

The research project is implemented in the framework of H.F.R.I call “Basic research Financing (Horizontal support of all Sciences)” under the National Recovery and Resilience Plan “Greece 2.0” funded by the European Union –NextGenerationEU (H.F.R.I. Project Number: 016638).



Energy/**F**uel and human **p**overty: public policy and **R**ecommendations in Southern **E**urope

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Project information

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Completed on	31/03/2025
Authors	Angeletopoulou Paraskevi, Kostakis Ioannis, Pastrapa Eleni, Tsagarakis P. Konstantinos

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Table of contents

D.1.1R MID-TERM REPORT	5
1. General Project Information.....	5
2. Summary of the Mid-term Project Results	5
3. Summary of the Mid-term Progress by Work Package (WP).....	5
a. WP1: Program Management.....	6
b. WP2: Theoretical Investigation and Literature Database	8
c. WP3: Empirical and Econometric Analysis	17
d. WP4: Final Documentation and Research Output	25
e. WP5: Market Analysis and Dissemination Plan.....	26
4. Current and Planned Dissemination Activities.....	26
5. Current Impact and Future Goals	29
6. Next Steps and Future Actions.....	29

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List of Figures

Figure 1. Resources Utilization (cost -left and personal months-right)	7
Figure 2. Effort use per WP	8
Figure 3. Average proportions of households with arrears on utility bills for EU-27 and South European countries (2012-2023).	10
Figure 4: Average proportions of people living in dwellings with leakages, damp, or rot, for EU-27 and South European countries (2012-2023).....	10
Figure 5. Average proportions of households unable to keep their home adequately warm, for EU-27 and South European countries (2012-2023).	11
Figure 6. EFPORE-SE research questions	11
Figure 7. Research methodological scheme.....	12
Figure 8 Subjective energy poverty indicators for Greece (2012-2023)	13
Figure 9. Subjective energy poverty indicators for Spain (2012-2023).....	13
Figure 10. Subjective energy poverty indicators for Italy (2012-2023)	14
Figure 11. Subjective energy poverty indicators for Portugal (2012-2023).....	14
Figure 12 Average values of subjective energy poverty indicators for Greece (2012-2023), by poverty status	15
Figure 13 Average values of subjective energy poverty indicators for Spain (2012-2023), by poverty status	15
Figure 14 Average values of subjective energy poverty indicators for Italy (2012-2023), by poverty status	16
Figure 15 Average values of subjective energy poverty indicators for Portugal (2012-2023), by poverty status	16
Figure 16 Ability to make ends meet, average values for Greece 2018-2023.....	18
Figure 17 People at risk of poverty or social exclusion, average values for Greece, 2018-2023...	19
Figure 18 Ability to make ends meet, average values for Spain 2018-2023	20
Figure 19 People at risk of poverty or social exclusion, annual observations Spain, 2018-2023.	20
Figure 20 Ability to make ends meet, average values for Italy 2018-2022	21
Figure 21 People at risk of poverty or social exclusion, average values for Italy, 2018-2022	21
Figure 22 Ability to make ends meet, average values for Portugal 2018-2022	22
Figure 23 People at risk of poverty or social exclusion, average values for Portugal, 2018-2022	22
Figure 24. Model 1 (Inability to keep home warm) results	23
Figure 25 Model 2 (Arrears on utility bills) results.....	24
Figure 26 Model 3 (Dwelling with leakages, damp or rot) results	24
Figure 27 Model 4 (At risk of poverty or social exclusion) results.....	25
Figure 28 Published draft version of the questionnaire.....	27
Figure 29 Team members presenting project findings at international scientific conferences.	28

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D.1.1R MID-TERM REPORT

1. General Project Information

Project Title: Energy/Fuel and Human Poverty: Public Policy and Recommendations in Southern Europe (EFPORE-SE)

Project Number: 16638

Principal Investigator: Assistant Prof. Ioannis Kostakis

Host Institution: Harokopio University of Athens

Project Start Date: 01/03/2024

Project Duration: 22 months

Approved budget: €133,800

Reporting Period: 01/03/2024 - 17/04/2025

2. Summary of the Mid-term Project Results

The project aims to study Southern Europe's poverty, particularly energy poverty, focusing on its social and economic dimensions and impacts. The project has two key objectives. First, it collects literature and empirical data from Greece, Italy, Portugal, and Spain to develop and compare energy poverty measurement methods, considering socioeconomic, climatic, and policy differences. Second, it develops statistical and econometric models to analyze household characteristics affected by energy poverty, helping shape targeted public policies to improve access to green energy and reduce energy poverty. During the first 12 months, initial data (2012–2023) was gathered, and an extensive literature review was conducted at both European and global levels. The project also launched its online platform (<https://efpore.eu/>), where all project-related information, including research findings, conference presentations, and a multilingual dynamic questionnaire (*draft edition*), is available. Over time, all deliverables, dissemination activities, and project tools will be uploaded.

3. Summary of the Mid-term Progress by Work Package

This section briefly presents the main objectives, key achievements, and challenges of each Work Package (WP). A more detailed and task-based analysis of each WP will be included in the intermediate Report, which is scheduled for submission in April 2025.

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3.1. WP1: Program Management

This Work Package (WP1) aims to ensure effective communication and collaboration among project team members while maintaining seamless financial and administrative management at both strategic and operational levels. It includes scientific and technical coordination, progress monitoring, and prompt resolution of emerging challenges. The Principal Investigator (PI) organizes bi-monthly meetings to ensure timely deliverables, proper alignment of partner activities, and high research quality. These online meetings serve as a platform for discussion, issue identification, and decision-making. WP1 also oversees responsible data management, ensuring compliance with ethical and regulatory guidelines. By facilitating continuous monitoring and coordination, WP1 supports the smooth execution of the project and achieving its objectives.

This cross-cutting work package started at the project's inception and will continue until completion. Its implementation is progressing according to plan. In addition to regular hybrid meetings with the research team ([consortium meetings](#)), a critical project meeting will take place on Thursday, April 10, 2025, at Harokopio University of Athens ([Agenda](#)). This meeting will present the research team's overall scientific and financial progress. Empirical findings and conclusions will also be discussed, along with challenges encountered. The following steps and necessary actions will be clearly defined to ensure the project's smooth continuation and completion.

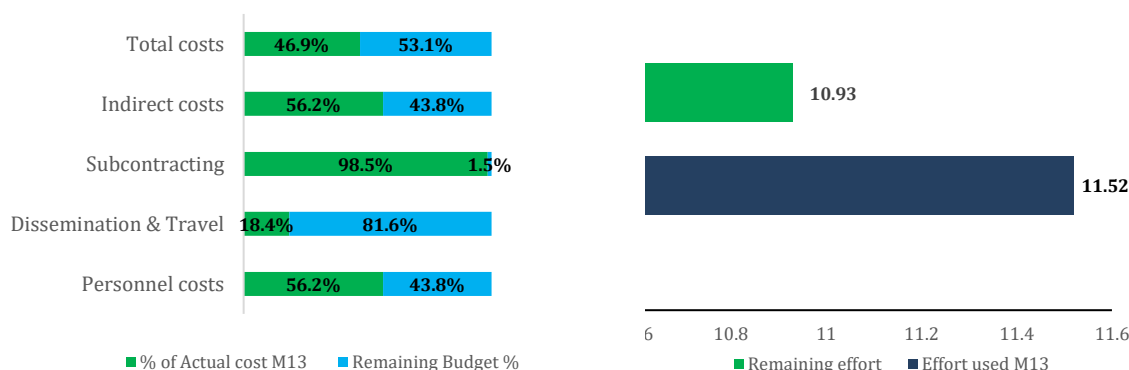
Regarding the deliverables of this WP, the D1.1 *Mid-term Report and Summary of the Mid-term Project Results (the current file)* is a short but key deliverable and will be submitted as part of the project's interim evaluation. It includes: a) a synopsis of progress per working package up to the mid-term, highlighting completed activities according to the initial timeline; b) a summary of interim results, focusing on key achievements and any necessary adjustments, and c) an assessment of the achieved objectives, emphasizing benefits for participating institutions and stakeholders. This deliverable reflects the project team's commitment to transparency, proper management, and timely achievement of expected outcomes, providing solid documentation of progress.

The D1.2 *Final Report and Executive Summary* is already in development, capturing key milestones at each project stage. It will be submitted upon project completion. The Work Package 1 (WP1) milestone aims to ensure the smooth progress and timely completion of deliverables, providing the first substantial project outcomes.

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An essential part of the project's management involves financial activities and administrative oversight, which HUA leads with contributions from all partners. This Report includes updated financial data detailing actual expenditures and resource use by all partners up to Month 13 (March 2025). According to the current financial Report, during the review period (Months 1–13: March 2024 – March 2025), 46.9% of the total budget has been spent. This percentage aligns with the activities carried out and the planned work schedule. Figure 1 below provides an overview of resource utilization.

