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Energy poverty and affordability in Ireland

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ENERGY POVERTY AND AFFORDABILITY IN IRELAND

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ABBREVIATIONS

AUB	Arrears on Utility Bills
CI	Coverage Index
CSO	Central Statistics Office
DCEE	Department of Climate, Energy and the Environment
EED	Energy Efficiency Directive
EI	Error Type I (Inclusion Error)
EII	Error Type II (Exclusion Error)
ESRI	Economic and Social Research Institute
EU	European Union
EPAH	Energy Poverty Advisory Hub
EPAP	Energy Poverty Action Plan
HAEE	High Absolute Energy Expenditure
HBS	Household Budget Survey
HSEEI	High-Share of Energy Expenditure Indicator
IAAW	Inability to Afford Adequate Warmth
LAEE	Low Absolute Energy Expenditure
LIHC	Low Income High Costs
LILEE	Low Income Low Energy Efficiency
LSEE	Low Share of Energy Expenditure
MIS	Minimum Income Standard
NDP	National Development Plan
NECP	National Energy and Climate Plan
RPEP	Research Programme on Energy Poverty
SILC	Survey on Income and Living Conditions
TCD	Trinity College Dublin

EXECUTIVE SUMMARY

INTRODUCTION

Energy poverty is a persistent policy issue across Europe, one which will become increasingly relevant in the face of energy price volatility, climate change, geopolitical uncertainty, and the need for a just transition.

Measuring energy poverty is vital for policymaking as it identifies vulnerable households, guides targeted supports and tracks progress, enabling timely adjustments to address rising energy costs, climate goals and changing household conditions.

Energy poverty refers to a household's lack of access to essential energy services that ensure a basic standard of living and health. It can be experienced in multiple ways. Energy bills might be too expensive, representing a high share of household's income or limiting their capacity to afford other essentials. Alternatively, households may be forced to behave in ways that reduce their energy consumption to a point where their physical and mental health is compromised.

Energy poverty stems from insufficient disposable income to afford adequate energy services, rendering it highly context-dependent and closely intertwined with a range of socio-economic issues and forms of hardship (Estévez and Tovar, 2024). It is also shaped by broader structural factors, including wage levels, income inequality, housing quality, corporate taxation, access to affordable energy, and the energy efficiency of the dwelling stock. Beyond national contexts, systemic and geopolitical factors such as extractivism, global inequalities, and the legacies of colonialism influence energy access, prices and infrastructure (Bouzarovski et al., 2025). In this sense, energy poverty is not simply an individual or household problem, but a multidimensional justice issue embedded in both national and global social, economic and political structures.

The European Union has placed this challenge firmly on their policy agenda: current directives require Member States not only to monitor energy poverty but also to design and evaluate measures that protect people experiencing energy poverty and vulnerable consumers, ensuring that affordability risks are systematically addressed. In Ireland, these aims have been incorporated into the Energy Poverty Action Plan (EPAP) and the National Energy and Climate Plan (NECP).

In this report, we address **key questions** related to energy poverty and affordability.

MEASURING ENERGY POVERTY AND ASSESSING AFFORDABILITY

What is the scale of energy poverty in Ireland? In 2024, at least 14 per cent of households self-reported experiencing energy poverty.¹ These measures show an improvement from their peak in 2013, as well as a reduction from the two previous years.

Energy poverty can be estimated through several indicators that reflect different ways in which households struggle to meet their energy needs. In 2015, more than 35 per cent of households met at least one of these indicators, showing that energy poverty is experienced in multiple forms by a significant share of the population. This amounted to around 600,000 households out of approximately 1.7 million at the time.

How to measure energy poverty? Ireland has an official definition of energy poverty; it measures the number of households whose expenditure on energy exceeds 10 per cent of their disposable income. According to this official indicator (HSEEI-10%), over one-in-ten households was in energy poverty in 2015.

This measure suffers from two issues that limit its policy use. First, the data required for its estimation are available every five years. Second, a problem that is common to using any single measure, it underestimates the true level of energy poverty and the diverse ways in which it is experienced. For instance, it may exclude households that, due to budget constraints, consume extremely low levels of energy.

We advocate for a monitoring system that tracks multiple indicators. This, as opposed to reporting a single indicator, would facilitate the assessment of energy poverty and affordability issues in Ireland, as well as provide the inputs required for robust policy design and adequate impact evaluation.

Evaluating the official indicator of energy poverty. Any single indicator has inherent limitations. Nevertheless, if one indicator must be chosen for monitoring purposes, the Inability to Afford Adequate Warmth (IAAW) measure from the EU-SILC survey is recommended, as it provides timely and reliable signals of energy

¹ See definitions of energy poverty indicators in Table 3.1 and estimates over time in Figures 3.4 in Chapter 3 and A.1 in the appendix.

hardship. In the longer term, once annual expenditure data become available, a more comprehensive and robust indicator should be developed, ideally based on a Minimum Income Standard.²

Why and how should affordability risks be assessed? The transition to a low-carbon economy will require substantial investment and is likely to increase energy costs for households and businesses. Assessing affordability risks is essential to ensure that the costs of the transition are distributed fairly and that vulnerable groups are not left behind. Those already experiencing energy poverty, followed by low-income households and those facing other types of structural vulnerabilities are most at risk of affordability challenges. Identifying experiences of energy poverty using Union Indicators – which classify a household as in energy poverty if it meets at least one of several established criteria – offers a comprehensive and practical method for measuring affordability risk.

For a more in-depth analysis, Chapter 4 introduces a framework for mapping households across different levels of risk and proposes a definition of structural vulnerability based on the socio-economic characteristics most strongly associated with energy poverty.

MULTIDIMENSIONAL ANALYSIS OF ENERGY POVERTY AND AFFORDABILITY RISKS

What does a multidimensional analysis reveal about energy poverty and affordability risks? Our analysis demonstrates that energy poverty is experienced in multiple ways. Assessing a comprehensive range of indicators is essential to capture the full extent of energy affordability issues, support effective targeting of vulnerable groups, and enable robust policy evaluation.

Expenditure-based measures recommended by the Energy Poverty Advisory Hub (EPAH) remain relatively stable, ranging from 5 per cent to 20 per cent between 2000 and 2015. Self-reported measures, are more volatile, peaking at 15 per cent during the financial crisis. Union Indicators tell a different story; they suggest that over 30 per cent of households face some form of energy affordability challenge. The limited overlap between these measures demonstrates that energy poverty is a multidimensional issue – experienced in multiple ways – and reinforces the need for comprehensive monitoring and policies that can account for its varied expressions.

² This approach has been adopted in Scotland and is particularly valuable as it considers household incomes, dwelling energy efficiency, and the interaction between socio-economic characteristics, climate, and the energy required to meet basic needs.

VULNERABILITY PROFILES AND ENERGY AFFORDABILITY

What are the main socio-economic and structural factors associated with energy poverty? Energy poverty is closely linked to other forms of deprivation. A consistent high-risk of energy poverty profile has emerged from the literature. Our analysis in Chapter 4 confirms these findings. Structurally vulnerable groups most likely to face affordability challenges are primarily low-income households, followed by those living in rented accommodation. Elevated risks are also observed among households with women as the main income earners, households with unemployed members, and those residing in older buildings – particularly detached and semi-detached dwellings. Single adults, both with and without children, as well as rural households, also face high probabilities of experiencing energy poverty. When these characteristics overlap, as they often do, they reinforce one another, increasing vulnerability and deepening affordability challenges.

ASSESSING VULNERABILITY AND AFFORDABILITY RISK

What do we learn from studying vulnerability profiles and risk? Our study on the overlap between energy poverty, structural vulnerability, and zones of risk illustrates how different definitions capture distinct household groups and highlight those most at risk. Among expenditure-based indicators, the share of energy expenditures above twice the median (HSEEI-2M), emerges as the most balanced measure, offering relatively broad coverage of vulnerable groups while enhancing accuracy in classification.

How to assess the risk of experiencing energy affordability issues? To address this challenge, we propose an analytical framework that maps households' energy expenditure and disposable incomes to zones of affordability risk. The level of risk is determined by the intersection of three vulnerability thresholds: income poverty, high energy costs, and the share of energy expenditure in income. Within this framework, structural vulnerability is defined as households in income poverty and those exhibiting two characteristics strongly associated with a higher probability of affordability issues. For example, single parents in rental accommodation are identified as structurally vulnerable under this definition, regardless of their income status. Finally, we evaluate the overlap of energy poverty indicators with structural vulnerability and identify areas at heightened risk of energy poverty. This approach provides a transparent way to measure indicators' coverage and identify cases of over- or under-estimation of vulnerable populations.

What are the best policy applications of different indicators? We show that the choice of indicator matters and should be purpose-oriented. Self-reported indicators (IAAW and AUB) are fast and people-centred; they directly track inability

to pay and affordability pressures among consumers. They are best for measuring changes, continuous monitoring, and assessing whether supports are needed to alleviate unexpected shocks in the short term. Meanwhile, expenditure-based indicators like HSEEI-10%, HSEEI-2M, LIHC, and LAEE are slower but structural. These measures are particularly valuable for evaluating the impact of economic interventions and informing the design of targeted policies that address longer-term issues like the improvement of energy efficiency and housing conditions.

Policy design must align indicators to objectives because different indicators vary in sensitivity to prices, structural factors, behavioural responses, and their ability to identify different types of vulnerable groups. Using Union Indicators – combined measures – helps capture different forms of energy affordability issues, contributing to policies that are both comprehensive and efficient.

What tools are needed to act on energy affordability challenges? We recommend that the monitoring system we advocate for focuses on at least three indicators, each serving a distinct purpose. The self-reported inability to afford adequate warmth (IAAW) should be tracked due to its timeliness and sensitivity to economic shocks. Because it reflects households' experiences, it is particularly effective at detecting stress quickly and useful for considering short-term protective measures. The share of households spending more than twice the median share of income on energy (HSEEI-2M) should be monitored to provide a clearer picture of energy poverty levels, capture high-risk and structurally vulnerable groups, and support the design and evaluation of long-term policy interventions. Finally, the low absolute energy expenditure (LAEE) measure should be included to capture households that fall outside the previous indicators because they adapt by under-consuming energy to unsafe levels. Together, these three indicators form a monitoring system capable of supporting timely responses, robust policy design, and adequate evaluation of policies addressing Ireland's energy poverty and affordability challenges.

ESTIMATING THE SEVERITY AND COST OF ENERGY POVERTY

How severe is energy poverty? Traditional measures of energy poverty say little about its severity. This report presents the first estimates of the energy poverty gap, which reflects the depth of affordability challenges and approximates their cost. For illustrative purposes, we measure this gap by estimating the minimum additional resources that households would need to avoid specific experiences of energy poverty. The results indicate that the gap has remained relatively stable over time. Households experiencing energy poverty require, on average, between €11–€45 per week to avoid facing affordability issues.

What is the value of targeted interventions? Our estimation of the energy poverty gap provides useful insights into the potential value of targeted measures. In 2016, the average shortfall was approximately €480 per household per year. Assuming this gap remains relatively stable, closing it by supporting all vulnerable households would require around €370 million – well below the €550–575 million spent on the universal €250 electricity credit in 2024. This calculation suggests that targeted interventions could have delivered adequate support at roughly 40 per cent lower cost, highlighting the efficiency gains of well-designed interventions.

STRUCTURAL ANALYSIS – LOOKING AT COMPLEMENTARY INDICATORS

What drives affordability pressures? We identify several structural factors that influence households' exposure to energy affordability challenges, with income emerging as the most important. Homeownership, health status, household composition, rent, and other living costs all shape disposable income and, ultimately, what households can afford. Following the recommendations of the Energy Poverty Advisory Hub (EPAH), this report presents a comprehensive analysis of indicators that track the evolution of these and related factors, providing deeper insights into the mechanisms that determine energy affordability.

Our analysis finds that rising disposable incomes have played a central role in stabilising or reducing energy poverty measures, offsetting the impact of higher energy prices, rising rents, and broader cost-of-living pressures.

How to mitigate the risk of experiencing energy affordability issues in the short run and in the long run? Unexpected shocks to energy prices – arising from geopolitical tensions, supply disruptions, or market volatility – can rapidly strain household budgets, particularly for vulnerable consumers. To mitigate these short-term pressures, governments must be able to detect shocks quickly using responsive indicators such as the Inability to Afford Adequate Warmth (IAAW), alongside complementary measures like energy price monitoring and arrears data. Once the vulnerable to energy poverty are identified, a range of protective tools can be deployed, including temporary electricity credits, targeted bill supports, deferred payment schemes, or even minimum guaranteed energy provisions that activate when prices exceed critical thresholds. However, such measures must be carefully targeted to ensure assistance reaches those most in need. In the longer run, reducing structural vulnerability requires investment in energy efficiency, retrofitting, clean technology adoption, and supportive grant schemes that strengthen household resilience and lower exposure to future shocks. Expenditure-based indicators, such as HSEEI-2M, and ideally a more comprehensive minimum income standard-based indicator, would be valuable for tracking the progress of these structural measures and for evaluating the long-term impact of policies.

IDENTIFICATION OF WELFARE SUPPORTS AMONG ENERGY-POOR HOUSEHOLDS

What types of welfare support do energy-poor households usually rely on? In 2024, members of energy-poor households display distinct socio-economic and demographic characteristics, including lower disposable income, and a younger, female-headed, urban profile. These traits shape their reliance on key welfare supports, particularly housing, child, and fuel allowance, reflecting widespread needs within this group. The younger age structure of the energy-poor cohort explains the lower uptake of old age benefits. At the same time, the high coverage of disability supports suggests that health-related challenges further deepen the vulnerability of this group.

CONCLUDING REMARKS

This report highlights the urgent need to strengthen both the measurement and response to energy poverty in Ireland. To enhance policy effectiveness, we recommend developing a comprehensive monitoring system that incorporates multiple indicators. We identify a set of metrics that, when used together, can support more accurate targeting, robust policy evaluation, and the design of both short-term relief measures and long-term structural interventions. Vulnerable groups, such as low-income renters, single-parent families and rural households, face compounded risks that require targeted support.

Estimating the cost of energy poverty reveals that well-designed, targeted interventions could be significantly more efficient than universal supports. Addressing root causes such as income poverty and other vulnerabilities requires coordinated policies across energy, housing and social protection.

CHAPTER 1

Introduction

Key Takeaways

- Energy poverty remains a challenging issue that is likely to intensify.
- Achieving a low-carbon economy will put pressure on energy affordability.
- European regulation requires Member States to act.
- Ireland's national policy framework responds to this challenge.

Across Europe, energy poverty continues to pose challenges that are likely to intensify with energy price volatility, climate change, the requirements of a just transition, and geopolitical uncertainty.

For Ireland, the issue is particularly acute. The country is committed to achieving a low-carbon economy, a shift that demands significant investment and, at least in the short term, may increase costs for households and businesses. Ensuring that this transition is fair and that vulnerable groups are protected requires robust evidence, timely monitoring, and effective policy tools.

Energy poverty refers to a household's lack of access to essential energy services that ensure a basic standard of living and health. These services include heating, cooling, hot water, lighting, and energy to power appliances (Directive (EU) 2023/1791, Art. 2(52)). Households experience energy poverty in diverse ways, with some facing energy bills that take up a disproportionately large share of their income, forcing difficult trade-offs with other essentials, while others reduce consumption to unsafe levels, undermining both physical and mental wellbeing. Energy poverty is therefore multidimensional: it arises from the interaction of inadequate income, high energy costs, inefficient housing, and broader socio-economic and structural factors such as housing conditions, health, household composition, and national policies and welfare systems. It is closely linked to other forms of deprivation and inequality, with drivers and consequences that extend well beyond the energy sector (European Commission, 2023).³

The European Union has placed energy poverty firmly on its agenda. Under the Governance Regulation (Regulation (EU) 2018/1999), Member States are required to assess its scale in their National Energy and Climate Plans and, where it is

³ Commission Staff Working Document on Energy Poverty (SWD(2023)647). Available at: https://energy.ec.europa.eu/publications/commission-staff-working-document-eu-guidance-energy-poverty_en.

significant, to set reduction objectives.⁴ The Electricity Directive requires governments to define and protect vulnerable customers in the design of national energy markets (Directive 2019/944/EU).⁵ The Energy Efficiency Directive goes further by making the alleviation of energy poverty an explicit policy priority. It requires the implementation of measures that prioritise households in energy poverty and vulnerable groups and establishes consumer protection as a central goal of the EU's decarbonisation strategy (Directive (EU) 2023/1791).⁶ These regulations make clear that affordability risks must be systematically monitored and addressed.

Ireland has embedded these requirements in its national policy framework. The Energy Poverty Action Plan (Government of Ireland, 2022)⁷ and the National Energy and Climate Plan 2021-2030 (Government of Ireland, 2024)⁸ commit the State to reducing affordability risks, while the Programme for Government: Securing Ireland's Future pledges to mitigate the impact of rising energy costs during the low-carbon transition. The forthcoming National Energy Affordability Action Plan is expected to extend these efforts by setting out medium- and long-term measures, including structural reforms aimed at reducing household energy costs and improving resilience.

The Energy Poverty Action Plan (Government of Ireland, 2022) stresses the need for better measurement of energy poverty. This begins with what gets measured: the choice of indicators shapes policy by defining what is recognised as an energy poverty experience – who is seen as suffering unjust hardships. In defining the problem, indicators narrow the field of solutions, signal where responsibility lies and ultimately determine who receives support. This report outlines the strengths and limitations of established indicators and argues that no single measure can fully capture the diverse ways energy poverty is experienced.

Good policy starts with adequate measurement. Meanwhile, Ireland's official indicator is based on infrequently gathered data that limit its usefulness for timely policy decision-making. In Chapter 2, we address how to measure energy poverty and affordability, document the scale of the issue, and present our proposal for updating the official indicator.

⁴ Governance Regulation (Regulation (EU) 2018/1999). Available at: <https://eurlex.europa.eu/eli/reg/2018/1999/oj>.

⁵ Electricity Directive (Directive 2019/944/EU). Available at: <https://eur-lex.europa.eu/eli/dir/2019/944/oj/eng>.

⁶ Energy Efficiency Directive (Directive (EU) 2023/1791). Learn more at: https://energy.ec.europa.eu/topics/energy-efficiency/energy-efficiency-targets-directive-and-rules/energy-efficiency-directive_en.

⁷ Energy Poverty Action Plan (Government of Ireland, 2022). Available at: <https://www.gov.ie/en/department-of-climate-energy-and-the-environment/publications/energy-poverty-action-plan/>.

