

Energy poverty in the European Union, specifically in Germany, Greece, Italy, and The Netherlands

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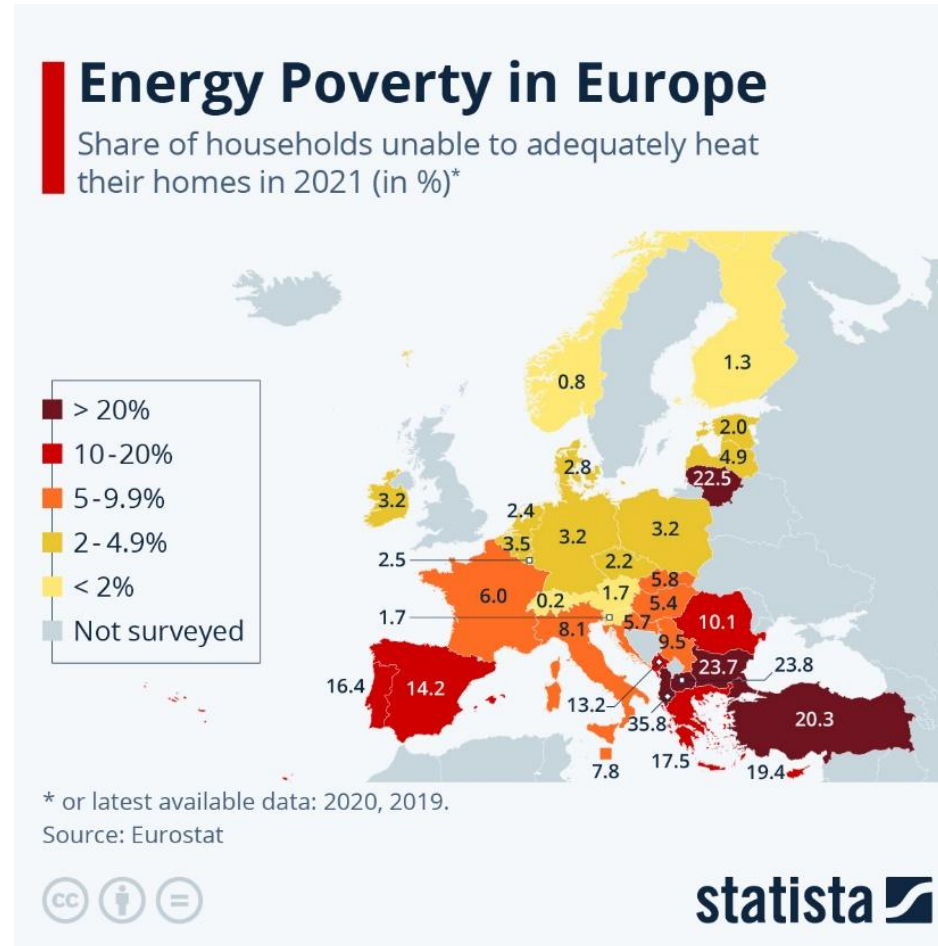
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Content

- Overview of energy poverty in the EU
- Energy poverty in Italy

- Energy poverty is the inability to afford adequate energy services, impacting heating, cooling, lighting, and access to energy-dependent services.
- Energy poverty significantly affects quality of life, health, and well-being, making it a major concern for policymakers and social services.



The main **causes** of energy poverty are:

- **Economic Factors:** Energy poverty is often driven by low income and high energy prices.
- **Energy Efficiency:** Many affected households live in poorly insulated homes and use inefficient appliances.
- **Energy Market:** Volatile energy prices and market deregulation also contribute to energy poverty.



The main **consequences** of energy poverty are classified in different groups:

Health

- Increased respiratory and cardiovascular diseases due to inadequate heating and poor indoor air quality.
- Mental health issues such as anxiety and depression, exacerbated by stress and living in cold conditions.
- Higher susceptibility to illnesses, particularly in vulnerable populations like the elderly and children.