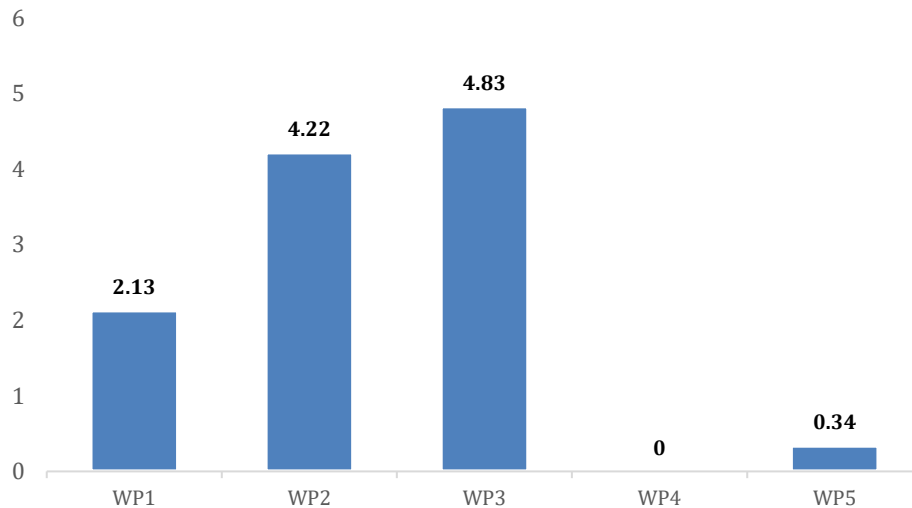
Figure 1. Resources Utilization (cost -left and personal months-right)



As expected, the main investment in terms of costs was personnel. 56.2% of the initial personnel budget was used during the reporting period. The total effort used was 11.52 person months, representing 51% of the total effort budget. Figure 2 below gives a complete picture of the effort consumed in each WP. Most of the effort used during the reporting period was related to WP2 and WP3, as expected and in line with the work plan.

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Figure 2. WP Effort use in Person Months



Key actions include:

Establishing an efficient communication system through regular meetings with the research team to coordinate activities, facilitate information exchange, and monitor real-time progress. Preparing the mid-term progress report, assessing the initial implementation stages, identifying any deviations from the original plan, and recommending corrective actions where needed. This milestone is a crucial reference point for effective project management, ensuring continuous monitoring and timely decision-making to achieve successful project completion.

3.2. WP2: Theoretical Investigation and Literature Database

This Work Package focuses on three key objectives to analyze and understand energy poverty and its associated challenges.

✓ *Literature Review and Theoretical Analysis*

The research team extensively reviewed theoretical and empirical studies from international journals and organizations. The goal is to understand energy poverty measurement indicators, key influencing factors (such as energy access, pricing, and socioeconomic inequality), and the challenges of vulnerable groups.

✓ *Assessment of Energy Poverty in Southern Europe*

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The study examines energy poverty in Southern Europe, analyzing regional characteristics, socioeconomic and geographical factors, and existing policies in different countries to address the issue.

✓ *Development of Research Questions and Statistical Methodologies*

Critical research questions have been formulated to explore the driving forces behind energy poverty and its impact on Southern European societies. Suitable statistical methodologies are being developed to analyze data with accuracy and reliability.

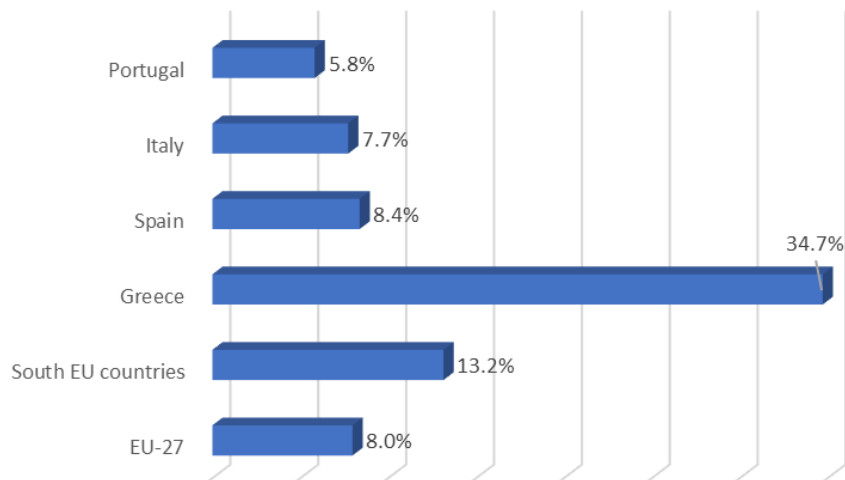
This Work Package contributes significantly to understanding energy poverty in Southern Europe, laying the groundwork for innovative policies and practical strategies to mitigate its effects. Through collaboration, the research team successfully achieved the key objectives of this Work Package, contributing to tackling energy poverty and promoting sustainable development. More specifically, a comprehensive literature review (D.2.1) was completed, analyzing theoretical and empirical approaches to European energy poverty and identifying key challenges and research gaps. Also, a detailed descriptive data analysis (D.2.3) was conducted nationally for Southern European countries, highlighting causes, regional differences, and impacts on vulnerable groups. Moreover, critical research questions (D.2.2) were formulated, and statistical methodologies were selected for the subsequent research phases, including large-scale data analysis and multidimensional energy poverty indicators (D.3.1 completed; D.3.2 in progress). Despite challenges, the team's collaboration and knowledge exchange were crucial in producing innovative findings, enhancing understanding, and implementing strategies to combat energy poverty across Europe. Following the initial project plan, a comprehensive literature review was conducted, familiarizing the research team with existing studies and shaping research hypotheses.

Key Deliverables

D2.1 (R) - Literature Review Report: This foundational Report analyzes definitions of energy poverty, its causes, and its social impacts, using a comparative approach across countries. It reviews measurement indicators, statistical data, and the European policy framework, focusing on Southern European countries (Greece, Italy, Spain, Portugal) and their unique challenges. The initial analysis revealed significant considerations concerning disparities between EU-27 and South European countries and between South European countries. Figure 3 presents the average proportions of the population unable to pay their utility bills. As observed, Greece displays a significantly higher ratio compared to other countries.

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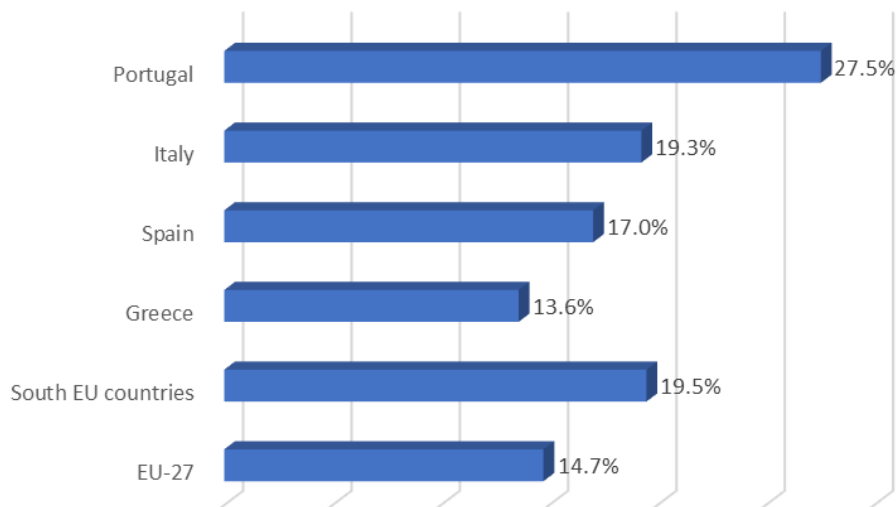
Figure 3. Average proportions of households with arrears on utility bills for EU-27 and South European countries (2012-2023).



Source: Eurostat 2024

The indicator referring to households living in dwellings with leakages, damp, or rot demonstrates a different picture (Figure 4). In this case, Portugal has the highest percentage, with over a quarter of its dwellings experiencing housing issues.

Figure 4: Average proportions of people living in dwellings with leakages, damp, or rot, for EU-27 and South European countries (2012-2023).

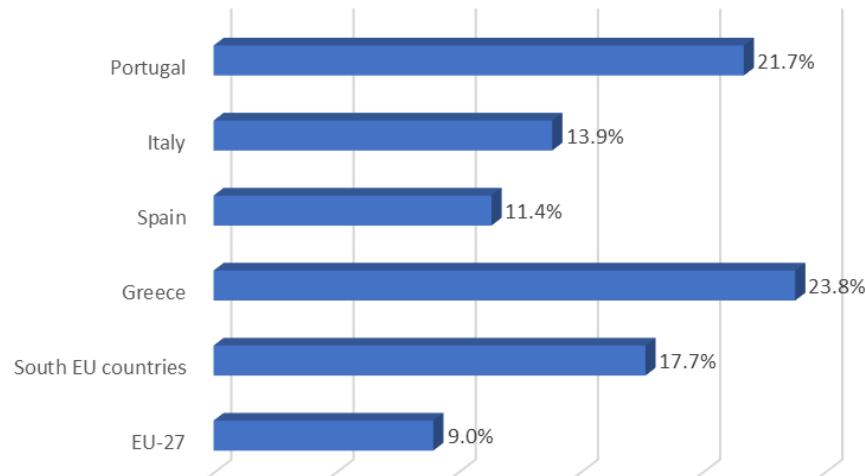


Source: Eurostat 2024

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The third subjective indicator, shown in Figure 5, presents the percentage of households unable to warm their homes adequately. Although Southern Europe experiences significantly fewer heating degree days, the regional average indicates that nearly 18% of residents struggle to warm their homes during winter.