⁸ National Energy and Climate Plan 2021-2030 (Government of Ireland, 2024). Available at: <https://www.gov.ie/en/publication/a856a-national-energy-and-climate-plan-necp-2021-2030/>.

Energy poverty is experienced in multiple ways; no single indicator can capture its complexity. In Chapter 3, we follow the Energy Poverty Advisory Hub (EPAH) recommendations and study the evolution of multiple indicators of energy poverty. The analysis reveals that there is limited overlap among measures, demonstrating that energy poverty is a multidimensional issue, and underscoring the need for a systematic and comprehensive monitoring system that accounts for its varied expressions.

What governments choose to measure determines not only the scale of the problem and how it is understood but also who is seen, who is missed, and ultimately who policies are designed to support. In Chapter 4, we identify who is most at risk of facing energy affordability issues and propose a working definition of structural vulnerability to energy affordability issues.

In Chapter 5, we take a step further to provide insights into the strengths and weaknesses of different indicators for specific policy applications. We introduce a straightforward analytical framework that maps households into zones of affordability risk, illustrating the mechanisms through which different indicators classify households who experience energy poverty. This framework makes it possible to examine the trade-offs across indicators, evaluate how well they align with structural vulnerability, and identify cases of under- or over-classification. Our analysis identifies the core monitoring tools needed to respond to economic shocks and to design and evaluate policies that protect vulnerable groups over the long run.

Traditional measures of energy poverty say little about its severity. Chapter 6 presents the first estimates of the costs that households in energy poverty face in Ireland. The energy poverty gap reflects the depth of affordability challenges by estimating the minimum additional resources households would need to avoid specific experiences of energy poverty. First, we calculate the average gap using different energy poverty indicators, and then the averages across vulnerable groups to show who faces the most severe pressures. These estimates do more than quantify hardship; they provide a benchmark for policy design. By showing the resources required to close the gap, we can evaluate the adequacy of targeted supports and highlight the potential fiscal savings compared with broad, universal interventions. In this way, the energy poverty gap offers both a measure of severity and a guide to more efficient, better-targeted policies.

Energy poverty is closely linked to broader structural conditions. Chapter 7 examines these factors, showing how housing tenure, health, household composition, rents, and other living costs constrain disposable household income and, ultimately, the capacity to secure adequate levels of energy. The analysis

highlights the mechanisms that underpin affordability challenges and underscores why they cannot be resolved without addressing the structural conditions that sustain them.

In Chapter 8 we identify the most common welfare payments received by households self-reporting experiences of energy poverty, to improve the targeting of support measures. The analysis reveals the inherent needs of this group. We argue that aligning energy poverty interventions with Ireland's social protection systems can enhance the protection for energy-poor households.

In summary, this report presents a clear picture of energy poverty and affordability issues in Ireland and sets out a framework for action. It offers evidence to shape policies that protect the most vulnerable, use resources effectively, and ensure the low-carbon transition is both equitable and inclusive.

CHAPTER 2

Measuring energy poverty and assessing affordability

Key Takeaways

- Ireland's official indicator suffers from two main issues that limit its usefulness for policy.
- Households spending over 10 per cent on energy can only be measured every five years.
- Relying on a single indicator understates the scale of the issue.
- The Inability to Afford Adequate Warmth (IAAW) indicator provides timely and reliable signals of affordability pressure. Best indicator to inform quick policy responses.

In this chapter, we document how frameworks to define and address energy poverty have evolved over time and vary across Europe. We examine how the issue is defined in Ireland and discuss the strengths and weaknesses of two indicators. We introduce why measurement matters, drawing on EU mandates and the broader policy context that motivates this report. We explain why reliance on a single measure risks understating the scale of hardship, and why a multidimensional monitoring system is essential for capturing affordability pressures. This chapter sets the stage for the multidimensional analysis and a more detailed vulnerability and energy affordability risk assessments that follow.

Across Europe, energy poverty is recognised as a pressing issue. EU rules require Member States to define and monitor it, a mandate that has led some governments to rely on a single indicator for both definition and assessment. Yet the European Commission's Energy Poverty Advisory Hub (EPAH) makes clear that no single measure can capture the complexity of energy hardship. The EU's 2023 Staff Working Document on Energy Poverty echoes this point, emphasising the need to track multiple indicators to understand both affordability pressures and underlying vulnerabilities (European Commission, 2023).⁹ To guide practice, the EPAH and the Covenant of Mayors' 2025 Reporting Guidelines provide a framework for local governments.¹⁰ They recommend the use of more than 20 indicators across six macro-areas, while requiring that at least one affordability measure be monitored consistently.

Alongside energy poverty, it is essential to consider energy affordability more broadly. Ireland's commitment to a low-carbon economy will require large investments that may raise energy costs in the short term for households and

⁹ Commission Staff Working Document on Energy Poverty (SWD(2023)647). Available at: https://energy.ec.europa.eu/publications/commission-staff-working-document-eu-guidance-energy-poverty_en.

¹⁰ Covenant of Mayors Europe (2025). Reporting Guidelines on Energy Poverty 2025. Available at: <https://eu-mayors.ec.europa.eu/sites/default/files/2025-01/Covenant-reporting-guidelines-energy%20poverty-2025-EN.pdf>.

businesses. Identifying who is most exposed to these affordability pressures is therefore crucial. In practice, groups most at risk are those already classified as in energy poverty under one or more established indicators; households that devote a high share of income to energy, struggle to afford adequate warmth, or under-consume energy to unsafe levels. Combining these measures into the Union Indicators (UIs), which classify a household as experiencing energy poverty if it meets any affordability criterion flagged by individual indicators, offers a clear and practical way to assess who is most likely to face challenges during the transition. Beyond this simple approach, we propose a framework to assess energy affordability and risk in Chapter 5.

Official frameworks to tackle energy poverty vary across countries and have evolved over time. In the UK, the early ‘10 per cent rule’ – households spending more than a tenth of income on energy – was replaced in 2013 by the Low-Income High Costs (LIHC) measure, and in 2021 by England’s Low Income Low Energy Efficiency (LILEE) indicator, which links poor building efficiency with insufficient residual income after energy costs (DEFRA, 2001; DECC, 2011; UK, 2022). Scotland has gone further, adopting a complex statutory definition tied to a Minimum Income Standard (MIS): households are fuel poor if they spend more than 10 per cent of post-housing income on energy and fall below 90 per cent of MIS after paying fuel and childcare (Government of Scotland, 2017). The MIS reflects structural factors such as housing conditions, energy efficiency, climate, and household composition, embedding vulnerability directly into the definition.¹¹ Wales and Northern Ireland still apply variants of the 10 per cent rule. In Belgium, since 2015, the Energy Poverty Barometer is published annually. It produces statistics and analysis using a multidimensional approach that distinguishes between measured, hidden, and perceived energy poverty (King Baudouin Foundation, 2018; 2024). These examples show both that approaches can and should evolve, and that our understanding of energy poverty has grown more sophisticated over time.

These approaches illustrate that a range of measures can be adopted, from simple thresholds that are easy to apply to more comprehensive frameworks that account for structural vulnerabilities and household circumstances. Each has strengths and limitations, but together they highlight how definitions can evolve as understanding improves. For Ireland and other countries, they provide valuable reference points when considering reforms to monitoring systems.

¹¹ More information on Scotland’s approach to energy poverty can be found here: <https://www.gov.scot/policies/home-energy-and-fuel-poverty/fuel-poverty/>.

2.1 MEASURING ENERGY POVERTY IN IRELAND

The Central Statistics Office (CSO) conducts two key household surveys in Ireland that are crucial for measuring energy poverty: the Household Budget Survey (HBS) and the Survey on Income and Living Conditions (SILC). The HBS is conducted roughly every five years to collect information on household expenditure on various commodities, including energy for residential use. Its main objective is to quantify the cost of living in Ireland. For this reason, it has limited income details and no systematic deprivation measures. The SILC is Ireland's official source for poverty measurement, designed under EU regulations to collect detailed income and deprivation data (e.g. the ability to keep adequately warm at home) annually. SILC provides equivalised disposable income, enabling the assessment of living standards and the calculation of internationally comparable indicators such as the at-risk-of-poverty rate. At the time of writing this report, household expenditure data were available only up to 2016, while the self-reported data extended to 2024.¹²

Good policy begins with good measurement. Ireland's official indicator, the High Share of Energy Expenditure (HSEEI-10%), is estimated using the HBS and has been in use since the early 2000s (Government of Ireland, 2016). It identifies households that spend more than 10 per cent of their disposable income on energy. This measure is based on the Household Budget Survey, which has been collected only every five years, limiting its relevance for real-time policy decision-making.

In contrast, self-reported indicators from the EU-SILC survey (SILC), such as the Inability to Afford Adequate Warmth (IAAW) are available annually, providing timely signals of energy affordability issues. By capturing the lived experiences and day-to-day struggles of households, subjective measures capture important dimensions of energy poverty. Until data availability improves and more comprehensive indicators can be developed, the IAAW needs to be considered as an official indicator.

Starting in 2025, the CSO will collect HBS data annually. Once these data are available, we recommend adopting a more comprehensive measure of energy poverty and affordability. Scotland offers a leading example: its official fuel poverty measure combines expenditure data with the Minimum Income Standard (MIS), making assessments reflect both household budgets and basic needs. By incorporating the MIS, the measure implicitly captures the energy efficiency of homes and other structural vulnerabilities. This approach not only improves

¹² Future research on measuring energy poverty will incorporate updated data as they become available.

accuracy and usefulness but also aligns measurement more closely with policy goals.

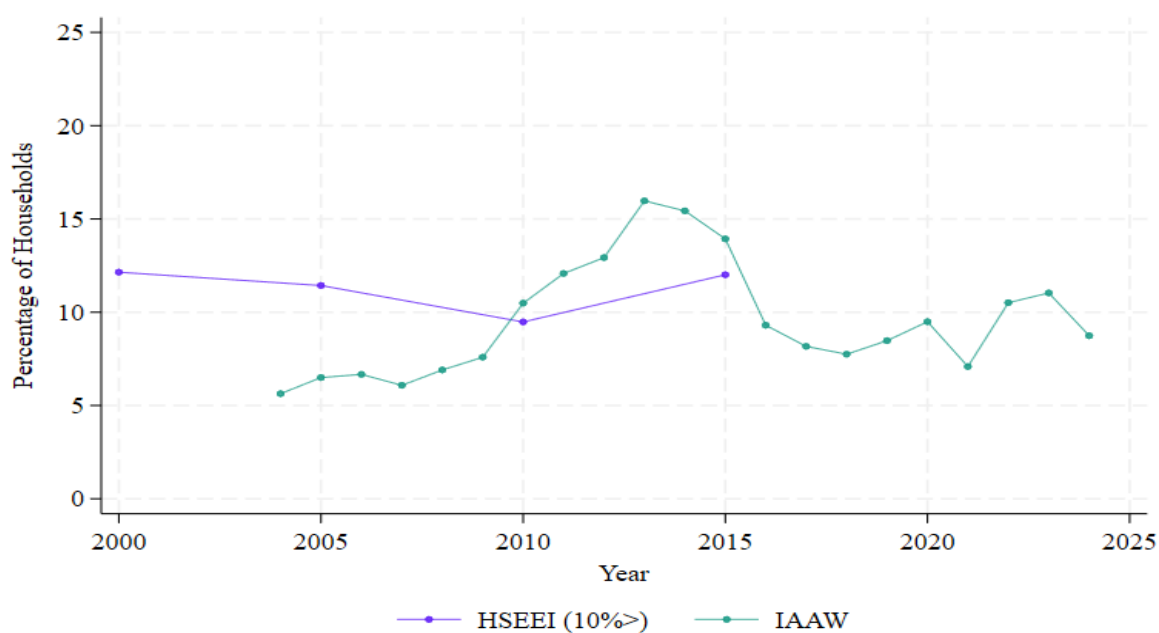
We advocate a systematic monitoring system that tracks multiple indicators. Such a system is essential for assessing energy poverty and affordability in Ireland and for generating the evidence needed to design effective policies and evaluate their impact.

2.2 STATE OF THE ART – MONITORING ENERGY POVERTY

We present the HSEEI-10% and the IAAW indicator as a starting point for understanding the state of energy poverty in Ireland. Taken together, they provide a quick overview of current conditions based on the latest available data.

Figure 2.1 plots these two indicators using available data from 2000 to 2025. While the HSEEI-10% is the official benchmark, the IAAW offers a self-reported measure that gives a more up-to-date picture of households' experiences and affordability pressures. The HSEEI-10% remains relatively stable over time. In 2000, the share of households spending more than 10 per cent of their income on energy stood at around 12 per cent, and by 2015 the level was broadly unchanged, showing little evidence of long-term variation.

FIGURE 2.1 A QUICK GLANCE AT ENERGY POVERTY



Sources: Calculations based on CSO HBS and SILC datasets.

Notes: The plot presents Ireland's official HSEEI-10% indicator, calculated every five years, alongside the IAAW self-reported indicator, which is available annually. Averages are equalised for household size and composition. IAAW: Inability to Afford Adequate Warmth. HSEEI-10%: High Share of Energy Expenditure -10 per cent. See Table 3.1 for definitions.

By contrast, the IAAW indicator, continuously available from 2004 to 2024, shows greater sensitivity to macroeconomic shocks. The financial crisis of 2007–2008 is observable in the sharp spike in households reporting an inability to afford adequate warmth. As incomes gradually recovered in the following years, this indicator declined, though not to pre-crisis levels. In addition, the IAAW series displays more volatility overall, fluctuating between 6 per cent (in 2004) and above 16 per cent at its peak.

Figure 2.1 clearly shows the limitations of relying solely on the HSEEI-10% measure. Since data for this indicator are only available intermittently – covering the period from 2000 to 2015 – it provides information for just a small share of the time span up to 2025. As a result, it misses shorter-term shocks and fluctuations that are central to understanding how households experience energy poverty. This not only constrains analysis but also limits the State’s capacity to make timely decisions in response to energy shocks or crises. The figure therefore underlines the importance of having more regular and timely data: when the goal is to monitor energy poverty effectively, frequent measurement – such as that offered by the IAAW – may be more valuable than relying on a single, more comprehensive but infrequent indicator. Moreover, because the HSEEI-10% indicator tends to identify households with high energy expenditures, it may overlook households with low consumption due to income constraints. These energy-deprived households are more likely to be captured by the IAAW indicator.

CHAPTER 3

Multidimensional analysis of energy poverty and affordability risks

Key Takeaways

- What we choose to measure shapes the scale of the problem, how it is understood, who is seen, who is missed, and ultimately which groups policies are designed to reach.
- Energy poverty is experienced in multiple ways.
- The limited overlap between indicators demonstrates that energy poverty is a multidimensional issue.
- Assessing a comprehensive range of indicators is essential to capture the full extent of energy affordability issues.
- Using Union Indicators – a combination of multiple measures – offers a comprehensive and practical method for assessing affordability risk.
- Expenditure based indicators display stable levels of energy poverty.
- Self-reported measures have almost halved since the 2013 peak and improved for the past two years.
- In 2015, more than one-in-three households experienced at least one type of energy poverty according to the expenditure-based indicators.

The indicators that governments choose to monitor determine not only the apparent scale and urgency of energy poverty, but also which households are visible, which are overlooked, and ultimately who policy is designed to reach. This is because the choice of indicators is constructive, not merely interpretative (Bouzarovski et al., 2025). It defines which households are considered to be experiencing energy poverty and thus shapes the perceived magnitude, distribution and urgency of the issue. This chapter examines the choice of indicators and their implications for assessing and addressing energy poverty.

Following recommendations by the EU Commission's Energy Poverty Advisory Hub (EPAH), we adopt a multidimensional approach to monitoring, analysis, and evaluation of energy poverty. This section presents a comprehensive overview of energy poverty over time in Ireland.

We select a set of eight well established indicators based on the literature and current policy trends in the EU and UK. These indicators form the basis of our analysis. In the following chapters, we use them to identify populations most vulnerable to energy poverty, to link these vulnerabilities to energy affordability and risk, and to provide insights into critical considerations that policymakers must account for when looking at a particular indicator.

3.1 ENERGY POVERTY INDICATORS AND DATA

This section presents an overview of selected indicators and their sources. We leverage household level microdata to calculate expenditure-based indicators using the CSO's Household Budget Survey (HBS), and self-reported indicators from Survey of Income and Living Conditions (SILC).

This section demonstrates that no single indicator can fully reflect the complexity and varied dimensions of energy poverty. Consequently, multiple indicators need to be used. We also show that these metrics can be combined into a composite Union Indicator, which classifies households as experiencing energy poverty if they are identified as such by any of the standard indicators.

High and low expenditure levels, as defined in Table 3.1, indicate abnormal household energy spending patterns that signal affordability issues. Expenditure-based measures quantify energy poverty by comparing household energy spending to defined thresholds or benchmarks and by measuring energy costs in absolute terms and relative to income. For example, the Low Income High Cost (LIHC) metric identifies households whose income falls below the poverty line (60 per cent of median disposable income)¹³ and whose energy expenditure exceeds the sample median. Conversely, the Low Absolute Energy Expenditure (LAEE) metric targets households whose energy spending is below half of the sample median. Self-reported indicators rely on households' subjective experiences to assess energy poverty. They typically stem from survey questions about their ability to afford heating their homes adequately. The resulting indicators are also binary variables. Further details on the estimated metrics are presented in Table 3.1.

¹³ This income poverty indicator – also known as the At Risk of Poverty (AROP) metric – is widely used in Ireland and internationally. The Central Statistics Office (CSO) provides further methodological detail in its official documentation: <https://www.cso.ie/en/releasesandpublications/ep/p-silc/surveyonincomeandlivingconditionssilc2025/poverty/>.