Social

- Social exclusion resulting from inability to afford energy, leading to reduced participation in community and social activities.
- Lower quality of life due to discomfort and lack of access to basic energy services.
- Impact on children's education as cold and poorly lit homes are not conducive to studying.

Economic

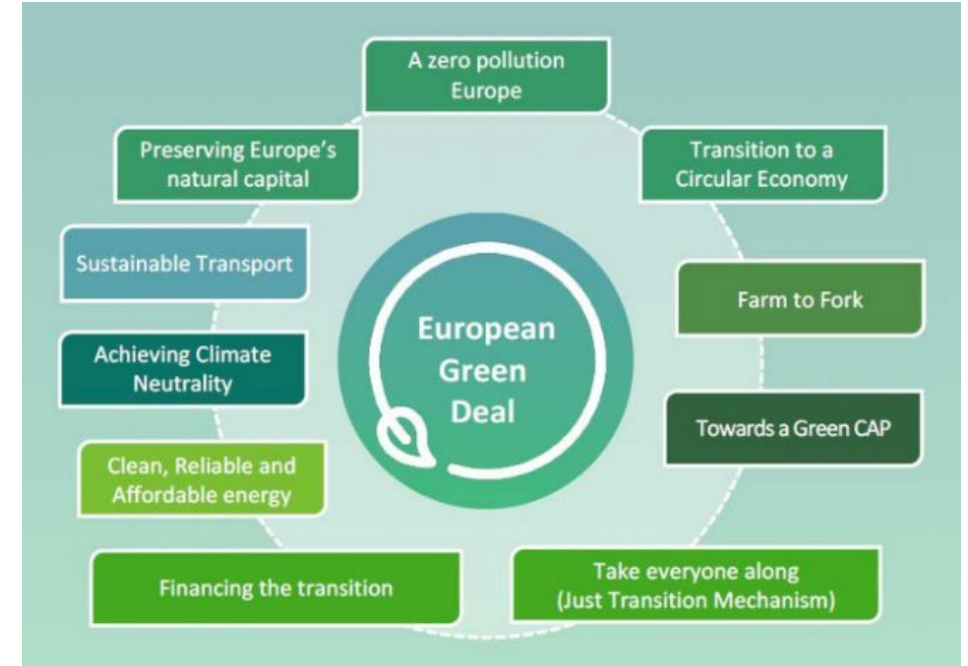
- Higher medical costs for individuals and healthcare systems due to health problems associated with energy poverty.
- Reduced productivity and absenteeism from work caused by health-related issues.
- Increased financial strain on households, leading to a cycle of poverty and debt.

Visuals

- Chart showing the correlation between energy poverty and health issues.
- Image of a family using blankets and other means to stay warm in a poorly heated home.
- Infographic illustrating the social and economic impacts of energy poverty.

EU strategies to tackle energy poverty are:

- **European Green Deal:** This ambitious plan aims to make Europe the first climate-neutral continent by 2050. It includes measures to reduce carbon emissions, improve energy efficiency, and promote sustainable energy sources.
- **Renovation Wave:** This initiative focuses on increasing the rate and depth of building renovations across Europe.
- **Energy Efficiency Directive:** Part of the Clean Energy for All Europeans package, this directive sets binding targets for improving energy efficiency across the EU.
- **Clean Energy for All Europeans Package:** This comprehensive set of policies aims to make energy systems more integrated, efficient, and consumer-oriented.