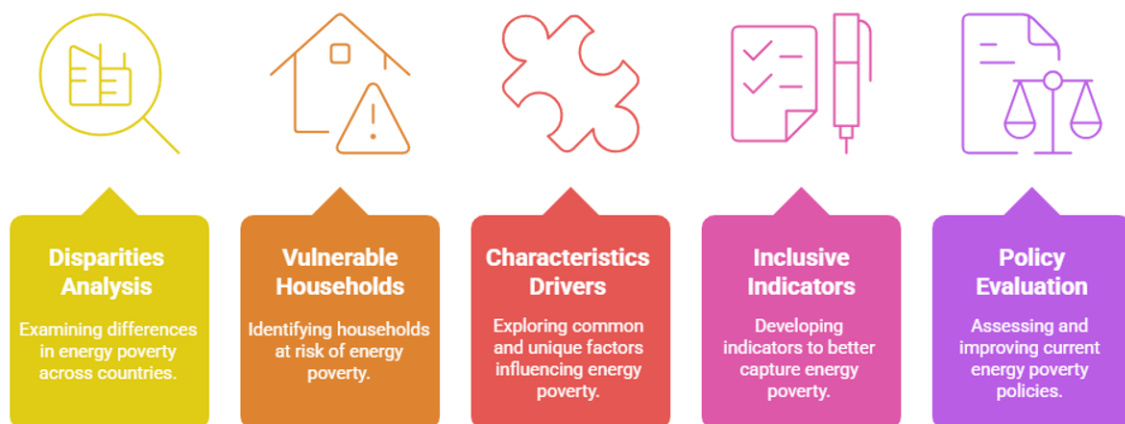
Figure 5. Average proportions of households unable to keep their home adequately warm, for EU-27 and South European countries (2012-2023).



Source: Eurostat 2024

D2.2 (DEM) - Research Questions & Methodology: This Deliverable defines the core research questions on energy poverty's causes, impacts, and dynamic relationships.

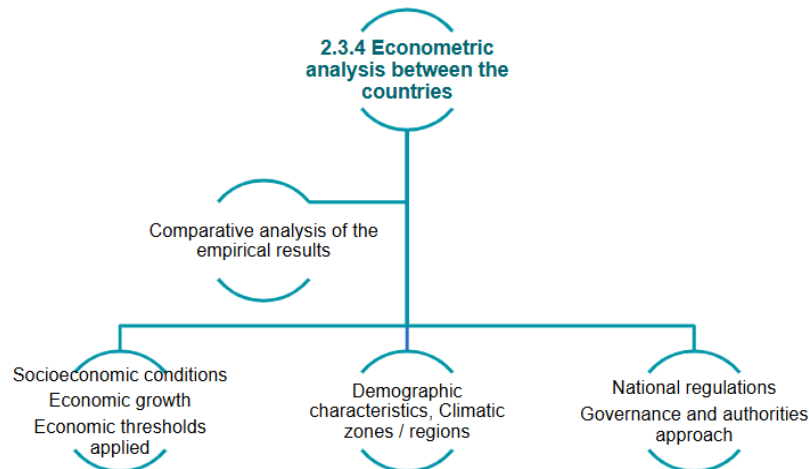
Figure 6. EFPORE-SE research questions



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Furthermore, D2.2 presents a three-step statistical and econometric approach: Data classification by year and country and analysis of energy poverty indicators (EU-SILC, EUROSTAT). Descriptive analysis of macro and microeconomic variables in Southern Europe. Econometric modeling, including regression analyses and cost-benefit analysis (CBA), to inform energy efficiency policies.

Figure 7. Research methodological scheme



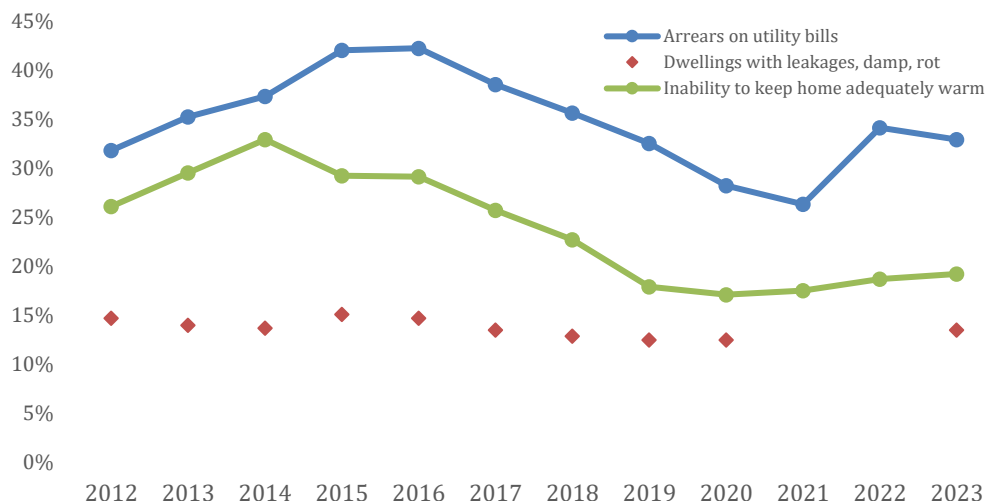
D2.3 (R) - Comparative Energy Poverty Analysis: Expands on D2.1 and D2.2, analyzing trends from 2012–2023, including the financial crisis, economic recovery, and the COVID-19 pandemic. It compares EU-27 and Southern Europe in terms of income inequality, unemployment, housing conditions, and energy consumption, using methodologies by Boardman (2010), Hills (2012), and Moore (2012). It also examines policy frameworks (e.g., Energy Efficiency Directive EU/2023/1791) and insights from the IEA and the Energy Poverty Advisory Hub. The deliverable also conducts a comparative analysis between the Southern European countries, identifying significant differences. Despite the similar climatic conditions, Southern European countries have different geographical areas and climate zones. Furthermore, these countries have variations in political systems, socioeconomic conditions, demographic characteristics, and how they meet their energy needs.

Greece is significantly more affected by energy poverty (Figure 8). The indicators related to arrears in utility bills and the ability to keep home warm are nearly four times higher than the EU-27 average and considerably higher than the average of Southern European countries.¹

¹ No data is available for the variable dwellings with leakages, damp or rot for 2021 and 2022 respectively.

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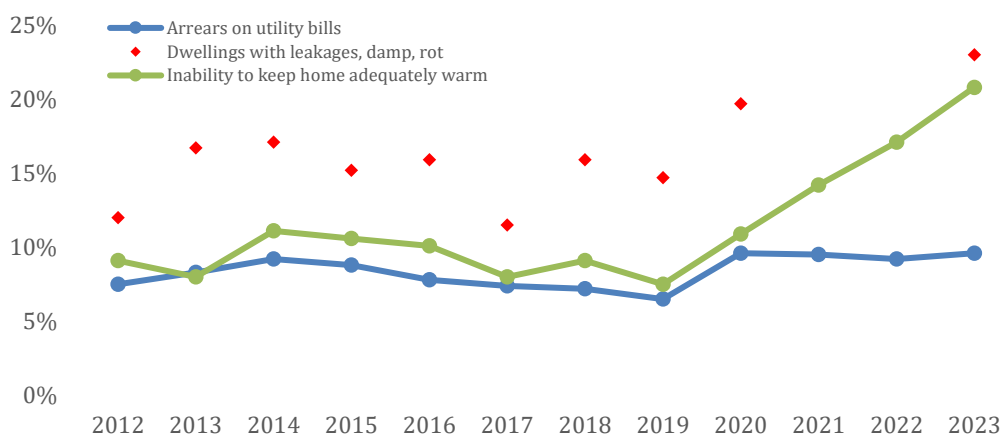
Figure 8. Subjective energy poverty indicators for Greece (2012-2023)



Source: Eurostat 2024

On the contrary, Spain and Italy appear to be quite aligned with EU-27 (Figures 9 and 10, respectively). Additionally, they seem slightly more favorable than the average of Southern European countries.

