs but also in the provision of connection and the prohibition of disconnecting them from the energy supply. The amendments made to Cabinet Regulation No. 345 "Regulations Regarding the Trade Service of a Protected Customer" strengthened their protection from 12 December 2023, because they obliged all electricity traders to provide the protected User Service regardless of the number of subscribers. From 1 January 2024 [83], the aid intensity of the protected user was also increased by setting it at EUR 25 for a multi-child family and EUR 20 for

needy/low-income households (persons), families in the care of a disabled child, a person with disability group I or its trustee instead of the previous EUR 15. In May 2022, protected users included persons with disability group I and children with disabilities (34,954), needy or low-income families (45,318), multi-child families (83,827). As of June 2022, there were 164,099 protected users in the country, but only 90,358, or 55 %, received support. The service did not apply to 11,110 persons on the maintenance debtor register.

Development Financial institution Altum JSC shall provide a support programme to owners of one apartment house, by Cabinet Regulation No. 103 of 11 February 2021 "Regulations Regarding the Support Program for the Renovation and Energy Efficiency Improvement of Single-Apartment and Two-Apartment Residential Houses", for purchasing of new electricity production equipment and improvement of energy efficiency for families with children in the form of a guarantee, support and/or grant. Aid intensity is up to EUR 4,000 for solar and wind power plants, and up to EUR 5,000 for energy efficiency. 80 % of the annual electricity production must be used for own consumption. The aim was to achieve a reduction in primary energy consumption of at least 20 %. It is not permitted to be used in economic activities. At present, new applications have been suspended [84].

The Central Finance and Contracting Agency provides a support programme for apartment homeowners, in line with the specific support objective to improve nature conservation and biodiversity, and green infrastructure by improving household heating systems. The programme provides support for connection to district heating systems, as well as for the purchase and installation of thermal energy sources, including heat pumps, pellet boilers, biomass boilers and electric heating systems. The costs covered by the aid may amount to up to EUR 4400 per declared population, with a maximum aid intensity of up to 95 % depending on the type of solution. Self-consumption must use at least 80 % of the annual electricity production. An economic activity may be carried out under the conditions of de minimis aid [85]. The amendments to the Electricity Market Law [82] provide that from 1 May 2024 the new net settlement system, which is used by users who have not joined the old accounting system, and which provides for a system of mutual settlement not according to quantity but price, became operational.

4. CONCLUSION

Energy poverty is a multidimensional issue, affected by high energy expenditure relative to the total household budget, low-income levels and insufficient energy efficiency in housing and equipment. Energy poverty has a particular impact on low-income households, children, disabled people, seniors and single mothers, who may have relatively higher energy consumption and limited resources available. As a result, these groups are exposed to higher energy poverty. At the EU level, solutions are being taken to improve energy efficiency and reduce energy costs, for example, through the Social Climate Fund and the Just Transition Fund. In Latvia, the NECP envisages a goal to reduce energy poverty by improving the indicator of users' inability to maintain adequate temperature in a dwelling to 7.5 %. The EU looks at different indicators

of energy poverty, such as the inability to maintain a suitable temperature in a dwelling, quality of housing, debts of municipal bills, and persons subject to social exclusion. For example, the highest risk of social exclusion in the EU is in Romania, Bulgaria and Greece, where it remained above 30 % in 2022. It is also relatively high in Latvia (26 %), Estonia (25.2 %) and Lithuania (24.6 %). Energy poverty indicators in Latvia include income level and poor or low-income status. Statistics show that 22.5 % of Latvia's population was at risk of poverty in 2021. The proportion of households unable to keep their home warm rose by 27 % in 2022 compared to 2021. Other countries have different experiences in solving the problem of energy poverty, from which Latvia should use the definition of energy poverty and its measurable indicators, identification of supported households, on-the-spot consultations and audits, attracting local governments, and non-governmental organisations, as well as improvement of RES support instruments.

ACKNOWLEDGEMENTS

The research has been funded by the Latvian Council of Science, project "Mitigating Energy Poverty through Innovative Solutions", project No. lzp-2023/1-0214.

The research has been supported by the EU Recovery and Resilience Facility within Project No 5.2.1.1.i.0/2/24/I/CFLA/003 "Implementation of Consolidation and Management Changes at Riga Technical University, Liepaja University, Rezekne Academy of Technology, Latvian Maritime Academy and Liepaja Maritime College for the Progress towards Excellence in Higher Education, Science and Innovation" academic career doctoral grant (ID 1014).

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