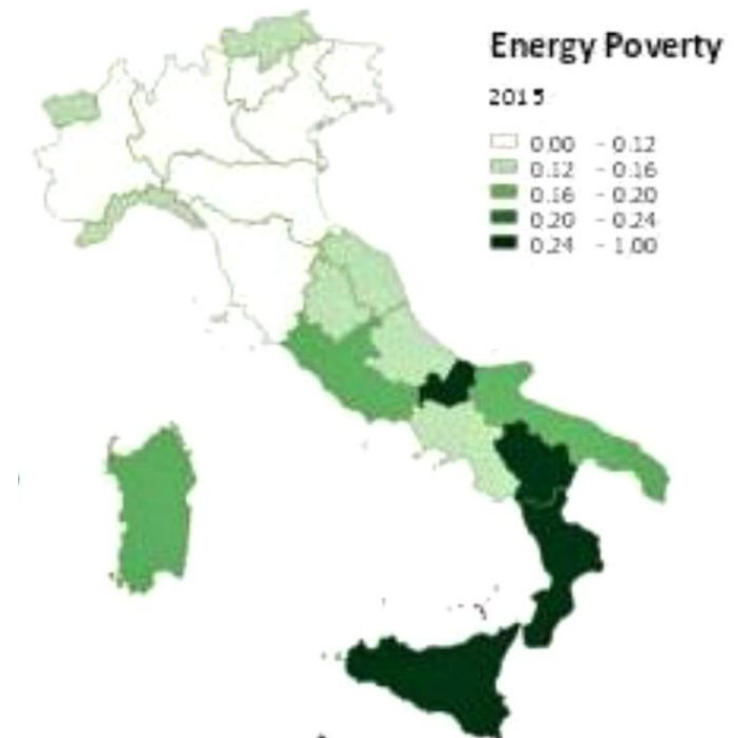
To effectively address energy poverty, we must focus on expanding access to renewable energy, enhancing energy efficiency, and implementing targeted policy measures.

- **Renewable Energy and stable energy provision**
 - Promoting access to affordable renewable energy sources.
 - Promoting the development of energy storage systems.
- **Improving Energy Efficiency**
 - Retrofitting buildings and promoting efficient appliances.
- **Policy Recommendations**
 - Strengthening social safety nets and targeted subsidies.
 - Enhancing cross-sector collaboration.



ENERGY POVERTY IN ITALY

- Energy poverty in Italy is a significant issue affecting a notable portion of the population.
- As of recent estimates, about 8-10% of Italian households struggle with energy poverty, meaning they cannot afford adequate energy services for comfort and health.
- The problem is not uniform across the country. Southern Italy faces higher rates of energy poverty compared to the northern regions. This disparity is influenced by regional economic differences, varying levels of infrastructure, and energy costs.



Energy poverty in Italy manifests in several critical ways:

- **Health Risks:** Households facing energy poverty often cannot afford sufficient heating or cooling, which can lead to serious health problems such as respiratory infections or cardiovascular diseases.
- **Economic Burden:** High energy bills mean less money available for other essential needs like food, education, or healthcare.
- **Quality of Life:** The inability to maintain a comfortable living environment impacts overall well-being and daily life.



To better understand the extent of energy poverty, it's essential to look at real-life examples. The following images depict various homes and living conditions affected by energy poverty across Italy.



The Italian government has introduced several measures to combat energy poverty:

Support Programs: Initiatives like subsidies and social tariffs help low-income households manage their energy costs more effectively.

Energy Efficiency Measures: Various programs offer financial assistance for improving home energy efficiency, such as installing better insulation or energy-efficient appliances.

Future Plans: The government is working on additional policies to further address energy poverty, aiming to improve overall living conditions and reduce disparities.





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Thanks for your attention!

Q&As?

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Energy poverty

in Germany

Content

1. Introduction
2. Energy Poverty - Statistics
3. Strategies to address energy poverty in Germany
4. Summary

Introduction

Energy poverty definition and indicators

Definition



- **Energy poverty** refers to households being unable to pay their heating and electricity bills, adequately heat or cool their homes, or avoid limiting electricity use for basic needs (such as cooking, washing, or accessing media).
- Germany lacks the quality data necessary to take adequate measures to reduce energy poverty.
- Definitions of energy poverty vary across countries:
--> **Germany does not have an official definition.**

Sources: 1, 2

Present situation

Main causes:

- Energy market dynamics,
- Inadequate policy measures,
- High energy costs,
- Energy inefficient housing and appliances,
- Low household incomes.