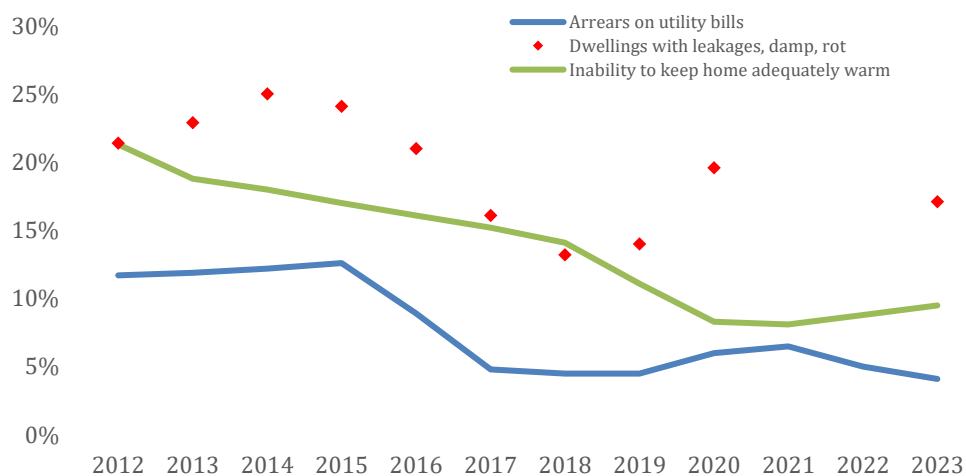
Figure 9. Subjective energy poverty indicators for Spain (2012-2023)



Source: Eurostat 2024

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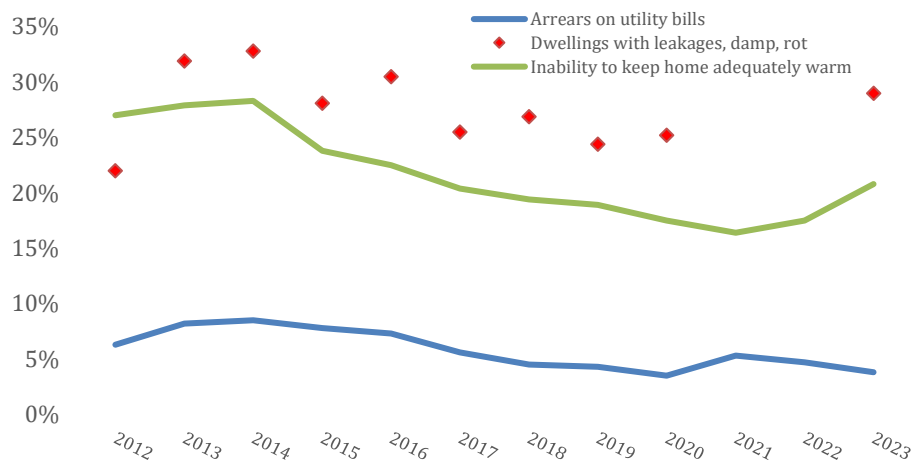
Figure 10. Subjective energy poverty indicators for Italy (2012-2023)



Source: Eurostat 2024

Compared to the EU-27 and the Southern European countries, Portugal performs significantly better regarding utility bill arrears (Figure 11). On the other hand, Portuguese households face more serious difficulties heating their homes and present worse living rates in buildings with leakages, damp, or rot.

Figure 11. Subjective energy poverty indicators for Portugal (2012-2023)



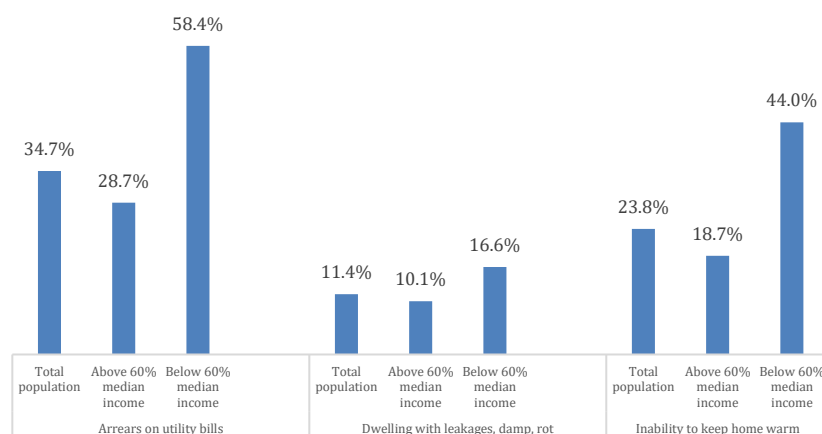
Source: Eurostat 2024

The research team also analyzed the energy poverty level among population groups below and above the at-risk of poverty. Common findings have emerged for the four countries (Figures 12, 13, 14, and 15). Specifically, the proportion of households

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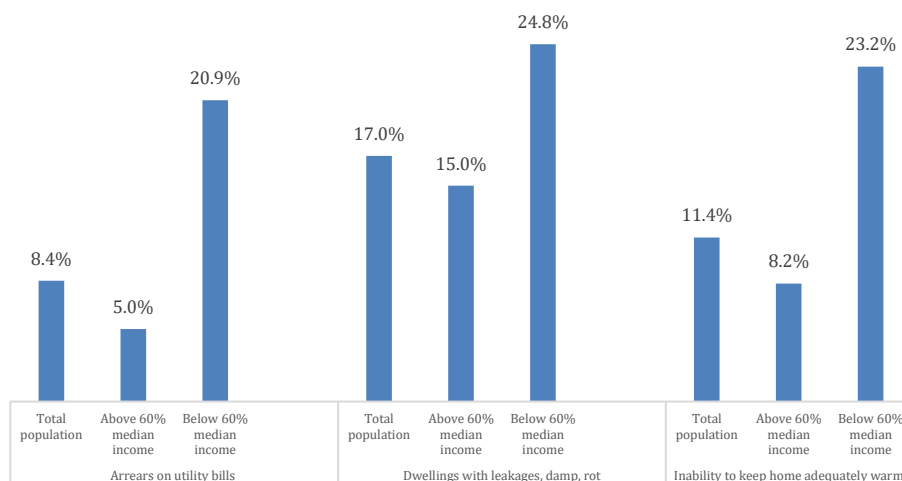
affected by energy poverty and falling below the poverty line is significantly higher than those suffering from energy poverty but whose income is above the national poverty threshold. Furthermore, the share of households above the poverty line but affected by energy poverty is relatively close to the general population's corresponding share, indicating that inequality directly influences energy poverty.

Figure 12 Average values of subjective energy poverty indicators for Greece (2012-2023), by poverty status



Source: Eurostat 2024

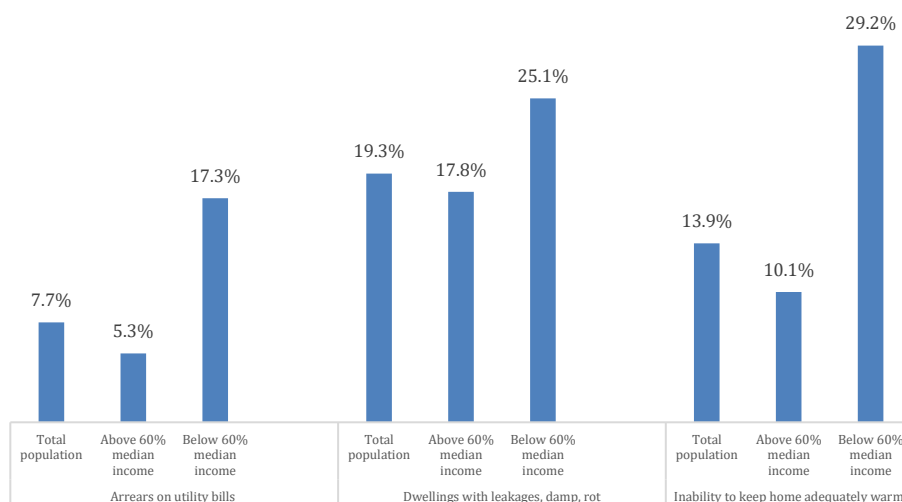
Figure 13 Average values of subjective energy poverty indicators for Spain (2012-2023), by poverty status



Source: Eurostat 2024

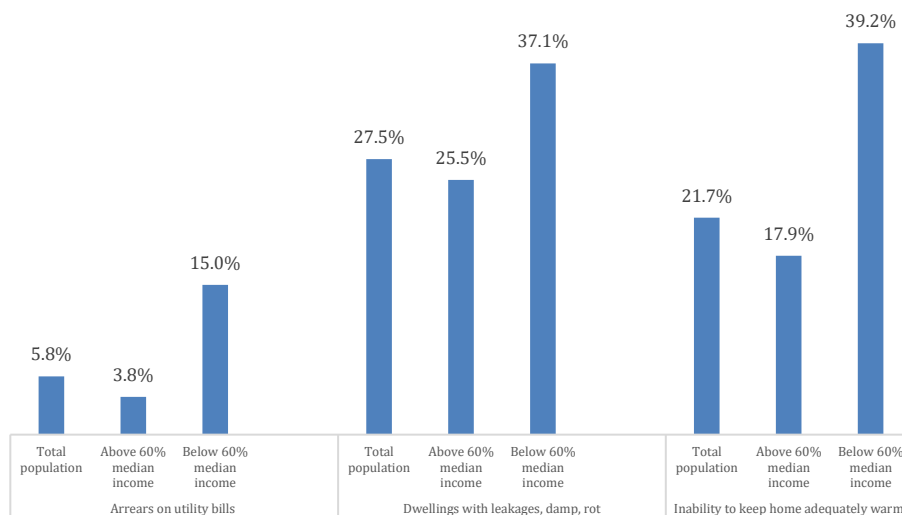
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Figure 14 Average values of subjective energy poverty indicators for Italy (2012-2023), by poverty status



Source: Eurostat 2024

Figure 15 Average values of subjective energy poverty indicators for Portugal (2012-2023), by poverty status



Source: Eurostat 2024

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Key Insights

Southern European countries share climatic similarities but exhibit distinct socioeconomic and energy poverty characteristics. The findings highlight the need for targeted policies tailored to regional challenges aligned with the Green Deal and the 2030 Agenda for Sustainable Development.