TABLE 3.1 ENERGY POVERTY INDICATORS

Expenditure-based (HBS)	Acronym	Formula
High Share of Energy Expenditure - 10%	HSEEI-10%	$\mathbb{1}(\text{Energy expenditure}_{it} > 10\% \text{ Income}_{it})$
High Share of Energy Expenditure - 2M	HSEEI-2M	$\mathbb{1}(\text{Share of energy expenditure on income}_{it} > 2 \times \text{Median share of energy expenditure on income}_{nt})$
Low Absolute Energy Expenditure	LAEE	$\mathbb{1}(\text{Energy expenditure}_{it} < 50\% \text{ Median energy expenditure}_{nt})$
Low Income High Cost	LIHC	$\mathbb{1}(\text{Income}_{it} - \text{Energy expenditure}_{it} < 60\% \text{ Mean income}_{nt} \ \& \ \text{Energy expenditure}_{it} > \text{Median expenditure on energy}_{nt})$
High Absolute Energy Expenditure	HAEE	$\mathbb{1}(\text{Energy expenditure}_{it} > 2 \times \text{Median energy expenditure}_{nt})$
Low Share of Energy Expenditure	LSEEI	$\mathbb{1}(1\% \text{ Income}_{it} \geq \text{Energy expenditure}_{it} > 0.5\% \text{ Income}_{it})$
Union Indicator (HBS)	UI-HBS	$\mathbb{1}(\text{HSEEI-10\% or HSEEI-2M or LAEE or LIHC or HAEE or LSEEI} = 1)$
Self-reported (SILC)	Acronym	Formula
Inability to Afford Adequate Warmth ¹⁴	IAAW	$\mathbb{1}(\text{Had to go without heating during the 12 months though lack of money}_{it})$
Arrears on Utility Bills	AUB	$\mathbb{1}(\text{Has been in arrears on utility bills in the past 12 months}_{it})$
Union Indicator (SILC)	UI-SILC	$\mathbb{1}(\text{IAAW or AUB} = 1)$

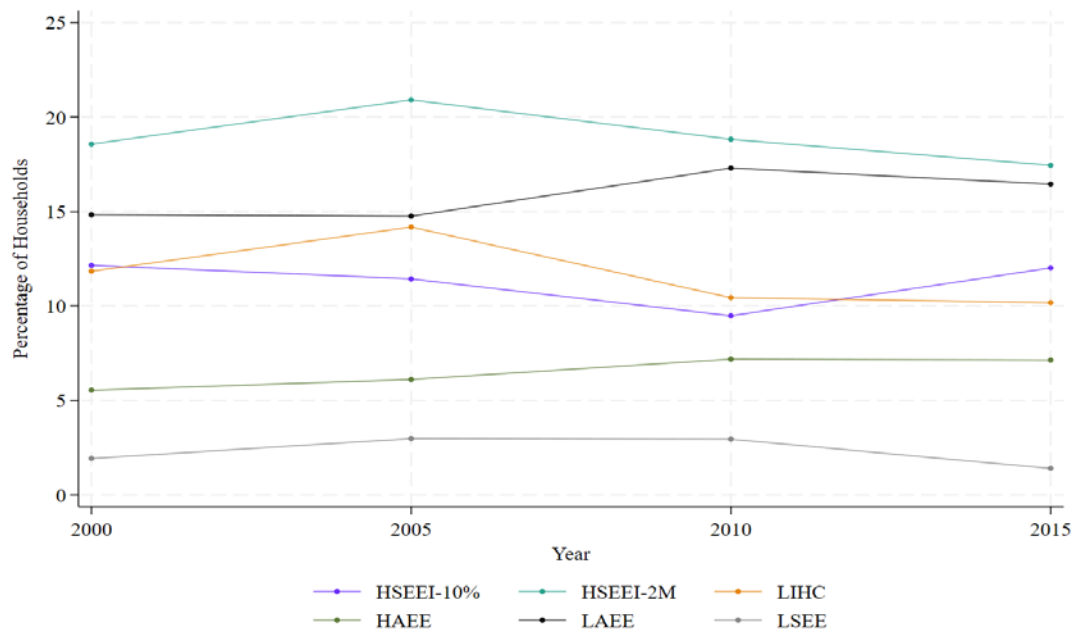
Source: Authors.

Notes: The table presents the selected indicators for the analysis, including their definitions. These indicators are well established in the literature, recommended by the EPAH, and serve illustrative purposes. Income refers to disposable income. All monetary amounts are equivalised to account for household size and composition and adjusted for inflation to 2015 prices. Energy expenditure includes fuels and electricity. Subscripts refer to household i and time t ; n indicates national level aggregates.

To understand the evolution of energy poverty over time, Figure 3.1 plots six different measures of energy poverty, each calculated using the Household Budget Survey dataset. As in the case of Ireland's official indicator, the levels of most of these measures remain relatively stable over time. However, the absolute levels differ considerably across indicators. The Low Share of Energy Expenditure (LSEE) consistently records the lowest incidence, with values around 3 per cent, while the High Share of Energy Expenditure (2M) shows the highest, reaching close to 19 per cent. The gap between these two indicators is substantial – amounting to about 16 per cent – and in relative terms, 2M is more than six times larger than LSEE.

These marked differences suggest that the indicators are capturing distinct segments of the population. Whereas LSEE may primarily identify households with atypically low energy spending, 2M identifies those facing the heaviest relative burdens. The divergence in levels points to underlying differences in both the characteristics and the vulnerabilities of the populations identified by each measure.

¹⁴ We define the IAAW indicator based on the SILC variable 'dep_cold'. Another commonly used variable is 'dep_warm'; we refrain from using this as an indicator due to issues with the survey design and coding into the dataset. The question reads 'do you keep the home adequately warm?' with response codes: 1 = yes, 2 = no, cannot afford it, and 3 = no, for other reasons. In practice, 'dep_warm' is provided as a binary variable that excludes households answering 'no, for other reason', despite these households reporting not being able to keep their homes warm. Figure A.1 in the appendix presents data on all self-reported variables.

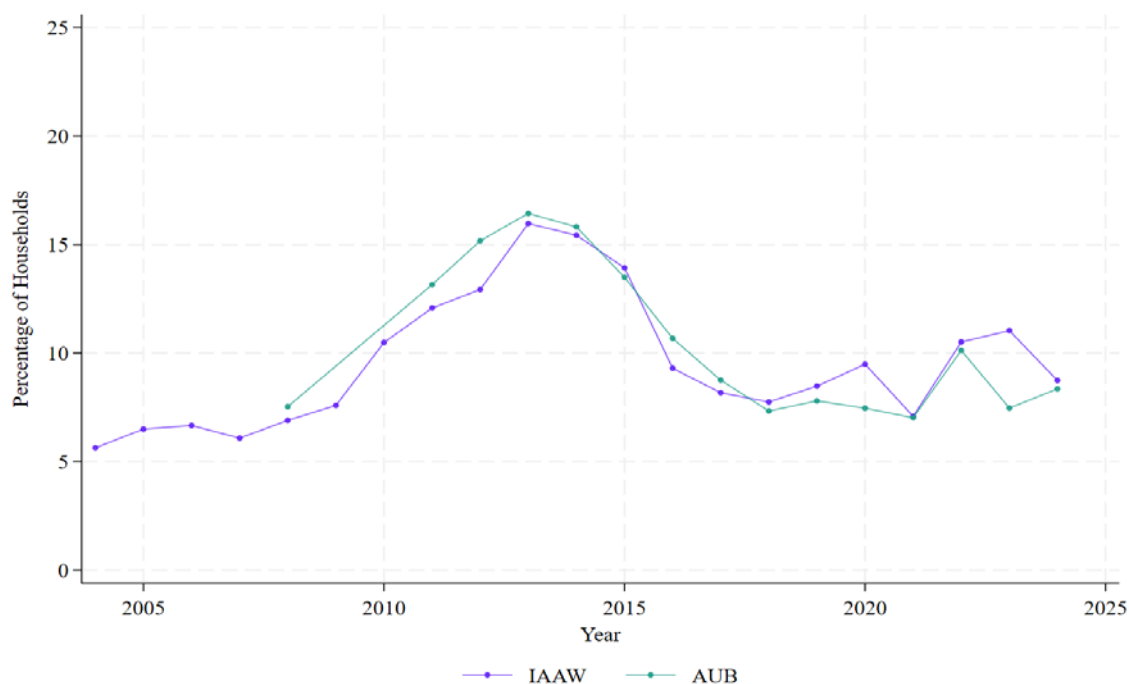
FIGURE 3.1 ENERGY POVERTY OVER TIME – EXPENDITURE BASED INDICATORS

Sources: Calculations based on CSO HBS dataset.

Notes: The Figure plots expenditure-based energy poverty indicators. Although stable over time, they show a wide discrepancy in levels. Averages are equalised for household size and composition. HSEEI-10%: High Share of Energy Expenditure - 10 per cent. HSEEI-2M: High Share of Energy Expenditure - 2M. LAEE: Low Absolute Energy Expenditure. LIHC: Low Income High Cost. HAEE: High Absolute Energy Expenditure. LSEE: Low Share of Energy Expenditure. See Table 3.1 for definitions.

The evolution of energy poverty according to self-reported indicators tells a slightly different story. Figure 3.2 presents trends in the Inability to Afford Adequate Warmth (IAAW) and Arrears on Utility Bills (AUB) indicators. Both measures display very similar patterns: they move closely together over time, showing comparable volatility and sensitivity to economic shocks. Levels range from around 5 per cent in the early years to a peak of roughly 16 per cent during the financial crisis, before declining steadily. By 2024, both indicators stand at about 9 per cent. Overall, the levels of energy poverty are within the bounds observed among expenditure-based indicators. However, the frequency of data and the nature of these indicators reveal that energy poverty experiences are sensitive to economic shocks.

At first glance, the similarity in levels and movements among self-reported indicators suggests that they capture the same group of households – that those reporting an inability to afford adequate warmth are the same as those with arrears on utility bills. However, this is not the case. When the two indicators are combined into a union measure – counting any household that experiences either one of these conditions – the resulting levels are considerably higher. This demonstrates that the two indicators do not fully overlap, and that each captures distinct households experiencing different aspects of energy-related vulnerability.

FIGURE 3.2 ENERGY POVERTY OVER TIME – SELF-REPORTED INDICATORS (SILC)

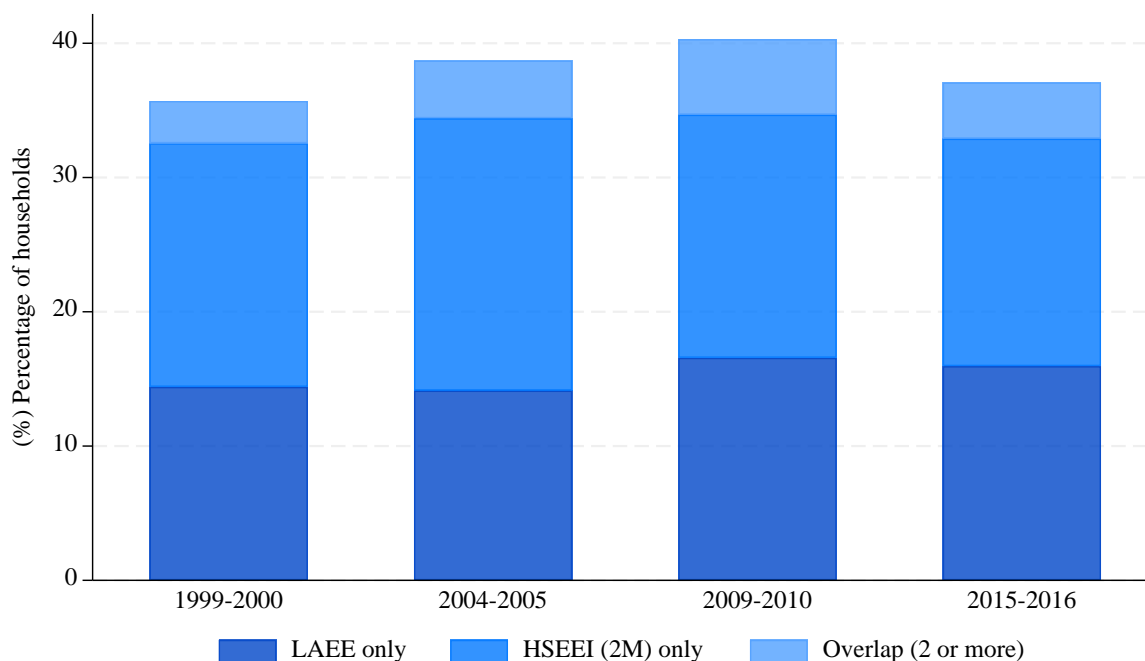
Sources: Calculations based on CSO HBS and SILC datasets.

Notes: The Figure plots self-reported indicators. Compared to other indicators, they display similar levels but more variability over time. Averages are equalised for household size and composition. IAAW: Inability to Afford Adequate Warmth. AUB: Arrears on Utility Bills. See Table 3.1 for definitions.

Figure 3.3 presents Union Indicators (UIs) constructed from both the Household Budget Survey (HBS) and the Survey on Income and Living Conditions (SILC). Among these indicators, the high-share (2M) and low-expenditure metrics account for the majority of cases in the Union measure. In 2015, the high-share (2M) and low-expenditure indicators stood at roughly 17 per cent and 16 per cent, respectively, both close to the EU average.¹⁵ The overlap between these metrics is close to zero; consequently, the remainder, indicated in light blue at the top of the bars in Figure 3.3, is largely attributable to other metrics.

Figure 3.3 shows that more than 30 per cent of households exhibit at least one expenditure-based indicator, indicating the broader scope of this multidimensional approach to energy affordability. Compared with single energy-poverty measures, the incidence is substantial: on average, it is approximately three times higher than most of the single indicators shown previously. This shows that each metric identifies distinct groups that, in aggregate, substantially inflate it.

¹⁵ Values for the HSEEI 2M and LAEE for Ireland and other EU countries can be found here: Energy Poverty Advisory Hub | Energy Poverty Advisory Hub.

FIGURE 3.3 HBS UNION INDICATOR: ENERGY POVERTY EXPERIENCES OVER TIME

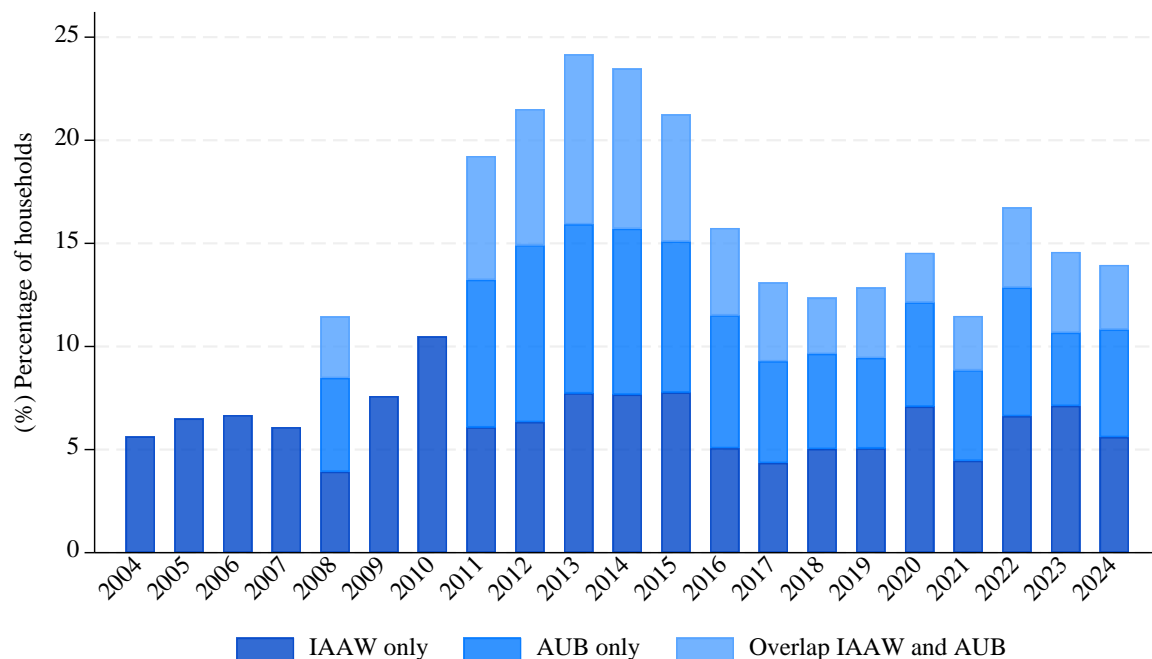
Sources: Calculations based on CSO HBS dataset.

Notes: The Figure plots the levels and composition of the HBS Union Indicator. Averages are equalised for household size and composition. LAEE: Low Absolute Energy Expenditure. HSEEI 2M: High Absolute Energy Expenditure. The overlap covers any combination of two or more expenditure-based indicators. See Table 3.1 for definitions.

The choice of indicator has far-reaching consequences. In 2015, the HBS Union Indicator (UI-HBS) – which flags households as experiencing energy poverty if they are captured by any of the six expenditure-based indicators defined in Table 3.1 – estimated that more than 35 per cent of Irish households were affected, around 600,000 out of 1.7 million.¹⁶ Meanwhile, the official HSEEI-10% identifies only one-in-ten. Such divergence is not a technical detail: it shapes our perception of the scale of affordability challenges.

The UI-SILC Union Indicator, by contrast, reaches somewhat lower levels, as indicated by Figure 3.4, peaking at around 25 per cent during the financial crisis before declining thereafter. Union Indicators exhibit a large difference in magnitudes – the UI-HBS is on average 2.7 times larger than UI-SILC. This difference shows that the degree of overlap among self-reported indicators is considerably higher than the overlap among expenditure-based indicators.

¹⁶ Population data from the CSO Census of Population- Tenure and Households in Ireland 2016–2019 – Demography. Available at: <https://www.cso.ie/en/releasesandpublications/ep/p-tah/tenureandhouseholdsinireland2016-2019/demography/>.

FIGURE 3.4 SILC UNION INDICATOR: ENERGY POVERTY EXPERIENCES OVER TIME

Sources: Calculations based on CSO SILC dataset.

Notes: The Figure plots the levels and composition of SILC Union Indicator. Averages are equalised for household size and composition. IAAW: Inability to Afford Adequate Warmth. AUB: Arrears on Utility Bills. See Table 3.1 for definitions.

The difference between single indicators and their combination into UIs underscores that no single indicator can capture the full picture of energy poverty or the diverse ways in which it is experienced – the UI-HBS is three times larger than most individual indicators. This makes the case for a multidimensional monitoring system stronger.

CHAPTER 4

Vulnerability profiles and energy affordability

Key Takeaways

- Structurally vulnerable groups most likely to face affordability challenges are primarily low-income households, followed by those living in rented accommodation.
- Affordability risks are also high for the unemployed, those in poor health, rural, and single-adult households, as well as those in older dwellings.
- Overlapping vulnerabilities compound and reinforce each other, intensifying risk and deepening affordability challenges.