Between 2.7 and 6.5 million households* in Germany are affected by energy poverty.

Approximately 1 in 10 households cannot afford sufficient heating during winter months.

*Average German household size =2



Sources: 1, 2, 3, 8, 9, 10

Present situation

- Energy poverty increasingly also affects the **middle class**
 - **In 2021, energy poverty affected less than 15%** but
 - Due to the energy crisis in Europe, energy poverty affected about **25% of all citizens (May 2022)**.
 - **“Lower middle class”** (net household income between 60 and 80% of the median income), **was twice as likely to become “energy poor”** than they were one year earlier.
 - Between **March 2022 and June 2023 the number of energy-poor households had jumped to 43%**.
-
- **Energy costs have fallen significantly since the peak periods** but wholesale prices for gas and electricity remain above the long-term average.
 - **(2024) Some 10% of 30 million households** in Germany still reliant on fossil fuels for heating are unable to adequately warm their homes or are "heavily burdened" by rising energy costs.
 - More than **80% of these** "vulnerable households" are **multi-family buildings** and almost all of them are **renters** (in Germany 58% households rent their homes)

Energy poverty indicators

• 10% Threshold

Households are considered energy poor if energy expenses exceed 10% of their income.

- 2x Median Energy Costs
- 2x Median Share
- Disconnection Rates
- Minimum Income Standard
- Low-Income High-Cost Standard



- Households spending double the median energy cost
- Energy costs make up twice the median share of household income.

Example: If the median share of income spent on energy is 5%, a household spending 10% is energy poor. It is calculated by dividing the median energy cost by the median household income.

- The proportion of households experiencing electricity or gas cut-offs due to unpaid bills. *Example: In 2021, approximately 230,000 households in Germany faced electricity disconnections.*
- Households fall below a basic income level after accounting for energy costs.
- Households with low income and disproportionately high energy costs.

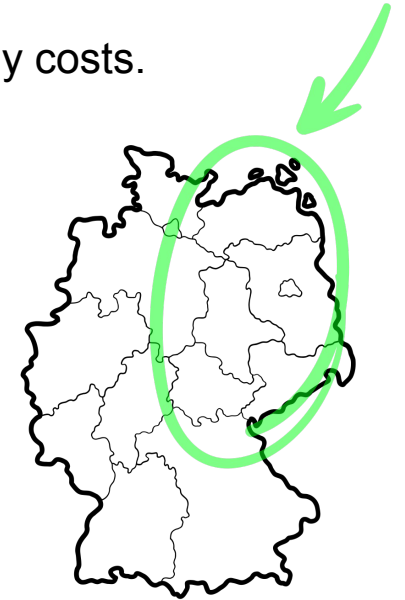
Most affected

Affected groups

- **Single-Parent Households:** More susceptible due to single income and higher per capita energy costs.
- **Pensioners:** Fixed incomes make it challenging to cope with rising energy prices.
- **Unemployed Individuals:** Limited financial resources increase vulnerability.
- **Migrant Families:** Often reside in lower-quality housing with poor energy efficiency.

Urban vs. Rural

- **Urban Areas** - Higher energy costs but better access to assistance programs.
- **Rural Areas** - Older housing stock with less efficient heating systems.



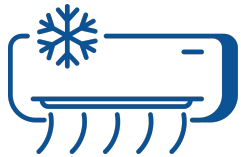
Regional Hotspots

- **Eastern Germany** exhibits higher rates of energy poverty, influenced by income disparities and less energy-efficient housing.

Energy Poverty - Statistics

Measures: climate, energy consumption, living conditions

Climate



CDDs measure how much (in degrees) and for how long outdoor temperatures exceed 21/24/26 °C indicating the need for cooling.

Cooling degree days (CDDs)



- Recent data indicates an increase in CDD in Germany, suggesting a **growing demand for cooling due to warmer summers.**
- **In the EU**, the need to cool a given building in 2022 was almost **four times higher** compared with 1979.