3.3. WP3: Empirical and Econometric Analysis

This Work Package focuses on developing, applying, and analyzing empirical and econometric models to understand the factors influencing social and energy poverty and their socioeconomic impacts at national and regional levels. Statistical and econometric analysis are conducted using data collected from national statistical authorities (EU-SILC), covering a) energy needs and expenditures, b) household socioeconomic characteristics, c) energy supply types by country and d) public incentives and policy measures.

The process has been particularly time-intensive and complex, requiring frequent collaboration with international research partners. Data access challenges were encountered, as some national statistical services required special requests for authorization, unlike Greece, where data is publicly available. The objective's implementation involves critical tasks to ensure practical data analysis and utilization:

- **Database Development:** A comprehensive database was designed and developed, forming the foundation for the study and project deliverables (D.3.1 and D.3.2).
- **Descriptive Analysis:** Conducted at national and regional (NUTS I) levels, highlighting key trends and characteristics of energy poverty.
- **Statistical Analysis:** Examined correlations and emerging patterns, providing deeper insights into the issue.
- **Econometric Modeling:** Cross-sectional and panel data analysis were applied to explore causal relationships and formulate policy recommendations for mitigating energy poverty.

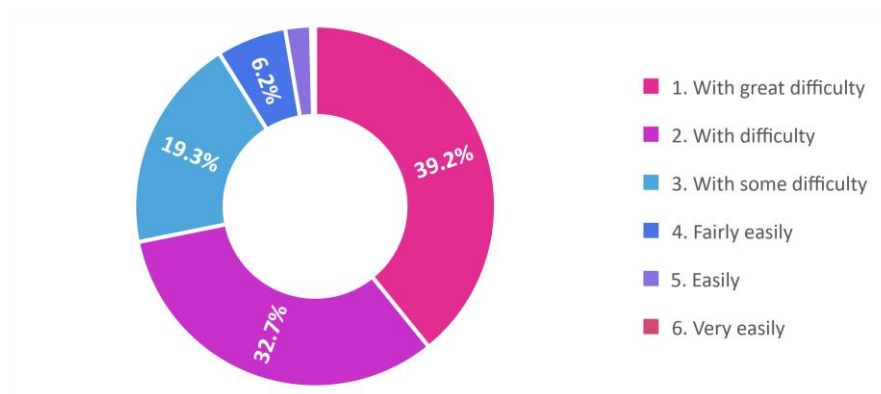
Regarding the current progress of the Work Package, D.3.1 has been almost successfully completed and will be submitted alongside the mid-term Report, providing a foundation for further analysis, while D.3.2 is in progress and will be finalized by the project's completion. These analyses are expected to yield valuable findings, enhance understanding, and support the development of targeted and effective policy interventions.

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D.3.1 includes descriptive and econometric analysis at Southern European countries' national and regional (NUTS I) levels. The spatial analysis within the four Southern European countries revealed noticeable regional disparities. Specifically, the regions Aegean Islands, Crete, and Central Greece are more vulnerable in Greece. In Spain, Sur and Canarias are the regions most affected; Este and Centro also present rising indicators. In Italy, the Southern and Insular regions are greatly affected. Finally, the regions Madeira and Azores in Portugal perform worse than Portugal's Continental. Moreover, the research team conducts a descriptive analysis of human poverty² at national and regional levels. The main objective of this analysis is to identify potential similarities or differences in the expression of energy and human poverty. This contributes to understanding the correlation of human and energy poverty determinants, overlapping conditions, and the broader dynamic relationships between the two phenomena.

Approximately 72% of Greece's population faces significant economic difficulties (Figure 16). The most burdened areas are Central Macedonia and Northern Greece. Additionally, 29% of the population is at risk of poverty or social exclusion (Figure 10), with the proportion of people living below the poverty line showing an upward trend. However, the islands present improvement, with an increase in the share of people not experiencing poverty.

Figure 16 Ability to make ends meet, average values for Greece 2018-2023

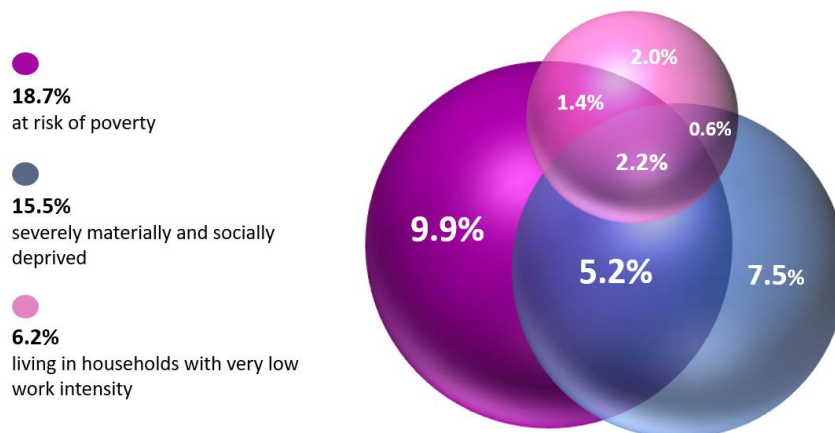


Source: ELSTAT 2024

² In this project, human poverty is proxied by the components of the AROPE (At Risk of Poverty or Social Exclusion) indicator, as defined in the EU-SILC dataset. The AROPE indicator combines three major dimensions: (i) relative income poverty, using the EU's at-risk-of-poverty threshold; (ii) enforced lack of socially perceived necessities, expressed by the severe material and social deprivation indicator; and (iii) weak labour market attachment, concerning population living in (quasi-)jobless households.

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Figure 17 People at risk of poverty or social exclusion, average values for Greece, 2018-2023³



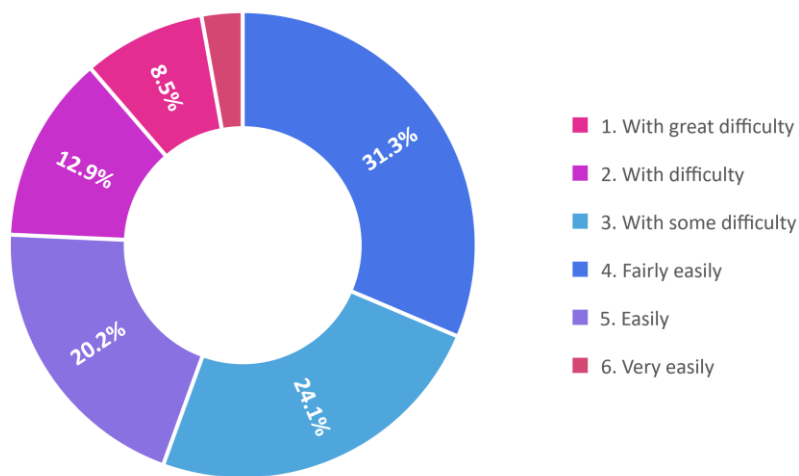
Source: ELSTAT 2024

The key findings for Spain show that around 21% of the population faces severe financial difficulties (Figure 18). However, approximately 55% manage to meet their needs with some ease. Furthermore, an increase in poverty and social exclusion over time is observed (Figure 19), with the average proportion of people at risk of poverty or social exclusion at around 25%. The most affected areas are the Canary Islands and Southern Spain, in contrast to the regions of Madrid and the Northeastern part of the country.

³ The legend illustrates the percentage of the population affected by each component of the indicator (which is extensively explained in Deliverable D 3.1), either individually or in combination with one or more other components. The values in the figure represent the proportion of the population experiencing a specific type of risk (e.g., only at risk of poverty, or at risk of poverty combined with low work intensity). The Figure follows the type of analysis from Eurostat ([Living Conditions in Europe - Poverty and Social Exclusion - Statistics Explained](#)).