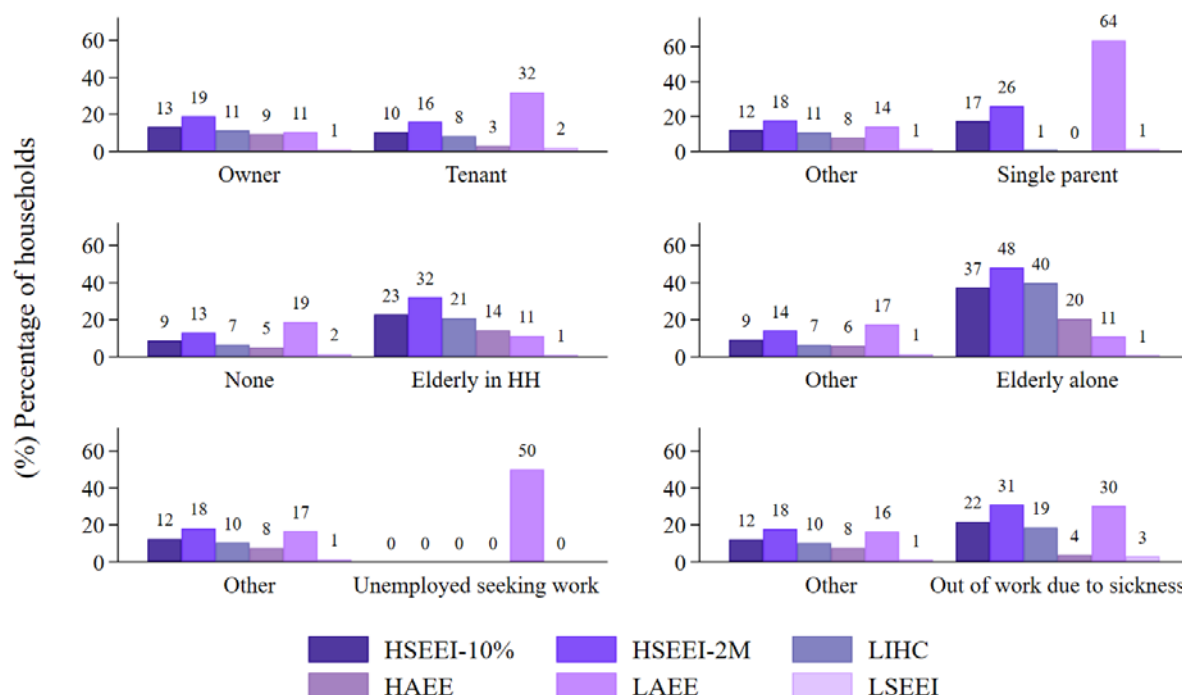
To comply with EU regulations and protect vulnerable populations, it is first necessary to identify the groups most at risk of energy poverty. In this chapter, we examine the prevalence of different energy poverty indicators across household groups defined by key socio-economic characteristics, such as income status, family composition and labour market situation. The analysis begins with conditional energy poverty rates, which provide an initial view of which groups are more likely to face affordability pressures and show how different indicators highlight different vulnerabilities. Although purely descriptive, these results clearly reveal the vulnerability factors and drivers documented in the peer-reviewed literature (Estévez and Tovar Reaños, 2024).

Conditional energy poverty rates – the average value of indicators by socio-economic characteristics – show which groups are more at risk of affordability challenges. Figure 4.1 presents these rates disaggregated by vulnerability characteristics, based on HBS indicators. Each panel reports the share of households experiencing energy poverty within a specific group – for example, tenants compared to owners or single parents compared to other household compositions. The differences in conditional energy poverty rates across indicators demonstrate that they capture different vulnerable population groups.

While such descriptive comparisons are useful, they remain limited. In statistical terms, each figure is controlling a characteristic at a time. As a result, the observed differences cannot be interpreted as causal or definitive, since they do not account for the influence of other socio-economic variables. A robust assessment requires regression analysis, which is better for simultaneously controlling for multiple household characteristics.

Nevertheless, these conditional rates provide valuable insights into how different measures capture vulnerability. Different indicators tend to highlight different groups: for instance, tenants are more frequently identified as experiencing energy poverty by measures such as the Low Absolute Energy Expenditure indicator, while households with elderly members are more strongly captured by the High Share of Energy Expenditure (2M) measure. This illustrates the importance of using a range of indicators to understand the diversity of vulnerabilities underlying energy poverty.

FIGURE 4.1 **CONDITIONAL ENERGY POVERTY RATES – EXPENDITURE BASED INDICATORS**



Sources: Calculations based on CSO HBS dataset.

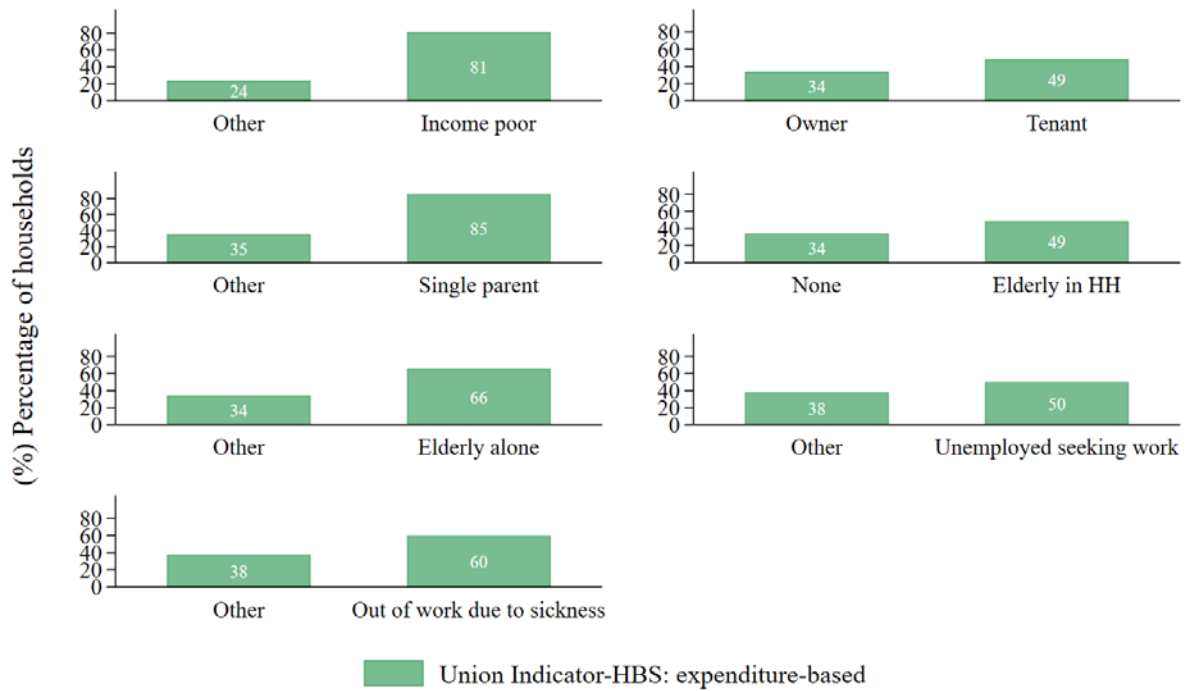
Notes: The plots in the panel present average energy poverty rates in 2015 across relevant socio-economic characteristics for each expenditure-based indicator. Averages are adjusted for household size and composition. Household is abbreviated as HH. HSEEI-10%: High Share of Energy Expenditure - 10 per cent. HSEEI-2M: High Share of Energy Expenditure - 2M. LAEE: Low Absolute Energy Expenditure. LIHC: Low Income High Cost. HAEE: High Absolute Energy Expenditure. LSEEI: Low Share of Energy Expenditure. See Table 3.1 for definitions.

Figure 4.2 presents conditional energy poverty rates using the UI-HBS, rather than displaying results separately for each of the six individual measures. This approach makes it easier to compare risks across different vulnerability characteristics, since the UIs reflect whether a household experiences at least one form of energy poverty.

The results show clear differences across groups. Low income households, single parents, households with elderly members (particularly those living alone), those out of the labour market, and tenants are all more likely to experience energy poverty according to the UI-HBS measure. Using a single combined indicator provides a direct way to compare vulnerabilities across household types and

highlights those consistently at higher risk. As before, however, these are conditional rates based on a single characteristic. A full assessment requires the use of econometric techniques that control for multiple factors simultaneously. Still, the findings are consistent with the literature, which has repeatedly identified these groups as being among the most vulnerable to energy poverty.

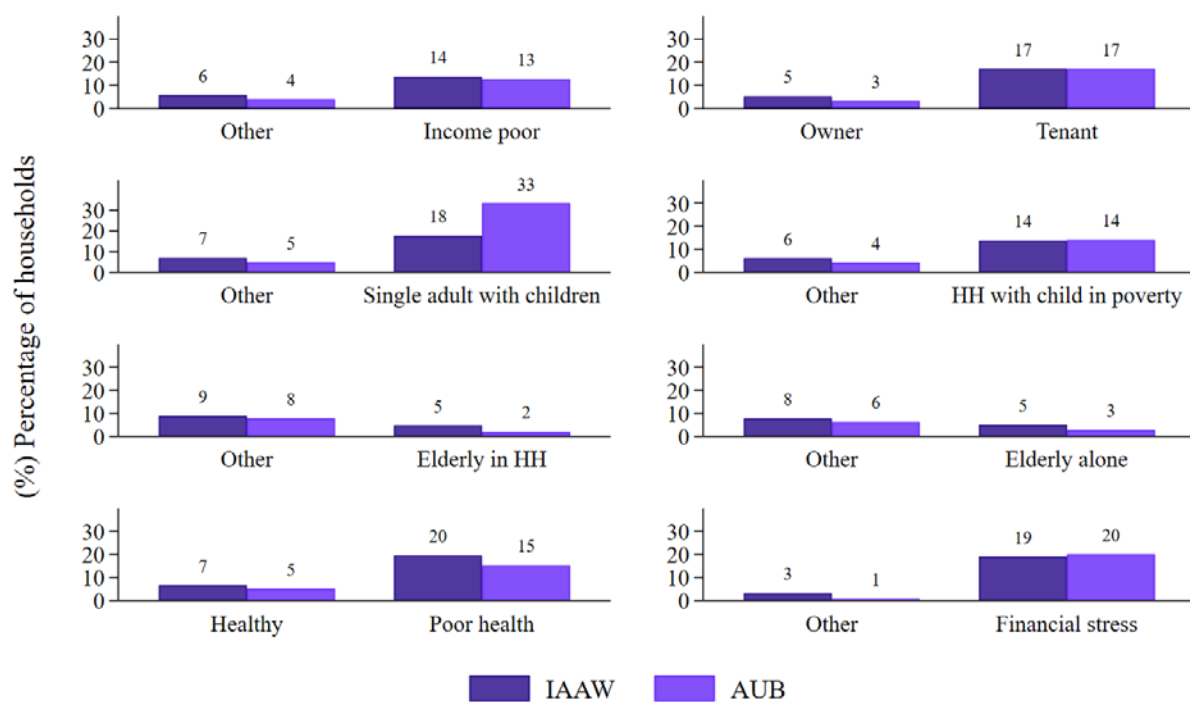
FIGURE 4.2 **CONDITIONAL ENERGY POVERTY RATES ACCORDING TO UI-HBS MEASURE**



Sources: Calculations based on CSO HBS dataset.

Notes: The plots in the panel present conditional energy poverty rates in 2015, using the HBS-UI, across relevant socio-economic characteristics. Union Indicators arguably provide a more comprehensive comparison of energy poverty experiences across groups. Households abbreviated as HH. See Table 3.1 for definitions. Averages are equalised for household size and composition.

We replicate this analysis using self-reported indicators. Figure 4.3 shows that, unlike expenditure-based measures in Figure 4.1, there are few differences in the vulnerable groups they identify.

FIGURE 4.3 CONDITIONAL ENERGY POVERTY RATES – SELF-REPORTED INDICATORS

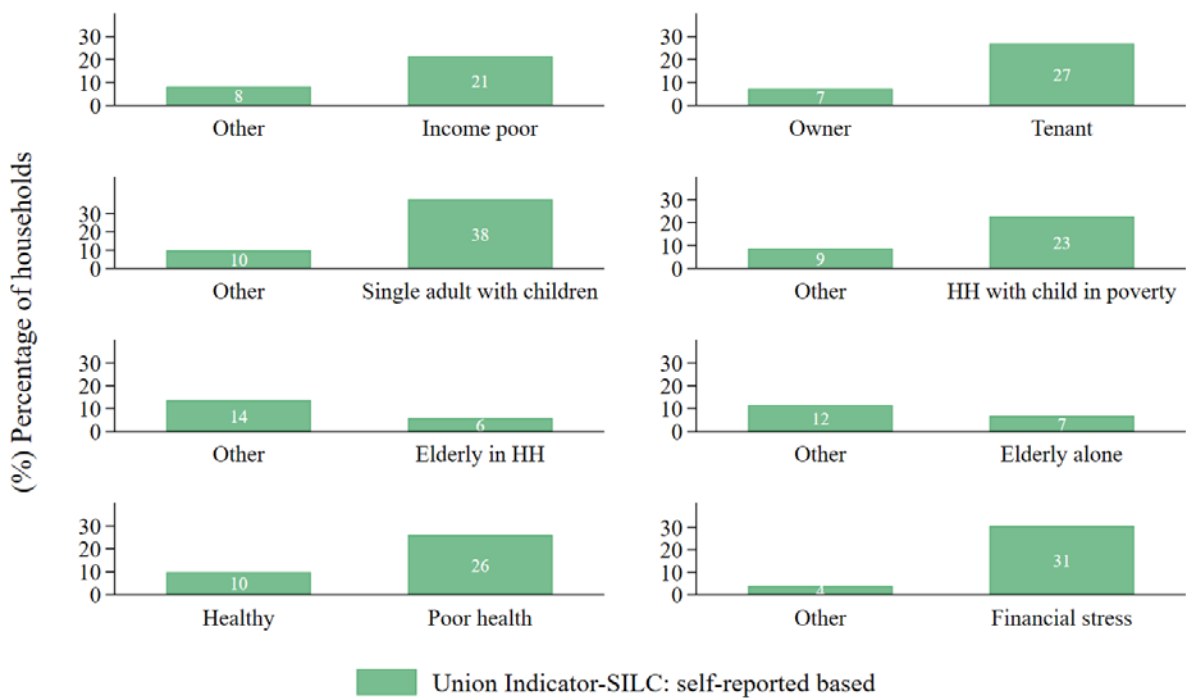
Sources: Calculations based on CSO SILC dataset.

Notes: The plots in the panel present conditional energy poverty rates in 2015 across relevant socio-economic characteristics. Household is abbreviated as HH. IAAW: Inability to Afford Adequate Warmth. AUB: Arrears on Utility Bills. See Table 3.1 for definitions. Averages are equalised for household size and composition.

Overall, the data reveal a clear risk profile, consistent with the literature. Estévez and Tovar Reaños (2024) explore the drivers of energy poverty in Ireland and identify a similar risk profile. Figures 4.2 and 4.4 report the average Union Indicators (UI) across socio-economic groups, combining HBS expenditure-based metrics and SILC self-reported metrics, respectively. Both approaches consistently identify the same vulnerable groups: households in income poverty, unemployed individuals, tenants, single adults with children, those in poor health, and households experiencing financial stress.

Figures 4.1 and 4.3 indicate that they are less likely to report being unable to afford adequate warmth or being in arrears on utility bills, even though expenditure-based measures show they spend a high share of their income on energy. This discrepancy highlights that relying on a single measure understates the full extent of energy poverty and risks overlooking certain vulnerable groups. In the same vein, Middlemiss (2022) and Day and Hitchings (2011) argue that among older adults, patterns of behaviour are shaped by cultural norms, a reluctance to complain, and coping strategies such as wearing extra clothing, maintaining a positive appearance, and avoiding age-related stigma. Future research is needed to establish whether these factors contribute to underreporting in self-reported measures among this population.

FIGURE 4.4 **CONDITIONAL ENERGY POVERTY RATES ACCORDING TO UI-SILC MEASURE**

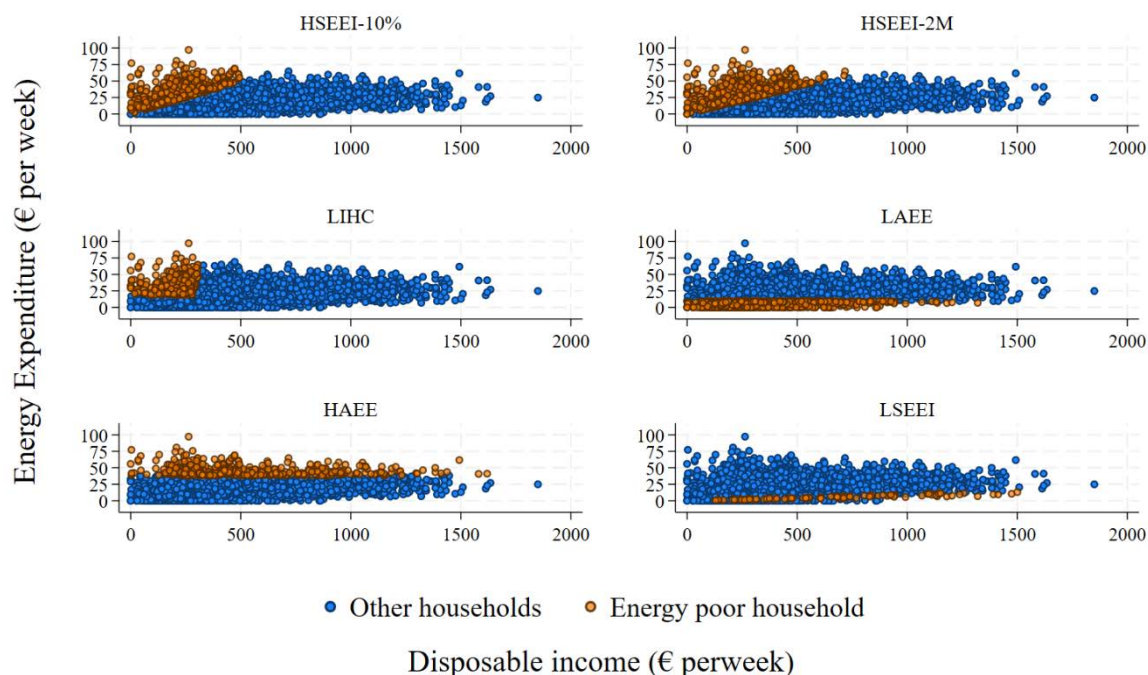


Sources: Calculations based on CSO SILC dataset.

Notes: The plots in the panel present conditional energy poverty rates in 2015, using the UI-SILC, across relevant socio-economic characteristics. Union Indicators arguably provide a more comprehensive comparison of energy poverty experiences across groups. See Table 3.1 for definitions. Household is abbreviated as HH. Averages are equalised for household size and composition.