HDDs measure how much (in degrees) and for how long outdoor temperatures are below 15/18°C, indicating the need for heating.

Heating degree days (HDDs)

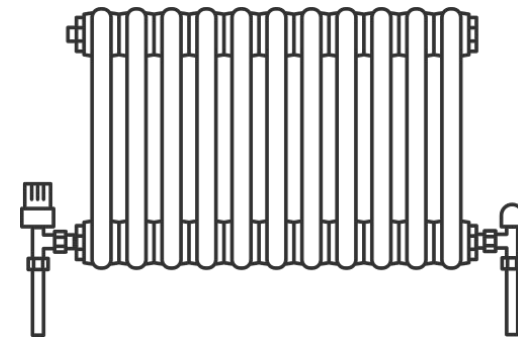


- Between 2000 and 2020, Germany experienced a decline in HDD, reflecting **milder winters**. This trend suggests a **reduced demand for heating over the years.**
- **In the EU**, the needs for heating a given building **decreased by 19 %** between 1979 and 2022.

Living conditions

Population living in dwellings:

- equipped with air conditioning: **1.5%** (2007).
- with presence of leak, damp and rot: **16%** (2023).
- considered as too dark: **7.1%** (2023).
- equipped with heating facilities: **99.7%** (2012).
- comfortably cool in summer time: **87%** (2012).
- comfortably warm in winter time: **97%** (2012).



→ **But in 2023, 8.2% was unable to keep home adequately warm.**

Socio-economic aspects



- Housing cost overburden rate: **13% (2023)**.
- Households with arrears on utility bills: **5.4% (2023)**.
- Population at risk of poverty or social exclusion: **21.3% (2023)**.
- Final consumption expenditure of households: **22 000€/capita (2022)**.
- Disposable annual household income: **23 000 PPS (Purchasing Power Standards) per inhabitant (2022)**

- The percentage of the population spending more than 40% of their disposable income on housing costs
- The inability to pay utility bills on time
- The share of people facing poverty, probability of being marginalized due to e.g., poverty, lack of access to education, employment, or social services.
- The total amount households spend on goods and services, reflecting living standards and economic well-being
- Money left for spending and saving after mandatory deductions e.g., income tax, social security contributions, adjusted for differences in price levels across countries

Energy, mobility and health



Energy prices:

- Household electricity: **0.40 €/kWh** (2024).
- Household natural gas: **0.12 €/kWh** (2024).



Mobility:

- Approximately **1.8 million** people in Germany were classified as transport poor, with an additional **12.9 million at risk**.(2019).



Health:

- Excess winter mortality: **6.9%** (2014).
- Population reporting asthma: **8%** (2019).



Strategies to address energy poverty in Germany

Drivers, policies, challenges and barriers

Strategies to Address Energy Poverty



- **Social Code Volumes II and XII: Subsistence Benefits***

These benefits include **coverage for heating and necessary household energy costs** for eligible low-income households.

- **Provisions to Prevent Energy Disconnections**

Legal Framework: Energy suppliers must notify customers at least **four weeks in advance** before any disconnection. Disconnections are prohibited if: The customer arranges partial payments. Vulnerable individuals would face undue hardship.

Government Interventions: Financial aid programs can assist in paying overdue energy bills.

- **Education and Awareness Campaigns**

Programs for Energy Savings, e.g. community advice on energy-saving techniques and cost reduction - Caritas' Energy Saving Check (Stromspar-Check).

* **Sozialgesetzbuch II (SGB II) - "Grundsicherung für Arbeitsuchende"** (Basic Income Support for Job Seekers) includes benefits like **Arbeitslosengeld II (ALG II)** or "Hartz IV." It provides financial support for people who are unemployed or earning very low income. **Sozialgesetzbuch XII (SGB XII):** This is called **"Sozialhilfe"** (Social Assistance) and covers subsistence benefits for individuals who cannot support themselves financially, including the elderly and those with permanent disabilities.