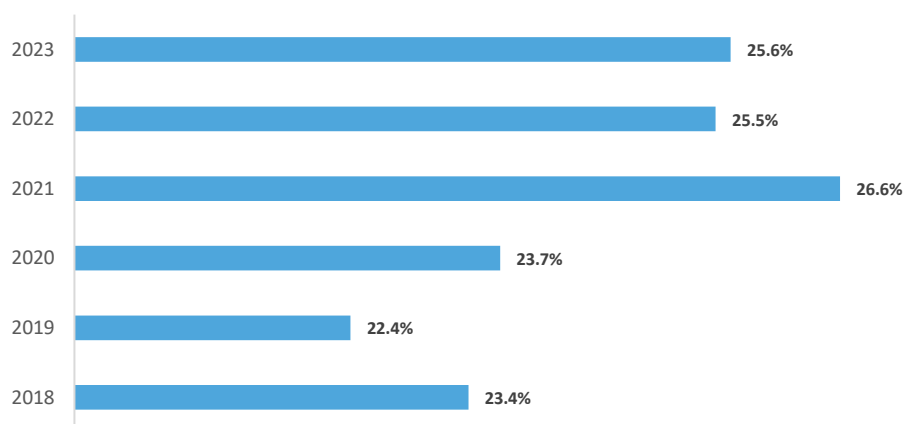
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Figure 18 Ability to make ends meet, average values for Spain 2018-2023



Source: INE 2024

Figure 19 People at risk of poverty or social exclusion, annual observations Spain, 2018-2023⁴



Source: INE 2024

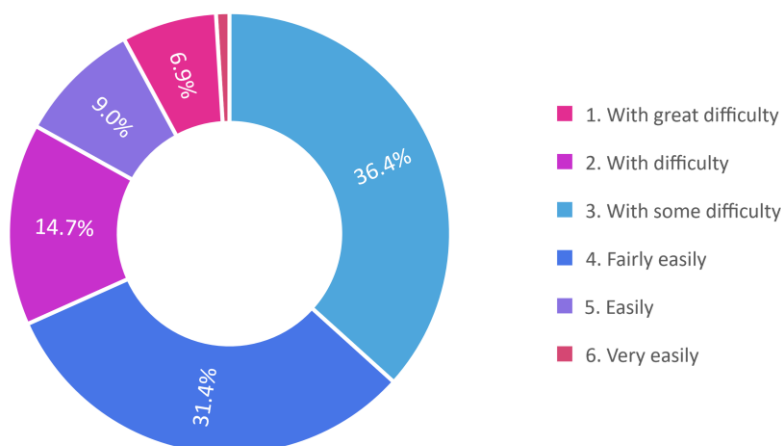
As presented in Figure 20, in Italy, around 22% of the population faces severe financial difficulties. Moreover, 24% are at risk of poverty or social exclusion (Figure 21). Southern Italy (in contrast to the northern regions) experiences the most serious

⁴ The Spanish EU-SILC database reports the “At risk of poverty or social exclusion” indicator solely in a binary format, distinguishing between individuals who are at risk of poverty ('yes') and those who are not ('no').

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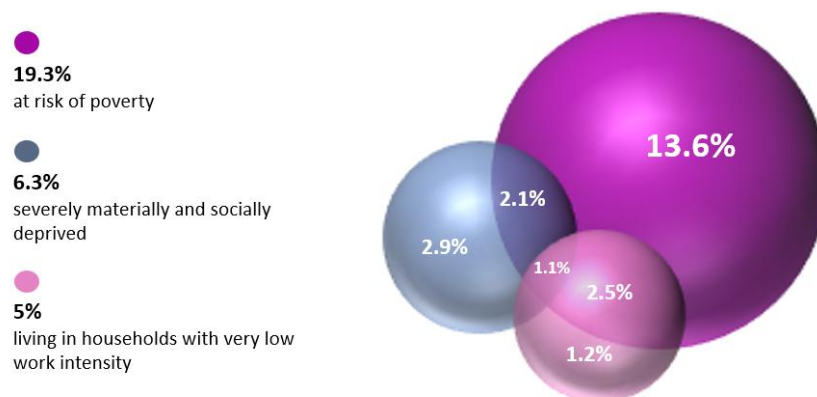
economic hardships and the highest rates of people at risk of poverty or social exclusion.

Figure 20 Ability to make ends meet, average values for Italy 2018-2022



Source: ISTAT 2024

Figure 21 People at risk of poverty or social exclusion, average values for Italy, 2018-2022

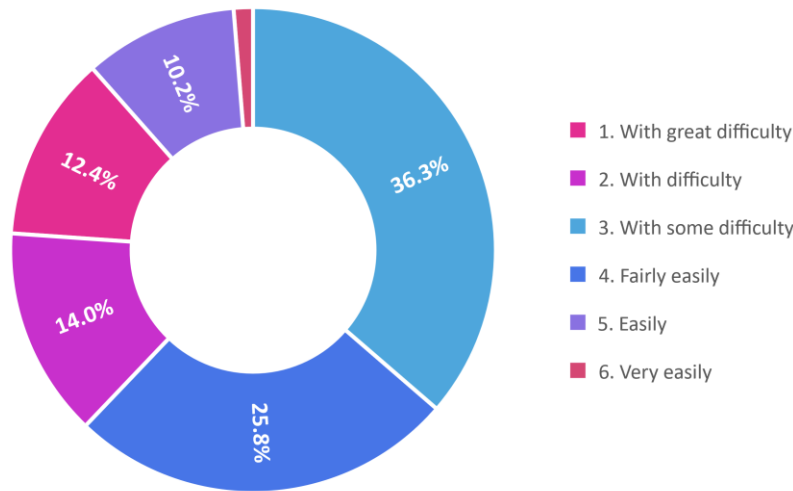


Source: ISTAT 2024

The economic situation for Portugal from 2018 to 2022 shows that over 34% of the population faces severe difficulties in covering their expenses, and 36% manage 'with some difficulty' (Figure 22). Around 24% of the population is at risk of poverty or social exclusion (Figure 23), out of which 15% are exclusively at risk of poverty, and 3% live with severe material and social deprivation. The regions facing the most significant difficulties are the Azores and Madeira.

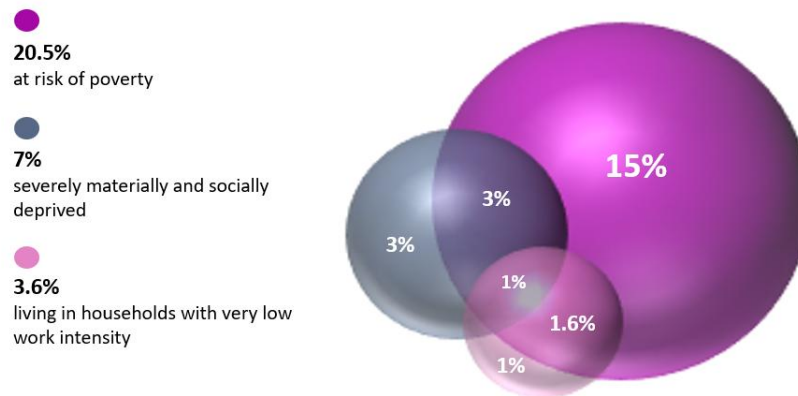
The research project is implemented in the framework of H.F.R.I call “Basic research Financing (Horizontal support of all Sciences)” under the National Recovery and Resilience Plan “Greece 2.0” funded by the European Union –NextGenerationEU (H.F.R.I. Project Number: 016638).

Figure 22 Ability to make ends meet, average values for Portugal 2018-2022



Source: INE 2024

Figure 23 People at risk of poverty or social exclusion, average values for Portugal, 2018-2022



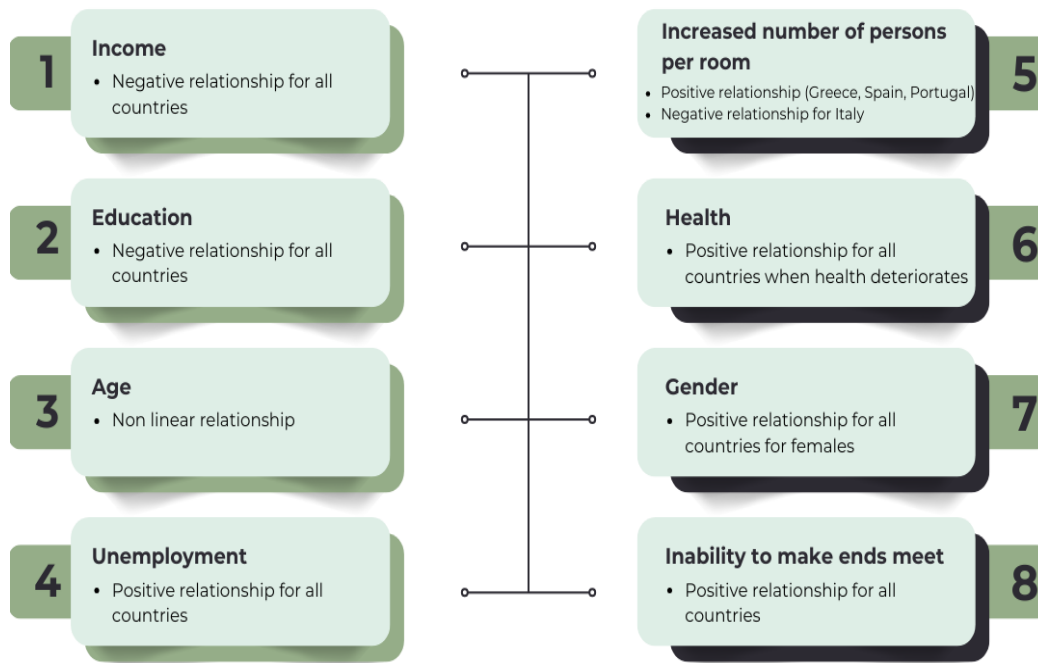
Source: INE 2024

Subsequently, D3.1 consists of an econometric analysis that examines the evolution of energy poverty indicators over time, isolating key demographic, macroeconomic, and environmental factors influencing energy poverty levels. Econometric models were estimated using Stata software, which was acquired through the project. The findings provide valuable insights for policy design, aiming to reduce inequalities and enhance regional energy security. The econometric analysis of D3.1 involves four econometric models, exploring the factors impacting the probabilities of i) being

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unable to keep the home adequately warm, ii) having arrears in utility bills, iii) living in a dwelling with leakages, damp, or rot, and iv) being at risk of poverty or social exclusion. The main findings of each model applied are briefly presented in Figures 24, 25, 26, and 27.