To better understand the household types captured by different indicators, we go beyond incidence and examine the joint distribution of income and expenditure. This approach reveals variation within household types that conditional averages alone would obscure. Figure 4.5 presents scatter plots of households' energy expenditure against disposable income. In each panel, households classified in energy poverty according to each indicator, estimated using HBS data, are shown in yellow.

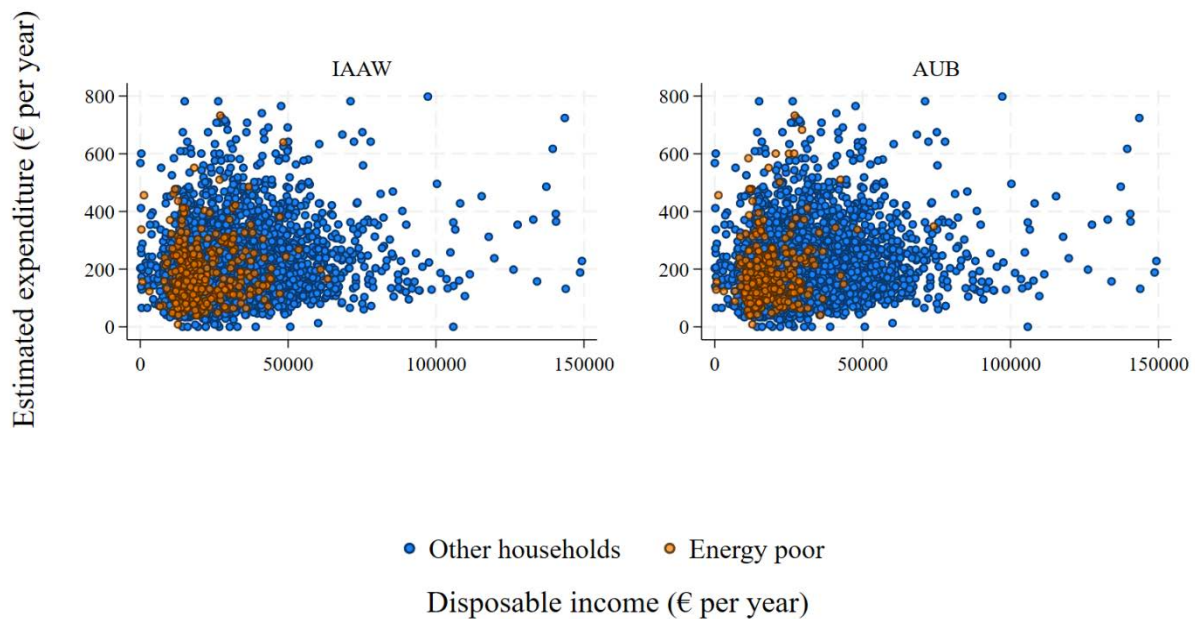
This visual display shows that different indicators classify very different groups of households in terms of income and expenditure. It also clarifies how these classifications are determined by the thresholds and conditions used as reference by each indicator. High-cost thresholds create a horizontal divide, which includes households at all income levels. Income poverty thresholds create a vertical divide, allowing for all expenditure levels. By contrast, relative indicators generate a diagonal divide, identifying only households with specific combinations of expenditure and disposable income as experiencing energy poverty under those definitions. This insight sets the stage for the next section, where we propose a framework that classifies areas by risk level according to these thresholds and conditions.

FIGURE 4.5 THE RELATIONSHIP OF ENERGY POVERTY, DISPOSABLE INCOME AND ENERGY EXPENDITURE

Sources: Calculations based on CSO HBS dataset.

Notes: The panel presents the distribution of households in the income–expenditure space using 2015 data. Each figure highlights, in yellow, households experiencing different energy poverty experiences. Values are equivalised for household size and composition and expressed in 2016 prices. Values are equivalised for household size and composition and expressed in 2016 prices. HSEEI-10%: High Share of Energy Expenditure - 10 per cent. HSEEI-2M: High Share of Energy Expenditure - 2M. LAEE: Low Absolute Energy Expenditure. LIHC: Low Income High Cost. HAEE: High Absolute Energy Expenditure. LSEEI: Low Share of Energy Expenditure. See Table 3.1 for definitions.

For the HSEEI-10% and HSEEI-2M measures, energy poverty is defined by households exceeding a given share of income spent on energy. This is reflected in the cut-off lines visible in Figure 5.1; households to the left of these thresholds are identified as experiencing energy poverty. The more lenient the threshold, the larger the group of households captured. For example, the 2M measure (equivalent to roughly an 8 per cent threshold) identifies more households than the stricter 10 per cent definition. The LIHC selects households in the upper-left quadrant of the distribution – those with energy expenditures above the median while simultaneously falling below the income poverty line. The LAEE indicator identifies households with unusually low energy consumption, regardless of their position in the income distribution. As a result, it includes not only poorer households but also richer ones with low expenditures, making its coverage visibly distinct from the other measures. The LSEE share-based indicator uses two income thresholds to identify low energy consumers; it identifies fewer households than LAEE, some of which have higher incomes. The HAEE works as a simple high-cost condition, therefore it identifies households that covers most of the income distribution.

FIGURE 4.6 THE RELATIONSHIP OF ENERGY POVERTY, DISPOSABLE INCOME AND COSTS

Sources: Calculations based on CSO SILC dataset.

Notes: The panel presents the distribution of households in the income–expenditure space using 2024 data. Each figure highlights, in yellow, households experiencing different energy poverty experiences. Values are equivalised for household size and composition and expressed in 2016 prices. Energy expenditure is calculated as total housing costs minus rent or mortgage interest payments. Values are equivalised for household size and composition and expressed in 2016 prices.

The distributions of self-reported indicators in the expenditure-income space are presented in Figure 4.6. Because SILC lacks direct energy expenditure data, total housing costs net of rent and mortgage payments are used to approximate energy costs. Given that these measures are not based on conditional thresholds, households in energy poverty are distributed more evenly in this space. However, we continue to observe a clustering among lower income households. These distributions suggest that self-reported indicators are likely to capture households with different characteristics that experience particular energy affordability challenges.

CHAPTER 5

A framework to assess vulnerability and affordability risks

Key Takeaways

- Indicators differ in their capacity to identify vulnerable groups and affordability risk.
- Three indicators form the basis of a monitoring system that supports timely responses, sound policy design, and adequate impact evaluation.
- IAAW is best for detecting stress early and guiding short-term support.
- HSEEI-2M serves to capture energy poverty more accurately, identify vulnerable groups, and guide long-term policy design and evaluation.
- LAEE is useful to capture households who under-consume energy to unsafe levels and fall outside other indicators.

In the previous sections, we identified the groups most likely to experience energy poverty and examined how energy poverty indicators are distributed across the income–expenditure space. In this chapter, we build on those findings to develop a framework for assessing affordability risk – households’ propensity to experience energy-related hardship.

We define risk areas by dividing the income–expenditure space using thresholds commonly found in expenditure-based measures. This allows us to map households into areas associated with low or high affordability risk. Drawing on the energy poverty profiles, we define structural vulnerability and analyse the extent to which different indicators capture – or overlook – these households.

Finally, we present statistics that test the overlap between structural vulnerability and energy poverty indicators. This shows how closely the measures co-vary and how they align with other forms of hardship, offering insights into indicators’ respective strengths and weaknesses for policy use.

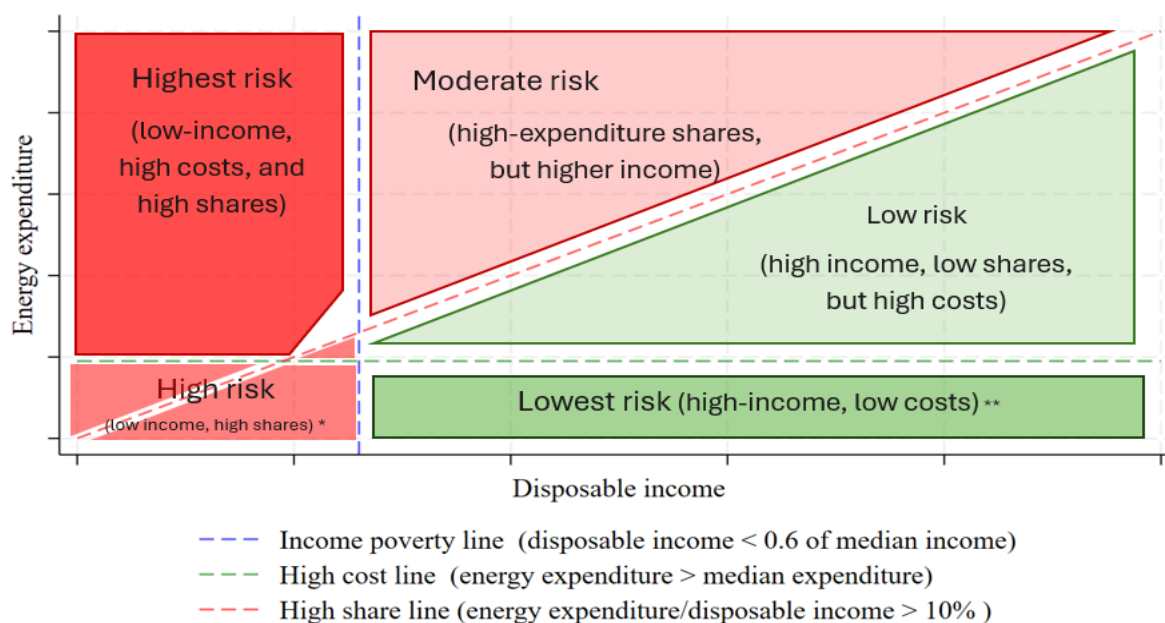
5.1 DEFINING VULNERABILITY AND ASSESSING AFFORDABILITY RISKS

This section introduces the conceptual framework for understanding vulnerability and affordability risk in the income–energy expenditure space. Figure 5.1 shows how the thresholds commonly used in expenditure-based indicators – the income poverty line, the high-cost threshold, and the high-share threshold – partition households into distinct zones of risk.

The highest-risk zone is found in the upper-left area, where households are income-poor, face high costs, and spend a high share of their income on energy.

The lower-left area also signals elevated risk, capturing income-poor households with low observed energy expenditure, which may indicate under-consumption or hidden hardship. Moving rightward, risk declines as income rises beyond the poverty line, though households above the high-share line may still experience affordability stress despite not being income-poor. Finally, households with higher incomes and low costs fall into the low-risk zone, where vulnerability is limited.

FIGURE 5.1 MAPPING VULNERABILITY AND RISK IN THE DISPOSABLE INCOME–ENERGY EXPENDITURE SPACE



Source: Authors.

Notes: The Figure presents a framework for assessing affordability risk – a measure of households' likelihood of experiencing energy-related hardship. Three vulnerability thresholds – income poverty, high energy costs, and the share of energy expenditure relative to income – classify households into distinct zones of risk. This framework is used for illustrative purposes only – making explicit the interpretation of how the different energy poverty measures capture households who are exposed to different levels of risk and vulnerability. It is designed to help readers gain insight into the distribution of households plotted in the rest of the section.

* The high-risk area comprises households – below the poverty line – across three zones: those spending a high proportion of income on energy, those spending low (potentially unsafe) amounts, and those facing high absolute costs. We group these experiences into a single high-risk profile for illustrative simplicity.

** The high-risk area comprises households – below the poverty line – across three zones: those spending a high proportion of income on energy, those spending low (potentially unsafe) amounts, and those facing high absolute costs. We group these experiences into a single high-risk profile for illustrative simplicity.

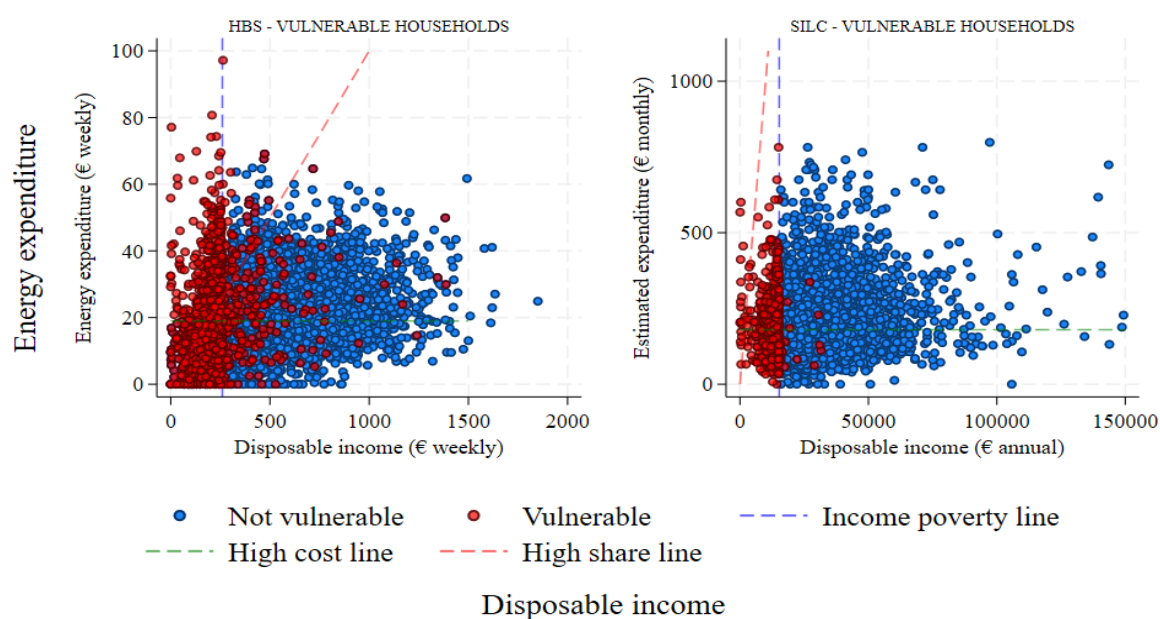
By mapping these conditions, the framework makes explicit how different definitions of energy poverty regulate who is considered energy vulnerable. It shows how widely-used thresholds can structure the way affordability pressures are identified and assessed, and how the interaction between household income and energy costs can be used to assess exposure to risk.

We define the structurally vulnerable as all households that are below the poverty line and households above the poverty line that exhibit more than one vulnerability characteristic associated with higher energy poverty incidence – including tenant status, single parenthood, elderly living alone, chronic illness, or unemployment.

This approach aligns with the Irish definition of consistent poverty, which combines income poverty with enforced deprivation, but adapts it to the specific context of energy poverty. As shown by Slevin et al. (2025), households can experience deprivation even when their income is above the at-risk-of-poverty threshold, particularly where housing costs or other disadvantages are present. Our definition builds on this logic by explicitly linking vulnerability to income poverty plus additional conditions known to heighten the risk of affordability issues.

Figure 5.2 plots structurally vulnerable households in the income–energy expenditure space for both the HBS and SILC datasets. The estimated thresholds from the conceptual framework – the income poverty line, the high-cost threshold, and the high share threshold – are included to illustrate how structural vulnerability relates to different zones of risk. By definition, structurally vulnerable households cluster around and to the left of the poverty line, showing that low income is a central driver of vulnerability. In the HBS data, however, a sizeable share of structurally vulnerable households extends to the right of the poverty line, whereas in the SILC data they remain more concentrated on the left. This reflects differences in how the two datasets capture energy costs and living conditions. The plots also show that structural vulnerability does not align perfectly with the conceptual zones of risk: some structurally vulnerable households appear in the low-risk area, simply because their characteristics indicate disadvantage even when their income and expenditure position would not.

FIGURE 5.2 DISTRIBUTION OF VULNERABLE POPULATIONS



Source: Calculations based on CSO HBS dataset.

Notes: The panel presents the distribution of households in the income–expenditure space using 2015 data. Each figure highlights, in red, households defined as structurally vulnerable – those who experience at least two conditions strongly associated with energy poverty. Scales and units are different for each plot in the Figure. Averages are equalised for household size and composition and expressed in 2016 prices.

This framework sets the stage for examining the interconnections between energy poverty, structural vulnerability and affordability risk.

5.2 OVERLAPS IN DEPRIVATION: ENERGY POVERTY AND BEYOND

In this section, we examine the overlap between energy poverty indicators, the structurally vulnerable population, and the zones of risk defined in the conceptual framework above. By characterising and plotting households in the income–expenditure space, we can observe directly how indicators capture different risks and how closely they align with structural vulnerability.

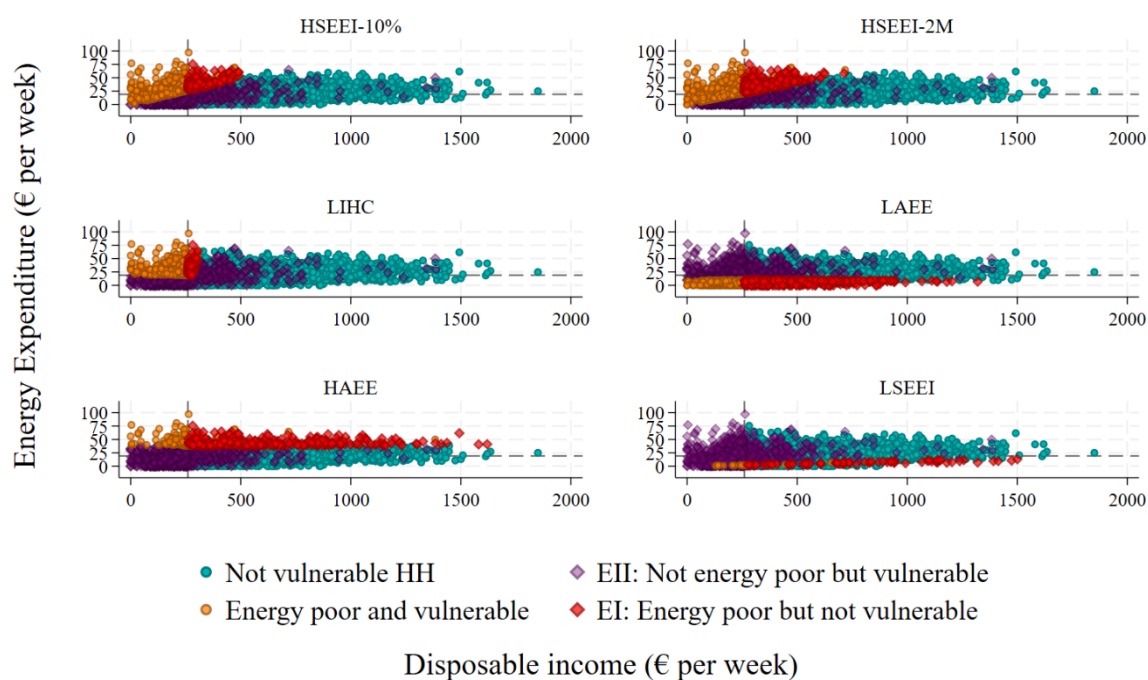
To assess the usefulness of energy poverty indicators, we estimate three reference statistics: the Coverage Index (CI), Error Type I (EI), and Error Type II (EII). Ideally, the CI should be maximised, since higher coverage means more structurally vulnerable households are correctly identified as being in energy poverty. By contrast, both EI and EII should be minimised: high EI indicates over-inclusion, where identification may extend to households that are not structurally vulnerable, while high EII indicates under-inclusion, where vulnerable households are missed. Importantly, the purpose of this evaluation is not to make energy poverty indicators identical to the structural vulnerability benchmark. If CI were 100 per cent, the indicator would collapse into the structural definition itself, offering no independent value. Instead, the usefulness of an energy poverty indicator lies precisely in the trade-offs it makes by capturing affordability risks in ways that overlap with – but are not identical to – structural vulnerability.

