The Role of Household Income in Identifying Energy Poverty

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A data-based approach for identifying energy poverty in Latvia has been introduced.

Method combines approaches from several international organizations with publicly available and measurable data on household housing expenditures, could be used in the long term to develop a unified approach for identifying both households at risk of energy poverty and their share within the population. It also shows that the critical monthly income of a household at risk of energy poverty in Latvia is less than 387.39 EUR per household member.
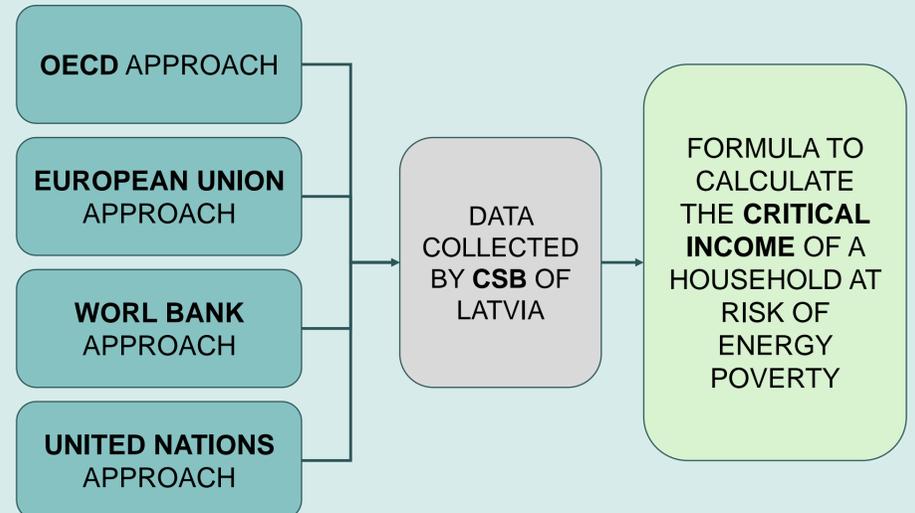

A data-based approach for identifying energy poverty in Latvia

Introduction

Energy poverty and the identification of households at risk of it have become increasingly important topics for research and national policy implementation. This issue has gained significance due to rising energy resource costs, geopolitical events, income inequality, and rapidly occurring climate change, and affects countries with extreme climates the most.

Figure 1. Persons in Europe living in a dwelling not comfortably warm [1]

No data
<5%
5 – 14,9%
15 – 14,99%
25 – 35%
>35%
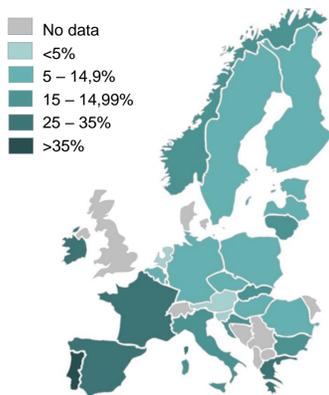
The approach of EU countries and international organizations to identifying households at risk of energy poverty varies. Therefore, it is essential to develop a unified, data-driven method that could be adapted by EU member states in the long term. This would support the creation of targeted policies aimed at reducing the share of such households, while also promoting improved well-being and contributing to climate change mitigation.

Methodology

The decomposition method was used to group indicators for identifying energy poverty across EU member states and to determine the most used ones. A detailed analysis was then carried out on the most widely applied and data-supported indicators, drawing on academic research and the approaches of various international organizations. This included a quantitative analysis of indicators related to household income and expenditure, an examination of publicly available data, and the development of calculation formulas for determining household income.

Figure 2. Decomposition method for introducing a data-based approach to calculate the critical income level for identifying households at risk of energy poverty
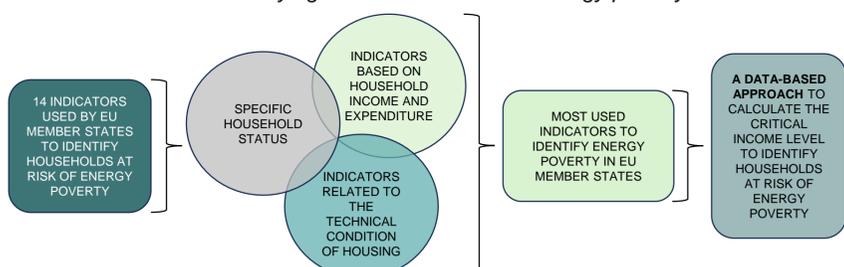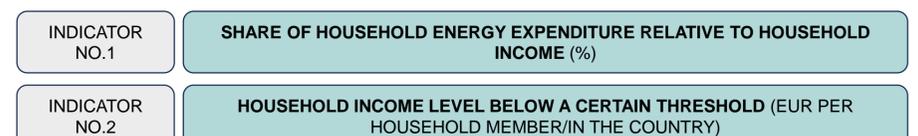

Results

An analysis of the NECPs (National Energy and Climate Plans) of all EU member states showed that only 14 out of 27 have defined energy poverty, while only one has not established indicators for its identification. These indicators generally fall into three categories: household income and expenditure, housing conditions, and specific household characteristics.

The most common indicators include the share of energy costs in household income, income below a set threshold, purchasing power, and poor housing energy efficiency.

Further analysis focused on the data used to determine these indicators, leading to the identification of two key indicators that enable a data-driven approach (using calculation formula) to estimate the critical income level for identifying households at risk of energy poverty in Latvia. This method holds potential for adoption by other EU member states in the long term.

Figure 3. Indicators used to calculate the critical income level for identifying households at risk of energy poverty

INDICATOR NO.1	SHARE OF HOUSEHOLD ENERGY EXPENDITURE RELATIVE TO HOUSEHOLD INCOME (%)
INDICATOR NO.2	HOUSEHOLD INCOME LEVEL BELOW A CERTAIN THRESHOLD (EUR PER HOUSEHOLD MEMBER/IN THE COUNTRY)

Conclusions

Energy poverty is commonly linked to households' inability to access energy and related essential services. Despite overlapping memberships, international organizations such as the EU, OECD, and IEA lack a unified approach to its definition and identification.

Data collected by these organizations varies, and countries rely on both data-driven and subjective indicators. Two widely recognized, objectively measurable indicators are presented in Figure 3.

Analysis shows that households face affordability issues when housing costs exceed 30% of income. Based on this, a data-driven formula was developed using publicly available data in Latvia to identify both the households at risk of energy poverty and their share within the population.

Further research could explore the factors affecting this proportion, leading to the development of a unified correction factor for data on the share of households at risk of energy poverty.

[1] Eurostat. Persons living in a dwelling not comfortably warm during winter by sex, age and risk of poverty or social exclusion situation [Online]. [Accessed 10.12.2024.]. Available: https://ec.europa.eu/eurostat/databrowser/view/ilc_lvhe11/default/table?lang=en