Figure 24 Model 1 (Inability to keep home warm) results



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Figure 25 Model 2 (Arrears on utility bills) results

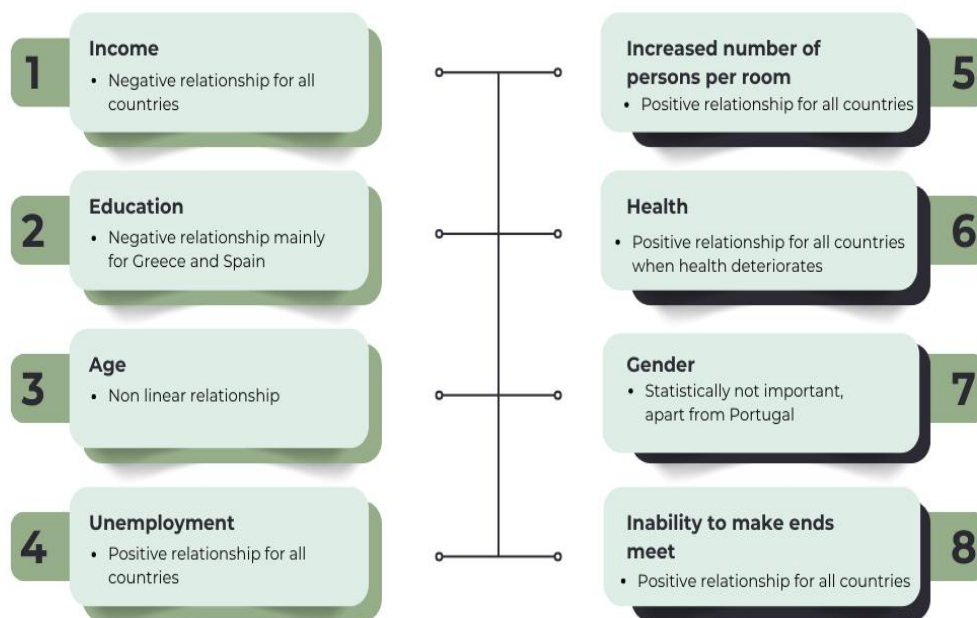
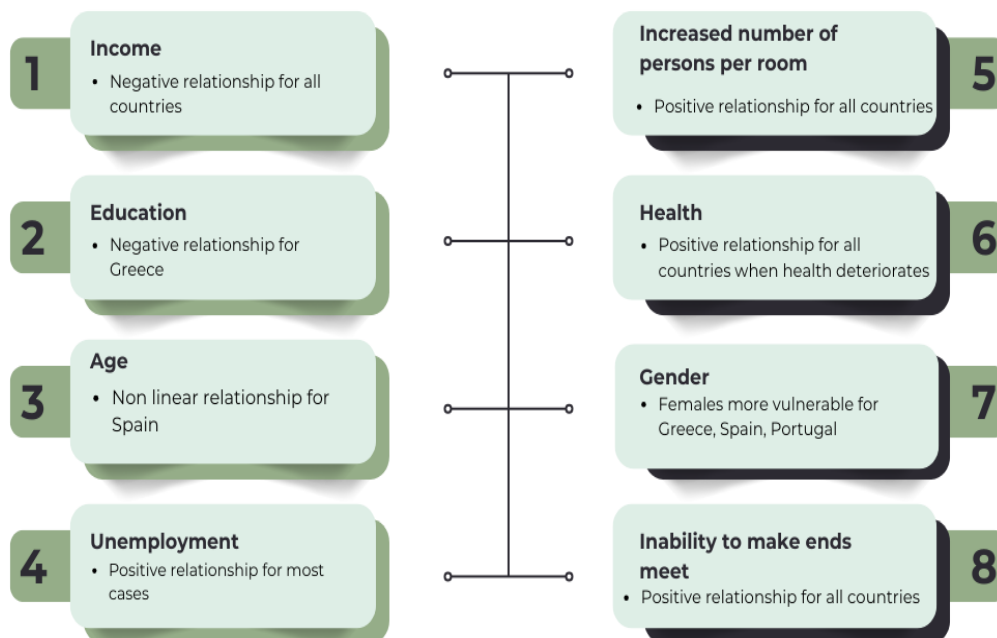
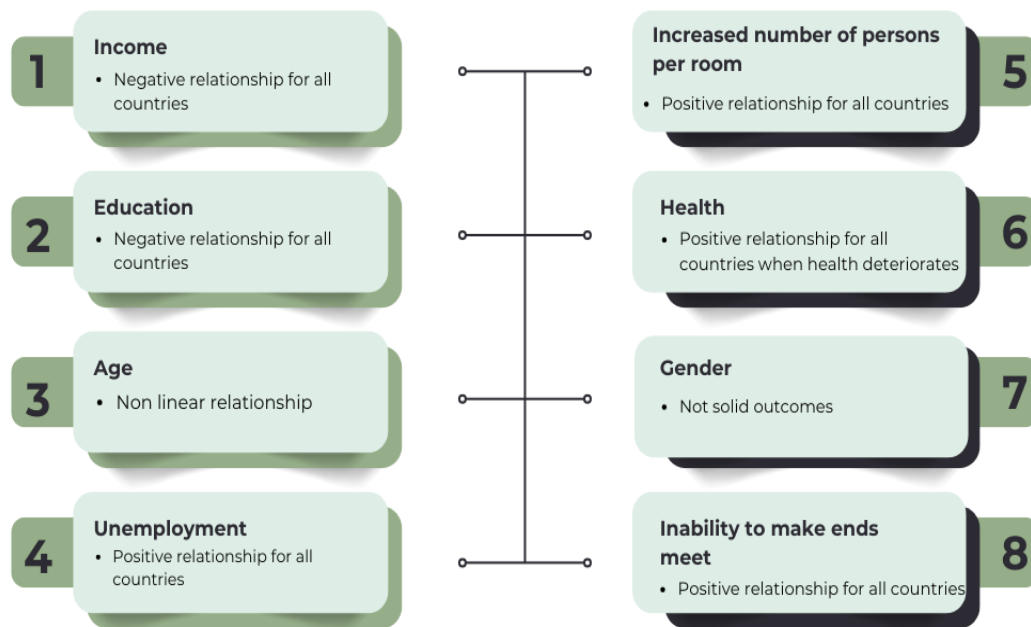


Figure 26 Model 3 (Dwelling with leakages, damp or rot) results



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Figure 27 Model 4 (At risk of poverty or social exclusion) results



Deliverable D3.2 is still in progress and will be completed by the end of the project. A key challenge is analyzing at the NUTS II level, particularly for Italy, where data availability is limited. To address this, the team is in contact with the Italian Statistical Office to resolve the issue and obtain the necessary data.

3.4. WP4: Final Documentation and Research Output

This Work Package (WP) aims to finalize and present the project's results through a comprehensive study and a series of completed and upcoming presentations. The focus is on showcasing the applications and impact of the project, contributing to knowledge dissemination, and informing policy and strategy development at the European and international levels. This Work Package (WP) aims to finalize and present the project's results through a concise yet comprehensive study and various dissemination activities, such as conference presentations and workshops. This WP also serves as a key dissemination tool, ensuring the visibility of the project's actions and outcomes. It includes the creation and continuous update of the project's website (<https://efpore.eu/>), which provides an overview of the project, its objectives, and dissemination activities (conference presentations, workshop participation, etc.) conducted by the research team. The website was developed well before this WP's official start, following communication with ELIDEK. This Work Package (WP)

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focuses on completing and presenting the project's results through two key deliverables:

D.4.1 – Overall Final Report and Scientific Output is a comprehensive scientific study summarizing the project's key findings and analyses.

D.4.2 – Policy Recommendation Report will include targeted policy recommendations based on the project's results.

These deliverables are scheduled for the final stage of the project, as they require the completion of all analyses and the availability of complete datasets. Their submission timeline aligns with the original project plan, ensuring all findings are effectively synthesized before final reporting.

3.5. WP5: Market Analysis and Dissemination Plan

The primary goal of WP5 is to ensure that key project results are published in high-impact scientific journals and presented at international conferences, maximizing the dissemination and impact of the research. These efforts lay the groundwork for effectively utilizing project findings supporting policy design to optimize the allocation of public resources to vulnerable households. Additionally, energy efficiency scenarios and the dynamic platform developed through the project can serve as valuable tools for the market, providing data that map the energy profile of residential buildings in each country.

The goal of WP5 is to ensure the publication of project findings in high-impact scientific journals and international conferences, maximizing the dissemination and utilization of EFPORE-SE results. These efforts support policy development for the fair allocation of resources to vulnerable households, aligning with the EU's green transition. Additionally, energy efficiency scenarios and the dynamic platform provide valuable market data.