From a policy perspective, these estimates reflect the balance between efficiency and inclusiveness in targeting energy poverty. A high Coverage Index with low exclusion errors (EII) ensures that the most vulnerable households are reached, which is often the overriding priority in social policy. Some degree of over-inclusion (EI) may be acceptable, since the cost of extending support to households with milder affordability pressures is usually less severe than the cost of failing to reach those in acute hardship. In this sense, indicators with relatively low EII – even at the expense of higher EI – are often more valuable from a policymaking standpoint, as they minimise the risk of leaving structurally vulnerable households without support while still reflecting the specific energy-related challenges that define energy poverty.

We present a graphical analysis of the relationship between energy poverty and structural vulnerability. The colours and shapes in Figures 5.3 and 5.4 denote how households are classified. Circles correspond to households that show no contradictions in their classification; orange circles indicate households

experiencing energy poverty according to a given indicator, while turquoise circles indicate households that are not identified as experiencing either structural vulnerability or energy poverty. Diamonds denote households considered misclassified due to a lack of overlap between energy poverty and structural vulnerability conditions. Red diamonds represent households identified as energy poor but not structurally vulnerable (Error I – false positives), while purple diamonds represent households that are vulnerable but not identified as energy poor (Error II – false negatives). Panels in Figure 5.3 present the distribution of six expenditure-based indicators within the conceptual mapping space defined above. As seen in Figure 4.5, because each indicator definition is based on thresholds of energy spending and income, the resulting classifications cluster neatly in distinct regions of vulnerability. Examining the overlap with structural vulnerability and areas of risk facilitates the assessment of the strengths and weaknesses of each measure.

FIGURE 5.3 ENERGY POVERTY AND VULNERABILITY COVERAGE – EXPENDITURE BASED INDICATORS



Sources: Calculations based on CSO HBS dataset.

Notes: The panel presents the distribution of households in the income–expenditure space using 2015 data. Colours and symbols indicate household classification: circles show households that have not been misclassified — those in orange are in energy poverty according to a specific indicator, while those in turquoise face no vulnerability. Diamonds indicate misclassifications — households in red are identified as experiencing energy poverty but are not structurally vulnerable according to our definition (EI – false positives); meanwhile, households in purple are vulnerable but not identified as in energy poverty (EII – false negatives). Values are equivalised for household size and composition and expressed in 2016 prices.

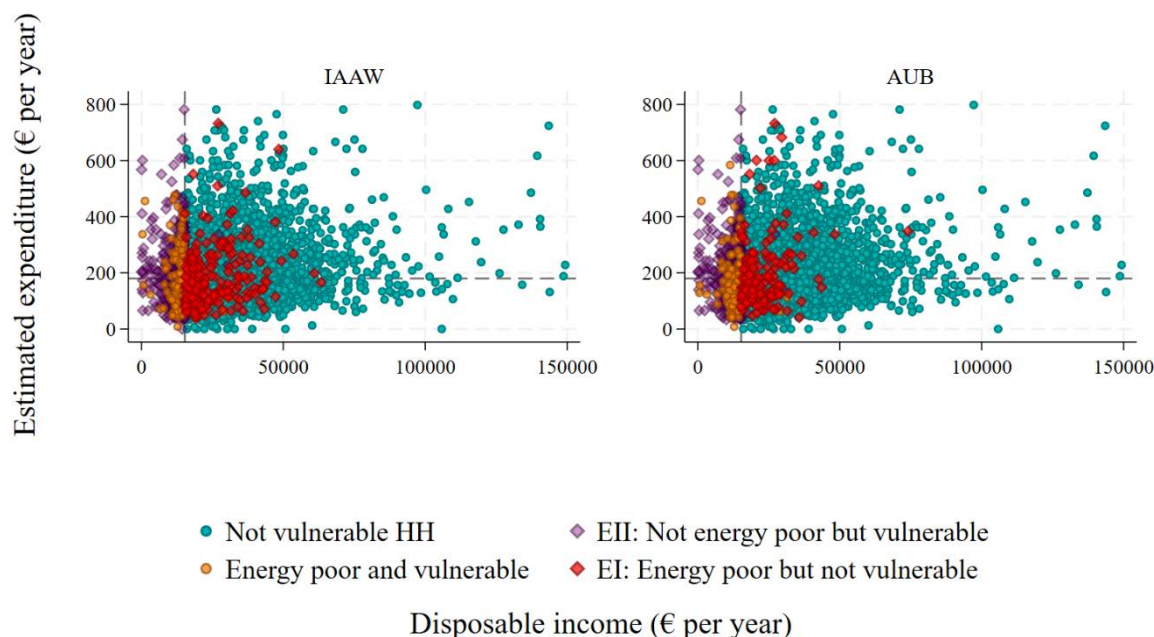
The share-based indicators (HSEEI-10% and 2M) capture a large share of structurally vulnerable households among the income-poor. At the same time, they also misclassify some non-poor households sitting above the relevant share threshold, extending coverage further up the income distribution. By contrast, the

LIHC indicator exhibits relatively low overidentification but misses many structurally vulnerable households whose risk arises from characteristics or deprivations not associated with low incomes. Moreover, because its condition requires both low income and above-median costs, it excludes a significant portion of the income-poor, raising questions about whether these households should be considered to be experiencing energy poverty. This is particularly relevant given that the LAEE indicator is designed to capture precisely this group of low-consuming households.

The HAEE and LAEE measures apply absolute thresholds that cut horizontally across the distribution. They do identify vulnerable households, but they also have a high false positive rate, capturing even households at the top of the income distribution, where high or low spending reflects consumption choices rather than deprivation. This suggests that potential improvements could come from combining these measures with an income condition or restriction, in order to avoid classifying affluent households as experiencing energy poverty. Finally, the LSEEI measure, with its double condition on expenditure shares, extends coverage more broadly across the lower part of the expenditure distribution. In doing so, it captures some higher-income households beyond those covered by the 10 per cent and 2M indicators, even though their risks may be less acute.

Looking across the zones of risk, the HSEEI-10% and 2M indicators leave out relatively few structurally vulnerable households, and most of those not classified as experiencing energy poverty fall in the low- or middle-risk areas. By contrast, the HAEE, LAEE, and LSEEI measures exclude a substantial share of structurally vulnerable households located in the highest-risk zone below the poverty line. At the same time, the LAEE and LSEEI generate the largest number of false positives, misclassifying households in the least risky areas of the distribution as experiencing energy poverty.

The six plots show that expenditure-based indicators differ markedly in their alignment with structural vulnerability. As confirmed by the estimates in Table 5.1, the LIHC achieves precision but excludes many vulnerable households. The HSEEI-10% and 2M capture a broader share but misclassify some non-poor households. The HAEE and LAEE spread identification too widely without an income condition, while the LSEEI broadens coverage across the lower-expenditure distribution. These contrasts highlight the trade-offs between inclusiveness and accuracy when selecting expenditure-based measures of energy poverty.

FIGURE 5.4 ENERGY POVERTY AND VULNERABILITY COVERAGE – SELF-REPORTED INDICATORS

Sources: Calculations based on CSO SILC dataset.

Notes: The panel presents the distribution of households in the income–expenditure space using 2024 data. Colours and symbols indicate household classification: circles show households that have not been misclassified — those in orange are in energy poverty according to a specific indicator, while those in turquoise face no vulnerability. Diamonds indicate misclassifications — households in red are identified as experiencing energy poverty but are not structurally vulnerable according to our definition (EI – false positive); meanwhile, households in purple are vulnerable but not identified as in energy poverty (EII – false negative). Values are equivalised for household size and composition and expressed in 2016 prices.

Panels in Figure 5.4 show the distribution of households identified by the two self-reported indicators and their overlap with vulnerable populations. Unlike expenditure-based measures, these indicators rely on household perception rather than explicit thresholds, so classifications are more dispersed across the space, though still concentrated around the poverty line. Both indicators identify a smaller share of households as experiencing energy poverty: the IAAW captures only part of the structurally vulnerable, leading to high under-identification (EII), while the AUB has slightly smaller coverage. Misclassification of non-vulnerable households is limited, with the few errors concentrated in medium- and low-risk areas.

The graphical analysis shows that self-reported indicators exhibit relatively low false-positive rates but fail to capture many highly vulnerable households. They reflect experienced hardship but only for a narrow subset of the population and thus tend to understate overall energy poverty. While levels may be biased downwards, their responsiveness makes them particularly useful for tracking changes over time and for crisis monitoring.

TABLE 5.1 VULNERABILITY COVERAGE OF ENERGY POVERTY INDICATORS

Data source	Indicator	Category	Share (%)
HBS	HSEEI-10%	Coverage Index	34.06
		Error type 1	3.78
		Error type 2	65.94
	HSEEI-2M	Coverage Index	43.61
		Error type 1	7.92
		Error type 2	56.39
	LIHC	Coverage Index	30.84
		Error type 1	2.19
		Error type 2	69.16
	LAEE	Coverage Index	32.97
		Error type 1	10.21
		Error type 2	67.03
	HAEE	Coverage Index	9.06
		Error type 1	6.946
		Error type 2	90.93
LSEEI	Coverage Index	0.9	
	Error type 1	15.59	
	Error type 2	99.08	
SILC	IAAW	Coverage Index	13.73
		Error type 1	5.96
		Error type 2	86.27
	AUB	Coverage Index	13.3
		Error type 1	4.08
		Error type 2	86.7

Sources: Own calculations based on CSO HBS and SILC datasets. HSEEI-10%: High Share of Energy Expenditure - 10 per cent. HSEEI-2M: High Share of Energy Expenditure - 2M. LAEE: Low Absolute Energy Expenditure. LIHC: Low Income High Cost. HAEE: High Absolute Energy Expenditure. LSEEI: Low Share of Energy Expenditure.

Notes: The Table presents reference statistics used to evaluate the relationship between energy poverty indicators and structurally vulnerable households. Error type (EI) is the share of not vulnerable households identified as experiencing energy poverty, overidentification. Error type II (EII) is the share of vulnerable households that are not identified as experiencing energy poverty, underidentification.

Table 5.1 reports the reference statistics used to evaluate the relationship between energy poverty indicators and structurally vulnerable households. Among expenditure-based measures, the HSEEI-2M achieves the highest coverage, correctly identifying 44 per cent of vulnerable households while excluding 56 per cent (EII). This comes at the cost of an 8 per cent over-identification rate (EI). By contrast, the LIHC indicator achieves the lowest over-identification, with EI close to 2 per cent, but its coverage is limited, failing to detect nearly 70 per cent of structurally vulnerable households. The HSEEI-10% and LAEE indicators fall in between, balancing moderate coverage with moderate errors. The HAEE shows very low coverage, as expected, since structurally vulnerable households rarely reach high consumption levels. The LSEE performs worst overall, with minimal coverage and the highest error rates. Notably, while both LAEE and LSEE aim to capture hidden energy poverty through under-consumption, the results suggest that LAEE is more effective in identifying vulnerability.

The graphical analysis of distributions and reference statistics complements each other. Note that misclassifications of the HSEEI-10% and 2M indicators tend to fall within medium-risk categories, while misclassifications under LAEE or LSEE more often occur among households with low or no observable risk. This highlights the importance of graphical analysis for a more insightful interpretation of the reference statistics.

The self-reported indicators perform less well. Both the IAAW and AUB capture only about 13 per cent of structurally vulnerable households, excluding around 86 per cent (EII). Similarly, they only differ slightly in their over-identification rates. HBS and SILC reference estimates are not directly comparable as differences are partly explained by the difference in sample composition between. However, they provide suggestive evidence of the limits of self-reported measures in capturing the levels of structural disadvantage.

Overall, results suggest that the HSEEI-2M offers the most balanced expenditure-based measure, combining relatively high coverage with manageable misclassification errors. By contrast, the SILC indicators, while less prone to over-identification, exclude such a large share of structurally vulnerable households that their ability to assess affordability risks is limited. From a policy perspective, this points to a clear distinction in their use: self-reported indicators remain valuable for detecting shocks and monitoring short-term changes in energy poverty, but their absolute levels should be interpreted with caution, as they tend to understate the true scale of energy vulnerability.

5.3 VULNERABILITY PROFILES AND TARGETING EFFICIENCY

Broad interventions such as universal electricity credits, or indirect tax cuts (VAT, excise, carbon tax relief) are poorly targeted. While their coverage of the structurally vulnerable population is 100 per cent, they also reach a large proportion of people who might not be in need of support (EI) – part of the 85 per cent of households above the poverty line.¹⁷ They have high fiscal costs and provide supports that are likely to be insufficient. By contrast, policies like means-tested welfare increases, targeted lump-sum supports, or PRSI credit changes target hardship better. For example, focusing efforts on those experiencing energy poverty would simultaneously reach more than 80 per cent of the income-poor, 85 per cent of single parents, and 50 per cent of tenants. Meanwhile, only 4 per cent of the population who are not income-poor would be receiving supports. These results highlight the potential of targeted policies to increase the size and efficiency of government supports with the smallest fiscal costs.

¹⁷ Being above the poverty line does not mean households do not require support. Those close to it are likely struggling financially, and there are other structural vulnerabilities to consider.

CHAPTER 6

Estimating the severity and costs of energy poverty

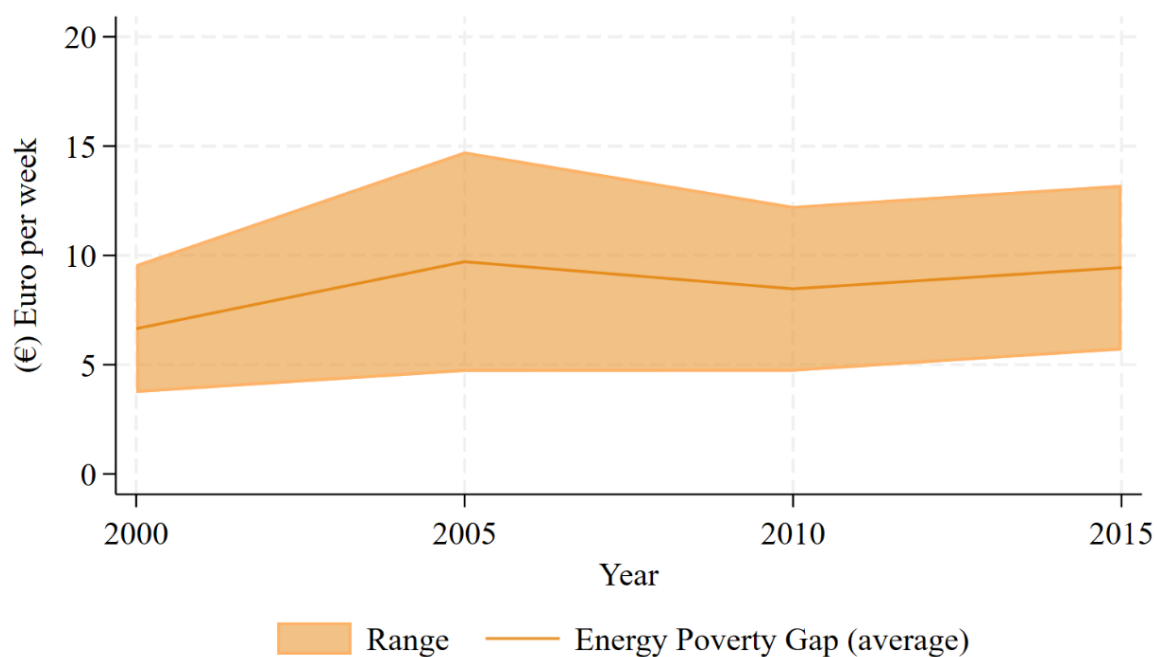
Key Takeaways

- Traditional measures of energy poverty say little about its severity.
- The energy poverty gap reflects the depth of affordability challenges and approximates their cost.
- Estimates for 2016 indicate that households experiencing energy poverty needed between €11 and €45 per week to avoid facing affordability issues.
- Findings suggest targeted interventions could have delivered adequate support at about 40 per cent lower cost, underscoring the efficiency of well-designed policies.

In this section, we assess the severity of energy poverty by estimating the financial resources households would need to escape the conditions that define it. Although this approach cannot fully capture people's lived experiences, it offers valuable insights for policy design and underscores the potential benefits of well-targeted interventions.

This approach aligns with the affordability risk framework by going beyond the information provided by energy poverty indicators. While indicator averages capture the prevalence of energy poverty, the energy poverty gap quantifies its intensity – the additional financial resources households would need to rise above defining thresholds. For example, under the HSEEI-10% or 2M measures, the gap reflects how much disposable income would need to rise, or energy spending fall, for households to exit energy poverty.¹⁸ The energy poverty gap should be seen as indicative rather than prescriptive. If households were given the exact amount of income needed to close their gap, and if all that money were devoted solely to energy consumption, they would cease to experience energy poverty. However, many would remain income-poor or face other types of deprivation, therefore continuing to be vulnerable, as earlier analysis has shown. Moreover, households do not adjust their spending in isolation: when income rises, or costs fall, they often allocate these additional resources across several basic needs. Thus, some of the additional income would likely go not only to improving warmth and comfort at home, but also to better nutrition, education, or other essential goods.

¹⁸ The Department for Energy Security and Net Zero (DESNZ) estimates the fuel poverty gap for England's LILEE indicator, publishing it in the Annual Fuel Poverty Statistics in England report. Available at: <https://assets.publishing.service.gov.uk/media/67e51e2cbb6002588a90d5d5/annual-fuel-poverty-statistics-report-2025.pdf>.

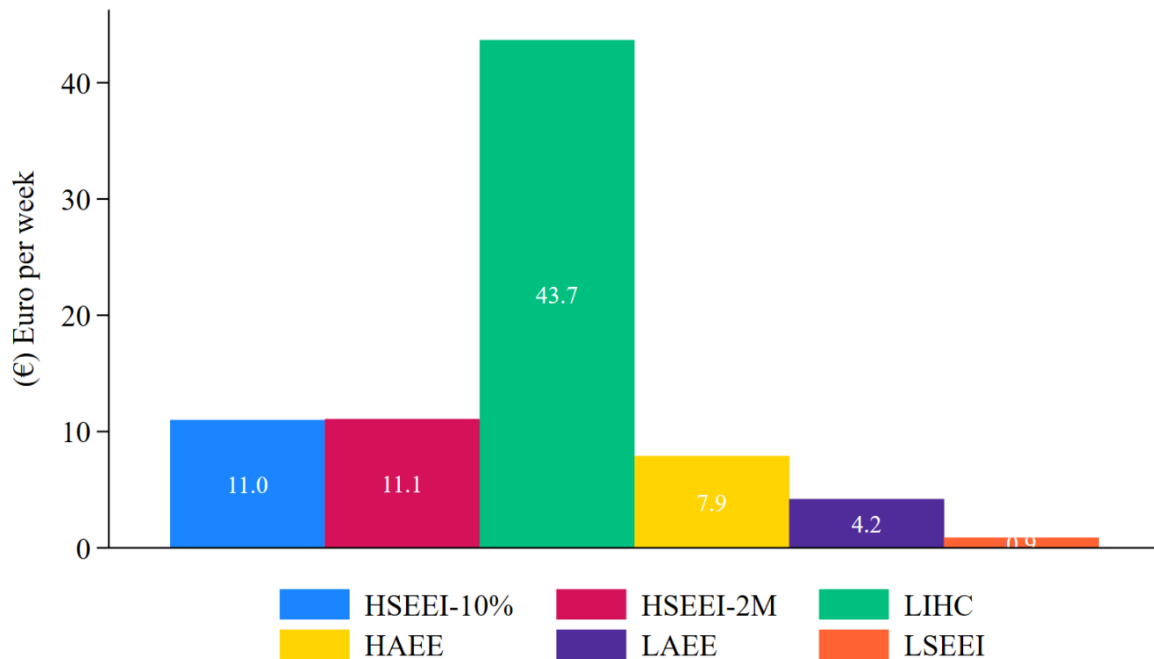
FIGURE 6.1 ENERGY POVERTY GAP OVER TIME

Sources: Calculations based on CSO HBS dataset.

Notes: The figure plots the average, minimum, and maximum values of estimated energy poverty gaps over time. Values are equalised for household size and composition and expressed in 2016 prices.

The energy poverty gap is calculated as the difference between observed values and the threshold for each expenditure-based metric described in Table 3.1. Figure 6.1 illustrates its evolution, with the middle line showing the average and the shaded area indicating the minimum and maximum values. The results suggest that the gap fluctuates around €9 per week and remains stable over time. The range of the gap suggests that the intensity of the deprivation experience is captured differently by each indicator.

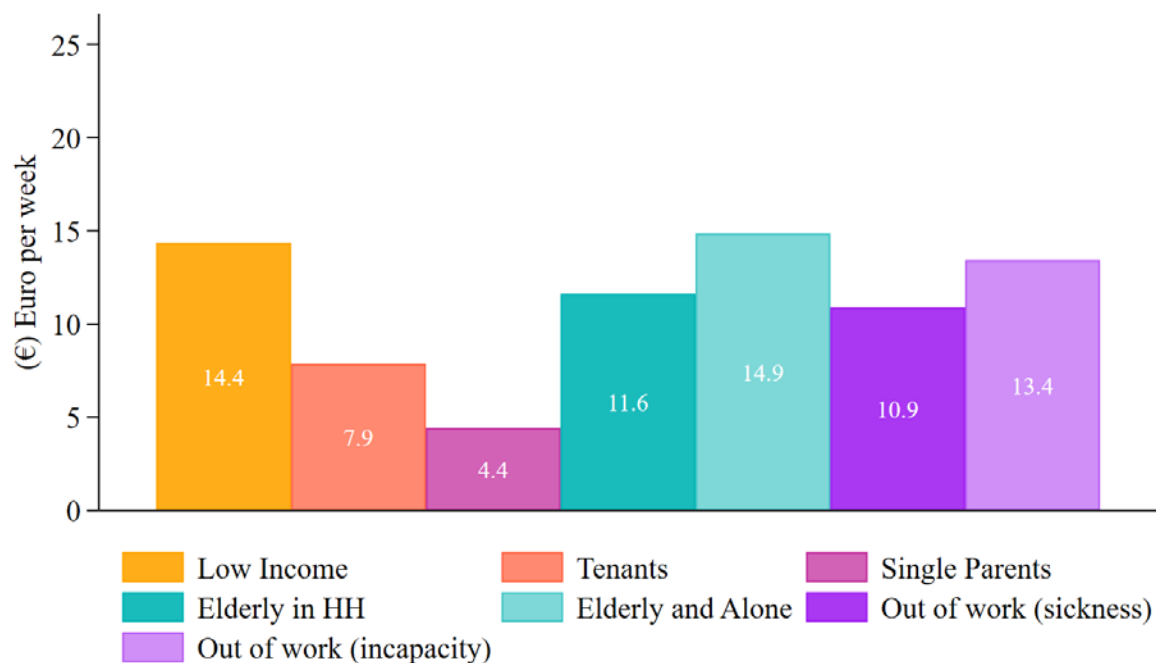
FIGURE 6.2 ENERGY POVERTY GAP BY INDICATOR



Sources: Calculations based on CSO HBS dataset.

Notes: The figure plots the average energy poverty gaps across energy poverty indicators using 2015 data. Income and expenditure data used for the calculations are equalised for household size and composition and expressed in 2016 prices. HSEEI-10%: High Share of Energy Expenditure - 10 per cent. HSEEI-2M: High Share of Energy Expenditure - 2M. LAEE: Low Absolute Energy Expenditure. LIHC: Low Income High Cost. HAEE: High Absolute Energy Expenditure. LSEEI: Low Share of Energy Expenditure. See Table 3.1 for definitions.

Figure 6.2 compares the size of the energy poverty gap across different indicators. Most measures suggest a gap of under €11 per week. Individual estimates range from €1 per week up to around €44 per week. The official HSEEI-10% and the 2M measures are close to each other, at €11 per week, while the Low Income High Cost (LIHC) indicator stands out with a much larger average gap of about €44 per week. This difference reflects both the stringency and the double condition of the LIHC definition: households must simultaneously face energy costs above twice the median and be income-poor after accounting for those costs. For each household, we compute the amount needed to exit both conditions, and the average of these two values defines the LIHC gap. This approach produces a larger monetary estimate and arguably better reflects the actual resources households would need to escape energy poverty, given that substitution in spending across energy and other goods is likely.

FIGURE 6.3 ENERGY POVERTY GAP ACROSS VULNERABLE GROUPS

Sources: Calculations based on CSO HBS dataset.

Notes: The figure plots the average of all energy poverty gaps across socio-economic characteristics using 2015 data. Income and expenditure data used for the calculations are equalised for household size and composition and expressed in 2016 prices. Income-poor households are those below the poverty line.

We previously showed that households' socio-economic characteristics differ across indicators. Our evidence suggests that the depth of affordability constraints also varies across groups. Figure 6.3 disaggregates the average energy poverty gap by vulnerable groups, providing indicative evidence of how severe their experiences of energy poverty are and how much additional support they would need to escape it. The households experiencing income poverty and the elderly population living alone exhibit the highest average gaps, implying that they would require substantially more resources than other groups to overcome energy poverty. When faced with energy poverty, these groups are likely to experience greater difficulty in exiting it, reflecting deeper and more persistent forms of deprivation.

6.1 THE ENERGY POVERTY GAP, TARGETING AND FISCAL EFFICIENCY

We illustrate the potential effectiveness of targeting through a simple calculation. In 2016, the average energy-poverty gap was approximately €9 per household per week, equivalent to €40 per month or €480 per year. If this gap were addressed for roughly 35 per cent of domestic electricity accounts that might be affected by

energy poverty ($\approx 770,000$ out of 2.2 million), the total subsidy required would amount to approximately €31 million per month, or €370 million per year.¹⁹

In comparison, the recent universal €250 electricity credit cost the Irish State about €550–575 million in total, spread across all 2.2–2.3 million domestic electricity accounts.²⁰ The fiscal scale of that 2025 intervention, therefore, greatly exceeded the estimated cost implied by the energy-poverty gap. Crucially, the analysis shows that higher, targeted transfers are needed for vulnerable households to avoid energy poverty, whereas uniform amounts spread thinly across all households are unlikely to be sufficient.

A €575 million fiscal envelope could be used far more effectively through targeted support. For example, providing a €480 credit to households identified as experiencing various types of energy poverty would fully cover their shortfall while saving around 40 per cent of the fiscal envelope.²¹ This approach would reduce overall costs while ensuring that more adequate support is delivered to those most in need.

Cash transfers should be used as temporary instruments for crisis relief rather than a lasting response. Energy poverty is fundamentally structural, and addressing it requires providing adequate and affordable energy-efficient housing alongside a more secure, resilient energy system. Without sufficient investment in generation, networks, and storage, households remain exposed to supply disruptions and external geopolitical shocks that can repeatedly translate into affordability crises. While income support can cushion households in the short term, durable progress depends on these longer-term structural investments.

¹⁹ For the illustration, the estimation assumes that the energy poverty gap remains close to 2016 levels, and applies it to the approximately 35 per cent of households who experience any type of energy poverty according to the HBS-IU (see Figure 3.3 in Chapter 3). Figure 6.1 supports this assumption, showing that the average gap is relatively stable over time, particularly between 2010 and 2015.

²⁰ Electricity Costs (Emergency Measures) Domestic Accounts Bill 2023 is estimated to benefit 2.2 million electricity domestic accounts. See: https://www.gov.ie/en/department-of-climate-energy-and-the-environment/press-releases/minister-ryan-welcomes-publication-of-the-electricity-costs-emergency-measures-domestic-accounts-bill-2023/?utm_source=chatgpt.com.

²¹ The calculation assumes 35 per cent of electricity domestic accounts are experiencing some type of energy poverty, substantially more than the 35 per cent of a 1.8 million household population from which energy poverty is estimated. Therefore, a high proportion of households are assumed to receive targeted supports, yielding a conservative estimate of the expected savings.

CHAPTER 7

Structural analysis – mechanisms driving energy affordability issues

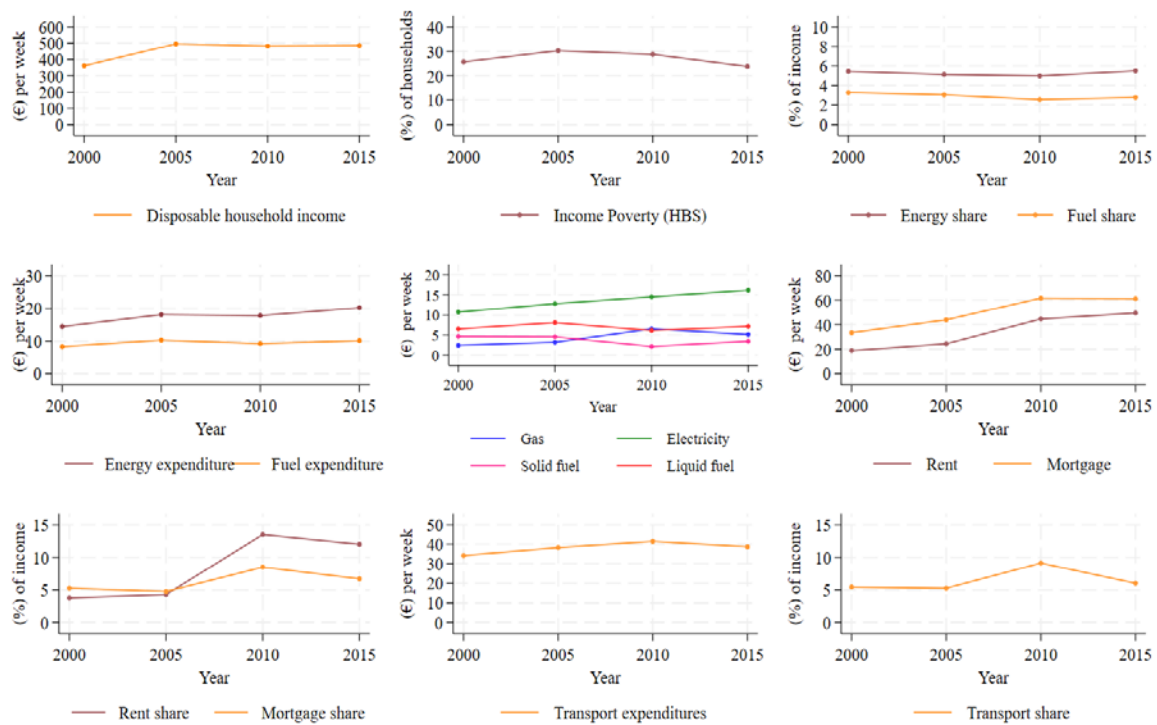
Key Takeaways

- Rising disposable incomes have played a central role in stabilising or reducing energy poverty, offsetting the impact of higher energy prices, rising rents, and broader cost-of-living pressures.
- Homeownership, health status, household composition, rent, and other living costs all shape disposable income and, ultimately, what households can afford.

Having examined the incidence and severity of energy poverty, we now turn to a descriptive analysis of the more structural mechanisms that drive affordability pressures. This chapter looks beyond indicators of energy poverty to a wider set of socio-economic variables that shape households' capacity to meet their energy needs. Some of these variables are used directly in defining them, but analysing their components and other variables separately helps us understand how the underlying mechanisms operate. For example, if the HSEEI-10% indicator shows energy poverty worsening, is the driver falling disposable income, higher energy prices, rising rents, or some combination? The structural analysis here allows us to answer such questions.

We examine income levels, housing costs, tenure status, expenditure patterns, and energy efficiency, all of which interact with energy prices and demand. The EPAH emphasises the value of monitoring such variables within a multidimensional approach. Analysing them reveals the economic conditions under which energy poverty arises and how vulnerabilities are reinforced or reduced over time.

For this analysis we continue to use both the HBS and SILC datasets, which capture different dimensions of household characteristics. The HBS provides detailed expenditure information, allowing us to examine the share of budgets spent on transport and to distinguish between fuel types in household energy spending. The SILC offers a more consistent account of income, as well as data on tenancy and ownership status. It also allows us to present trends in housing costs and their components, following the estimation approach introduced in Chapter 4.

FIGURE 7.1 COMPLEMENTARY SOCIO-ECONOMIC INDICATORS (HBS)

Sources: Calculations based on CSO HBS dataset.

Notes: The panel presents socio-economic indicators linked to energy poverty and broader structural issues. Scales and units differ across plots. Values are equalised for household size and composition and expressed in 2016 prices.

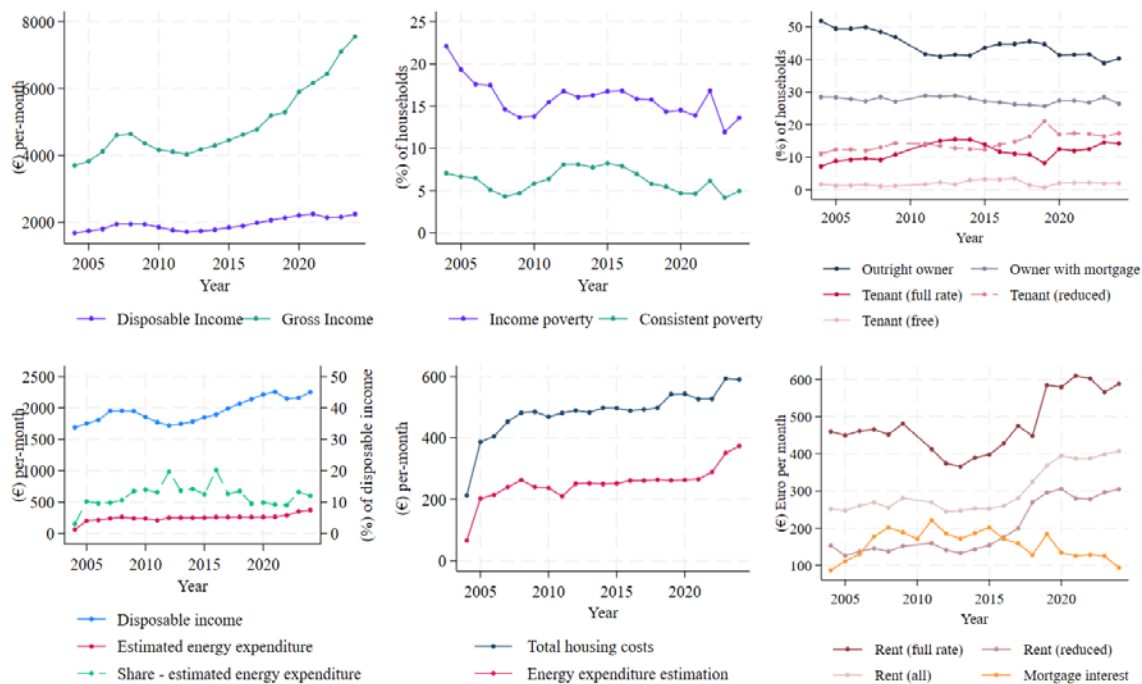
Figure 7.1 presents socio-economic indicators from the HBS. Equivalent disposable income remains broadly stable at around €500 per week, and the income poverty rate moves within a similarly narrow band of 24 per cent to 30 per cent. Energy-related spending also shows little variation. Households allocate roughly 5.5 per cent of their disposable income to energy and over 3 per cent to fuels. In absolute terms, weekly energy expenditure increases from €15 to €20, while fuel spending rises from €8 to €10. Most of this change reflects higher electricity spending, which grows from €10 to €16, whereas expenditure on other fuels remains largely unchanged, aside from a temporary spike in gas around 2010.

Housing costs display a much sharper increase. Average weekly rent doubles from €20 to €40, while mortgage interest payments rise from €30 to €60. When considered relative to disposable income, renters consistently carry a higher burden – around 12 per cent in 2015 compared with roughly 7 per cent for mortgage holders. Transport spending also increases, both in absolute terms and as a share of income, reaching its highest point around 2010.