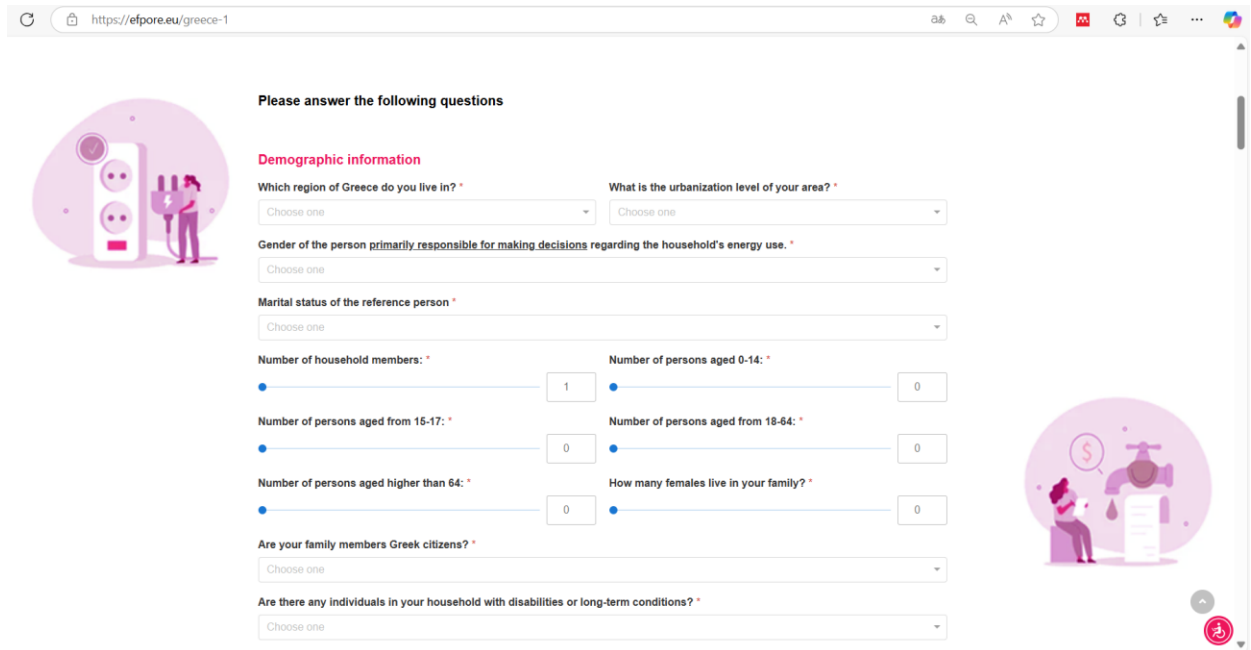
3.5.1. Current and Planned Dissemination Activities (website)

Team members have already presented preliminary findings at international conferences, with further publications and presentations planned—particularly from WP2 and WP3 deliverables in conferences and through the project website and social media. More specifically, as part of the project's dissemination efforts, the official website has been developed in five languages—Greek, English, Italian, Portuguese, and Spanish (<https://efpore.eu/>). The website provides:

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- ✓ A detailed project overview, including its objectives, progress, deliverables, and activities.
- ✓ A dynamic questionnaire (*published draft*), allowing households to anonymously input their data and receive an assessment of their risk level for energy poverty, along with recommendations to mitigate it. The final version of the project's dynamic questionnaire will soon be translated into all consortium languages.

Figure 28 Published draft version of the questionnaire



https://efpore.eu/greece-1

Please answer the following questions

Demographic information

Which region of Greece do you live in? *
Choose one

What is the urbanization level of your area? *
Choose one

Gender of the person primarily responsible for making decisions regarding the household's energy use. *
Choose one

Marital status of the reference person *
Choose one

Number of household members: *
1

Number of persons aged 0-14: *
0

Number of persons aged from 15-17: *
0

Number of persons aged from 18-64: *
0

Number of persons aged higher than 64: *
0

How many females live in your family? *
0

Are your family members Greek citizens? *
Choose one

Are there any individuals in your household with disabilities or long-term conditions? *
Choose one

Also, the project has established LinkedIn and Facebook accounts to promote research dissemination and engage the public. Additional social media accounts (Twitter/X) will be launched to enhance outreach and engagement.

3.5.2. Current and Planned Dissemination Activities (conferences presentations)

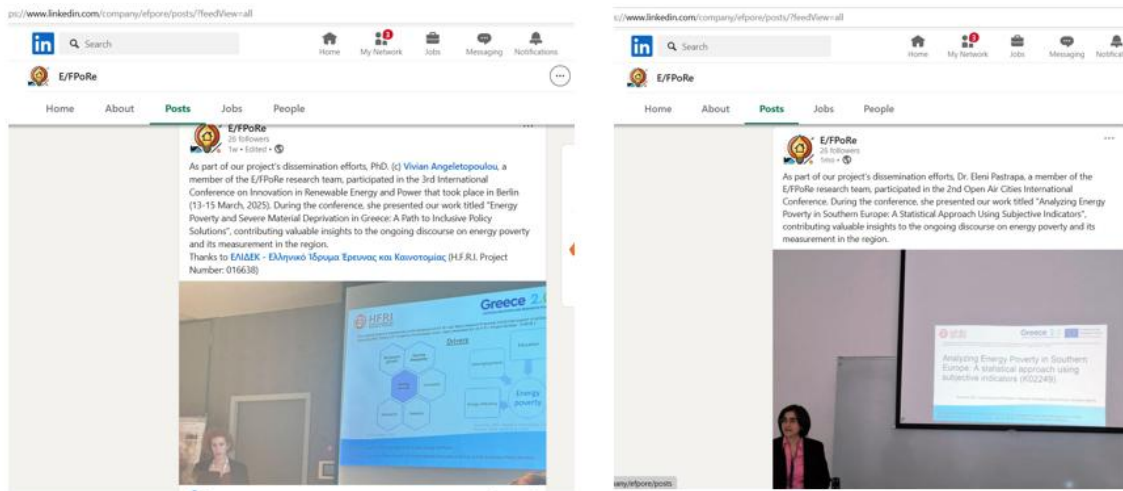
Moreover, team members have already presented project findings at **international scientific conferences**, including:

1. Angeletopoulou, P. (2024). Socioeconomic Influences on Household Energy Poverty in Greece: Insights from EU-SILC Data (part of D.2.3). *International Annual Conference of Business, Economics, and Politics in the Middle East*, November 9, British University in Egypt.

The research project is implemented in the framework of H.F.R.I call “Basic research Financing (Horizontal support of all Sciences)” under the National Recovery and Resilience Plan “Greece 2.0” funded by the European Union –NextGenerationEU (H.F.R.I. Project Number: 016638).

2. Pastrapa, E. (2025). Analyzing Energy Poverty in Southern Europe: A Descriptive Analysis Using Subjective Indicators (part of D.3.1). *Open Air Cities Conference, February 16-18, Athens.*
3. Angeletopoulou, P. (2025). Energy Poverty and Severe Material Deprivation in Greece: A Path to Inclusive Policy Solutions (part of D.3.1). *3rd International Conference on Innovation in Renewable Energy and Power, March 13-15, Berlin.*

Figure 29 Team members presenting project findings at international scientific conferences.



At the same time, the team has already scheduled **additional conference presentations**, particularly at the International Workshop on Applied Economics and Sustainability (Athens, April 11-12, 2025):

1. *Measuring Energy Poverty: Insights from the Portuguese Case Study* (Palma, P.) – Based on **D.3.1**
2. *Measuring Energy Poverty: Insights from the Italian Case Study* (Di Foggia, G.) – Based on **D.3.1**
3. *Measuring Energy Poverty: Insights from the Spanish Case Study* (Arauzo-Carod, J.M.) – Based on **D.3.1**
4. *Employing Machine Learning to Uncover Trends in Organizational Efforts Against Energy Poverty* (Tsagarakis, K.) – Based on **D.3.2**
5. *Addressing Energy Poverty: Insights from Policy, Research, and Local Action* (Gouveia, J.) – Based on **D.3.2**

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Finally, a conference paper (proceedings) had been already publishes, while the first scientific article based on D.3.1 is nearing completion and will soon be submitted for peer review in an open-access journal.

4. Current Impact and Future Goals

At this stage, as research articles are still under development, the impact of the project's results is primarily reflected through initial dissemination activities, including:

- ✓ Presentations by research team members at international scientific conferences.
- ✓ Project findings and updates will be published on the official website.
- ✓ Upcoming presentations at the International Workshop on Applied Economics and Sustainability will further enhance the public dissemination of project results.

Concerning the project's long-term impact, it aims to contribute to the broader discussion on energy poverty through more scientific publications in peer-reviewed journals and dissemination of findings in international conferences and research networks. It also aims to strengthen evidence-based policymaking, ensuring that research outcomes are effectively utilized to benefit vulnerable households by informing better-targeted policies and resource allocation strategies.

5. Next Steps and Future Actions

The next steps and future actions are described as follows:

- ✓ Finalization of empirical analysis and econometric modeling (WP3).
- ✓ Drafting policy recommendation report (WP4).
- ✓ Continued dissemination through conferences and publications (WP5).

This Mid-term Report will provide a comprehensive summary of the progress achieved thus far and set the foundation for the final phase of the EFPORE-SE project. The team remains committed to achieving the project's objectives and ensuring meaningful contributions to energy poverty research and policy development.