Taken together, these trends highlight key structural drivers of affordability pressures: household incomes remain broadly unchanged while essential costs –

particularly housing, energy, and transport – continue to climb.²² Such divergence helps explain why some households are more exposed to energy poverty than others, and why affordability risks persist over time.

FIGURE 7.2 COMPLEMENTARY SOCIO-ECONOMIC INDICATORS (SILC)



Sources: Calculations based on CSO SILC dataset.

Notes: The panel presents socio-economic indicators linked to energy poverty and broader structural issues. Scales and units differ across plots. Values are equalised for household size and composition and expressed in 2016 prices.

Figure 7.2 presents socio-economic indicators from the SILC. The first plot shows that, aside from the sharp contraction during the financial crisis, disposable income has risen steadily over time. This growth – alongside shifts in energy and other household costs – is likely a key factor behind the gradual decline in energy poverty rates observed in previous sections. The second plot confirms this pattern: both income poverty and consistent poverty have decreased.

The panel also reports trends in dwelling tenure. As highlighted in the literature, ownership is strongly associated with lower energy poverty risk. However, the share of tenants has increased over time, potentially heightening vulnerability of the population – especially in the context of rising rent and total housing costs.

²² Conclusion drawn based on HBS data. It is important to keep in mind that SILC is a more reliable source of income levels and their dynamics.

Regarding other potential complementary indicators, the Energy Efficiency Directive recommends monitoring the share of the population living in dwellings with leaking roofs, damp walls, floors, or foundations, or with rot in window frames or floors. However, as shown in Figure A.2 in the appendix, this variable is available only through 2020, limiting its usefulness for ongoing monitoring.

Finally, the panel includes a plot of the estimated expenditure measure used in the affordability analysis from Chapter 4. Estimated energy-related housing costs (total housing costs net of rent and mortgage payments) closely track both total housing costs and disposable income and account for roughly 10 per cent of income on average. Although more volatile and slightly higher than the values derived from HBS data, the SILC-based estimate appears to be a reasonable approximation for our purposes.

CHAPTER 8

Welfare supports and energy poverty

Key Takeaways

- Identifying the socio-economic and demographic factors associated with energy poverty can enhance the development of targeted policies. The issue disproportionately affects low-income households, particularly those led by younger individuals and women.
- A high share of households experiencing energy poverty are recipients of housing, child, and fuel allowances, suggesting that they face a broad set of financial pressures.

Designing instruments to tackle energy poverty is a complex process. It not only determines who receives support and who is excluded, but also shapes incentives, potential behavioural responses, and the overall fiscal cost and efficiency of resource allocation. Creating new instruments can also entail additional administrative expenses related to their implementation. However, targeted cash transfers delivered through existing welfare systems offer a practical and effective way to ease the burden of rising energy prices on vulnerable households in the short run – particularly in countries with robust social safety nets such as Ireland (Amaglobeli, 2023; IEA, 2026).

In this section we examine the distribution of welfare payments among households experiencing energy poverty. This helps identify the main types of welfare support that households in energy poverty rely on to alleviate financial pressures. The findings can inform the development of a comprehensive social protection strategy to address energy poverty.

To conduct this analysis, we use the SILC dataset, which serves as the primary source of information on both received welfare benefits and self-reported experiences of energy poverty. We also incorporate the UI-SILC, as outlined in Chapter 4, in which households are classified as experiencing energy poverty when they report being incapable to afford adequate warmth (IAAW), or having arrears on their utility bills (AUB).

The SILC dataset also provides information on the level of deprivation in the area where each household resides, based on the Pobal Haase Pratschke (HP) Relative Deprivation Index (Devlin et al., 2025). This index is a census-based statistical tool that assesses the socio-economic conditions of small geographic areas, such as Electoral Divisions or Small Areas, using multiple indicators. The HP index provides

a detailed geographic representation of disadvantaged populations.²³ The HP index in the SILC ranges from 0 to 4, where 0 indicates very disadvantaged, 1 disadvantaged, 2 neutral, 3 affluent, and 4 very affluent. For this analysis, we constructed an indicator of deprivation area with values of 0 and 1 in the HP index. Additionally, we include a variable to identify households situated in small towns with populations under 1,000.

Social protection benefits in Ireland are designed to support specific segments of the population. For example, old-age benefits primarily target individuals at retirement age, while unemployment benefits are generally aimed at younger cohorts. Other payments are tailored to household composition, such as the One-Parent Family Payment, which supports single parents raising children. To understand the current allocation of these payments across the population in energy poverty, it is essential to understand the socio-economic characteristics of households, such as age, sex, employment, household composition, etc.

Table 8.1 presents the average values of various socio-economic indicators for two segments of the sample: households in energy poverty and all other households, based on data from the year 2024. The reported averages and proportions are calculated relative to the total number of households within each group, making the values group-specific. These estimates illustrate how households in energy poverty differ from other households in terms of socio-economic conditions, highlighting key differences in vulnerability and living circumstances. Households in energy poverty have lower disposable income (€1,746) per month than other households (€2,381), indicating a link between income and energy poverty. According to the HP index in the SILC, about 40 per cent of those in energy poverty live in deprived areas, suggesting that energy poverty is not primarily concentrated in areas of social disadvantage.

Table 8.1 shows that gender and demographic characteristics also play a role. Among energy-poor households, 64 per cent are headed by women, pointing to a gendered dimension of energy poverty. Table 8.1 also shows that only 24 per cent of these households are in small population areas, which may imply a more urban or suburban concentration of energy poverty. Finally, the average age of the reference person in households in energy poverty is 49 years, slightly younger than the rest of the population.

²³ Note that the HP index is only one way of measuring deprivation; further analysis will be required to examine the relationship between energy poverty and other deprivation indicators.

TABLE 8.1 SOCIO-ECONOMIC CHARACTERISTICS OF HOUSEHOLDS IN ENERGY POVERTY

	Households in energy poverty	Rest of households
Disposable income (€/month)	1,745.81	2,381.35
Ref. Household age (Years)	48.7	53.8
Deprived area (%)	37.87	31.06
Female (%)	63.51	52.25
Small population (%)	24.09	33.64

Source: Results based on SILC 2024 data.

Note: Disposable income is equivalised and monthly.

The payments most frequently received by households experiencing energy poverty – namely family and child-related allowances (50 per cent), housing allowances (46 per cent), unemployment-related benefits (18 per cent) and the fuel allowance (36 per cent) (see Table 8.2) suggest that they often face employment, housing, heating and childcare needs.²⁴ As shown before, people experiencing energy poverty have an over-representation of tenants, unemployed households and single adults with children.²⁵

It is noteworthy that the high frequency of disability benefits displayed in Table 8.2 suggests that health outcomes exacerbate the vulnerability of households in energy poverty. In contrast, a payment such as an old-age benefit is less frequent among energy-poor households simply because fewer of them are pensioners, as the energy-poor group is a younger cohort (see Table 8.1).

TABLE 8.2 MOST PREVALENT WELFARE PAYMENT (%)

General categories	Households in energy poverty	Rest of households
Unemployment Benefits	17.5	5.9
Old age benefits	12.0	28.8
Sick benefits	7.7	8.3
Disability benefits	12.3	4.4
Family/Children related Allowances	50.0	37.7
Social Exclusion Allowances	13.2	2.1
Housing Allowances	46.2	34.6
Fuel allowance	35.7	17.6

Source: Results based on SILC 2024 data.

Note: The categories are presented in aggregate, and the calculation incorporates the individual payments that comprise them.

²⁴ The categories of welfare payments shown in Table 8.2 are aggregated in the SILC data. For example, the category Family/Children-related Allowances includes payments such as Family Income Supplement, Maternity Benefit, Adoptive Parent Benefit, Carer's Benefit, Back to School Clothing and Footwear Allowance, Child Benefit, and others. The same holds for other payments listed in Table 8.2. More information on how the general categories are comprised can be found here: Methodological guidelines 2024 operation.

²⁵ As in Table 8.1, the proportions are calculated relative to the total number of households within each group. Note that some households can be recipients of more than one payment type; therefore, these categories should not be interpreted as mutually exclusive.

The Fuel Allowance is a well-established policy instrument in Ireland's efforts to combat energy poverty. Research by Pillai et al. (2023) shows that the allowance is effective in reducing the likelihood of experiencing energy poverty. However, its eligibility criteria exclude households that are nonetheless in need of support. Table 8.2 shows that only 36 per cent of households in energy poverty are covered by the fuel allowance. This underscores that the eligibility criteria must be broadened to include all vulnerable households experiencing energy poverty, but not receiving support.

For the 2024–2025 heating season, the Fuel Allowance was paid at a rate of €33 per week over 28 weeks, from September 2024 to April 2025. This amounts to a total of €924 per eligible household.²⁶ Under Budget 2026, Fuel Allowance is set to increase by €5 per week, rising from €33 to €38, and recipients of the Working Family Payment are also eligible.²⁷

Several additional payments are specifically designed to assist eligible and vulnerable households with heating and electricity costs, including the Household Benefits Package, the Additional Needs Payment, and various special heating supplements. It should be noted, however, that information on these specific payments is not available in the SILC dataset.

The frequency of payments regarding housing, fuel allowances and unemployment benefits among households in energy poverty shows that energy poverty policy needs to be closely aligned with broader social protection, housing, and energy strategies to ensure interventions are effectively targeted.

²⁶ More information is available here: <https://www.gov.ie/en/department-of-social-protection/services/fuel-allowance/>.

²⁷ More information on the Budget 2026 is available here: <https://www.gov.ie/en/department-of-social-protection/publications/budget-2026/>.

CHAPTER 9

Conclusions

This report explores the complex landscape of energy poverty in Ireland. It highlights the challenges of measuring energy poverty and affordability and advocates for indicators that provide timely signals of affordability pressures.

To enhance policy design and evaluation, we identified three core indicators for monitoring energy poverty in Ireland. The Inability to Afford Adequate Warmth (IAAW) is a timely, self-reported measure that responds quickly to economic shocks, making it ideal for detecting stress early and guiding short-term support. The High Share of Energy Expenditure Indicator – Twice the Median (HSEEI-2M) provides a more accurate representation of energy poverty by identifying households with disproportionately high energy costs, thereby helping to target structurally vulnerable groups and inform long-term policy planning. The Low Absolute Energy Expenditure (LAEE) measure captures households that under-consume energy to unsafe levels, ensuring that hidden forms of energy poverty are not overlooked. Together, these indicators provide a balanced framework for timely response, structural analysis and inclusive policy development.

This report presented the first assessment of the severity of energy poverty in Ireland. The energy poverty gap estimates the additional resources required to lift households out of the definition of a particular energy poverty experience. These estimates provide evidence that targeted interventions could be significantly more cost-effective than universal supports, delivering adequate assistance at a fraction of the cost. Such findings are particularly relevant in the context of constrained public budgets and the need for efficient resource allocation.

Furthermore, the report emphasises the role that welfare supports can have in mitigating energy poverty. Households experiencing energy hardship often rely on housing, child, and fuel allowances, with disability supports playing a crucial role due to the intersection of health and energy vulnerability. These patterns highlight the need to integrate energy poverty strategies with broader social protection and housing policies.

In conclusion, by improving measurement systems, aligning indicators with policy goals, and investing in both immediate supports and long-term structural solutions, Ireland can move toward a more equitable and resilient energy future. The insights and recommendations presented in this report provide a foundation for such efforts, ensuring that no household is left behind in the transition to a sustainable energy system.

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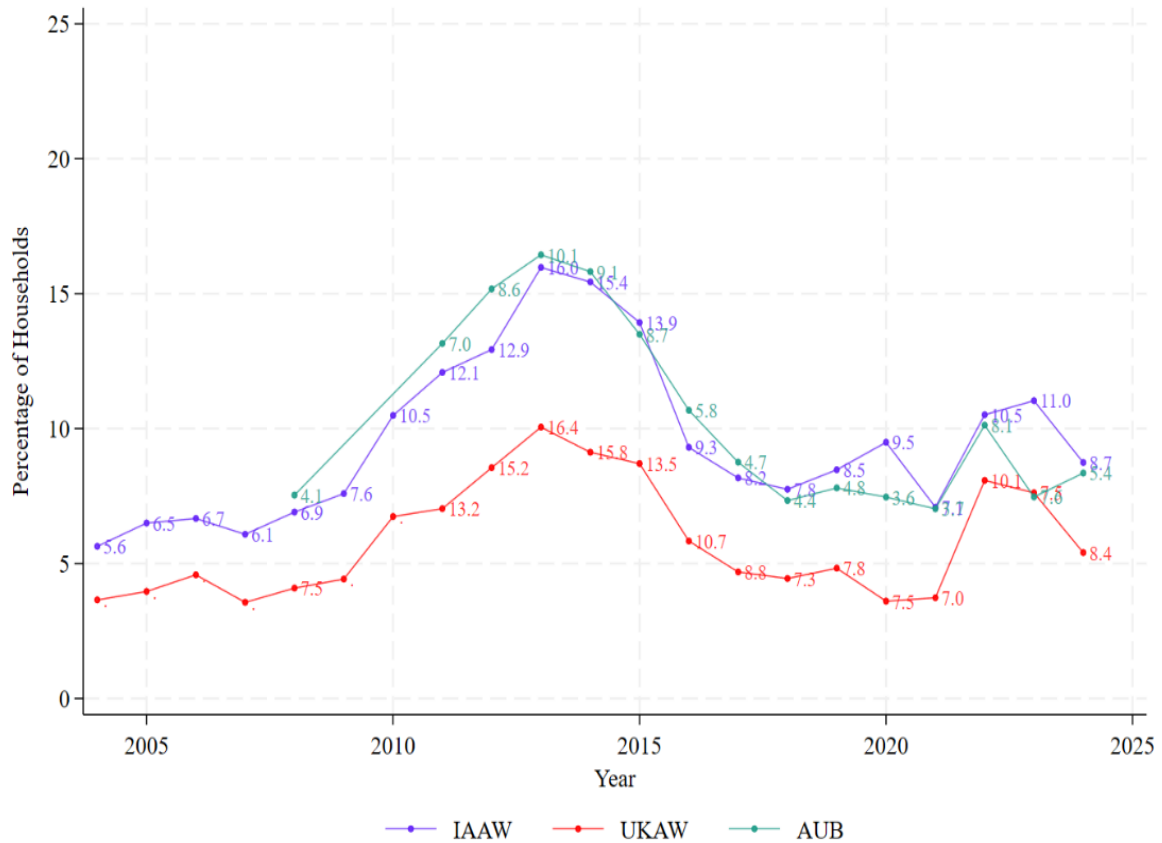
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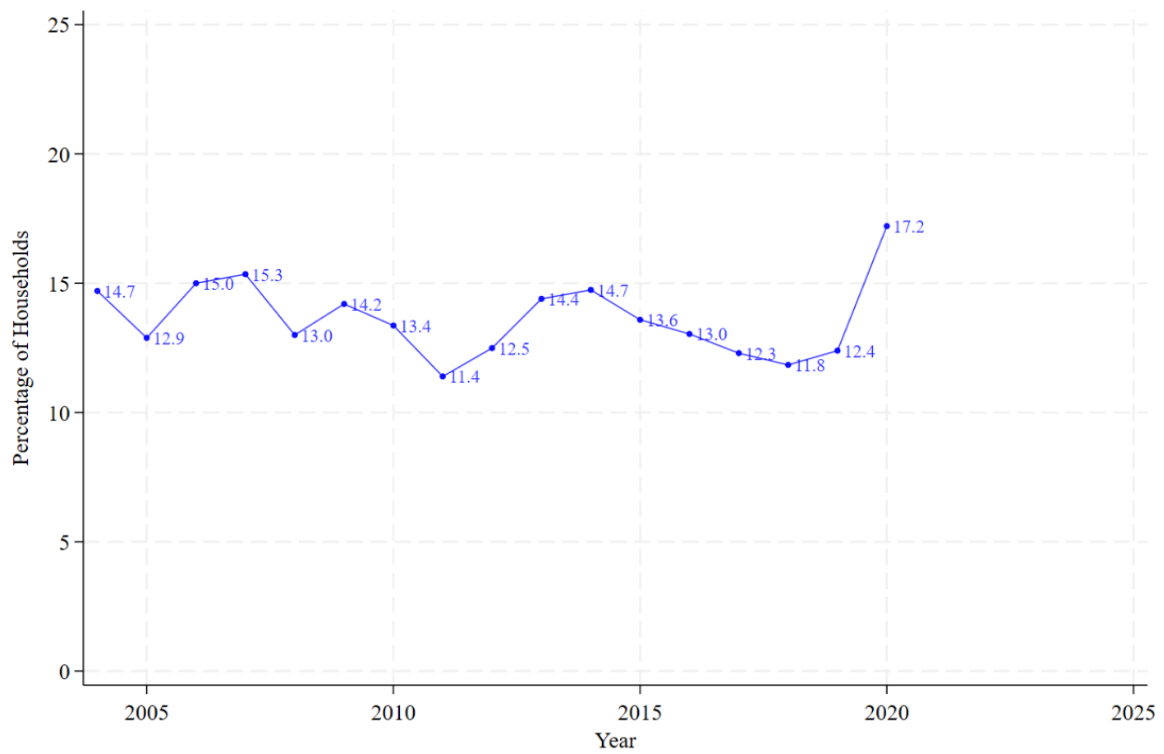
APPENDIX

FIGURE A.1 UNABLE TO AFFORD TO KEEP THE HOME ADEQUATELY WARM (UKAM), INABILITY TO AFFORD ADEQUATE WARMTH (IAAW) AND ARREARS ON UTILITY BILLS (AUB)



Sources: Calculations based on CSO SILC dataset.

Note: In our analysis, the IAAW indicator is constructed using the SILC variable `dep_cold`, whereas the UKAM indicator uses `dep_warm`. The graph shows that although IAAW and AUB follow similar levels and trends, UKAM consistently lies below both measures. This suggests that the construction of `dep_warm` may omit some households experiencing energy poverty (see Chapter 3 for more details).

FIGURE A.2 LEAKING ROOF, DAMP WALLS/FLOORS/FOUNDATION, OR ROT IN WINDOW FRAMES OR FLOOR

Sources: Calculations based on CSO SILC dataset.

Note: The Energy Efficiency Directive recommends using the indicator Leaking Roof, Damp Walls/Floors/Foundation, or Rot in Window Frames or Floor to monitor energy poverty. However, its limited time coverage restricts the analysis to 2020 and earlier.



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