Strategies to Address Energy Poverty



Climate Protection Act (Klimaschutzgesetz)

Targets: Achieve net-zero greenhouse gas emissions by 2045 and **reduce energy costs for households by transitioning to renewable energy sources.**

Measures: Promoting energy-efficient housing renovations through subsidies. Expanding renewable energy infrastructure to stabilize energy prices.

Energy Efficiency Act (Energieeffizienz-Gesetz)

Supports the implementation of the revised **Energy Efficiency Directive**, setting targets for primary and final energy consumption by 2030.

- **Energy Efficiency Improvements**

Federal programs support insulation upgrades and energy-efficient heating systems, e.g.

KfW grants for retrofitting old buildings.

- **Renewable Energy Expansion**

Incentives for Solar and Wind Energy, e.g. subsidies for installing rooftop solar panels.

Sources: 18, 19

Examples

Berlin Relief Package:



Berlin specific measures to mitigate the impact of rising energy costs on households:

- **Moratorium on Terminations for Tenants of the Municipal Housing Companies** - Temporary protection from evictions for tenants unable to pay rent due to energy-related financial difficulties.
- **Hardship Fund for Energy Debts** - Financial assistance for individuals struggling to pay overdue energy bills.
- **Heating Cost Subsidy for Oil, Pellet, Coal and Liquid Gas Heating Systems** - Targeted support to offset rising heating costs for households using non-standard systems.
- **Network of Warmth** - Energy advice and creation of public spaces where residents can stay warm during the winter months.
- **29-Euro Ticket & Social Ticket** - Affordable public transport options to ease financial strain on low-income residents.

Nationwide Relief Packages:



- **Electricity and Gas Price Brakes** - Caps on electricity and gas prices to protect households from volatile energy markets.
- **Housing Benefit** - Expanded financial support to help eligible households cover housing and energy expenses.

Examples



Programs to Accelerate the Expansion of Renewable Energies and Energy Efficiency:

- **Effiziente GebäudePlus (Efficient BuildingsPlus)** - grants for energy-efficient building upgrades and renewable energy installations in residential properties.
- **SolarPLUS** - funding for the installation of photovoltaic systems to increase solar energy generation, e.g. Balcony Power Plants: Provides up to €500 in subsidies for tenants to install plug-in solar devices on their balconies.
- **Berlin Solar Law** - Since 2023, photovoltaic systems covering at least 30% of roof surfaces are mandatory for new buildings and major roof conversions.
- **Consulting services:**
 - **Coordination Office for Energy Efficiency and Climate Protection in Business (KEK):** free, consulting to help businesses identify and implement energy efficiency and climate protection measures.
 - **Energy Consulting for Efficiency and Optimization (ENEO):** free advice for property owners, a grant of up to €2,000 for energy reports, and assistance in planning energy-efficient refurbishments.
 - **Energy Consulting for Residential Buildings:** subsidized consulting (up to 80% of costs) for property owners and tenants to create renovation roadmaps for energy-efficient upgrades.

Summary

Summary and resources

Summary



- **Germany does not have a legal definition of energy poverty**, which limits the development of targeted policies and interventions.
- The **European energy crisis has led to a significant increase in the number of German households experiencing energy poverty.**
- Increasing vulnerability among middle-income households - **energy poverty is no longer confined to low-income households.**
- Different measures were **implemented, some only in recent years** due to the energy crisis, some only temporary.

Sources



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Thank You

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Energy Poverty in Greece

Alice Corovessi, Managing Director INZEB
Country Coordinator for Greece for the EU Climate Pact



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- ▶ **Energy Poverty in Greece (INZEB Data)**
- ▶ **Energy Poverty in Greece – National Energy & Climate Plan**



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Energy Poverty in Greece (Statistics 2020-2021)

In **Greece**, in **2020**,
17.1% of households were
unable to keep their homes
adequately warm.

This figure follows:

- **Bulgaria:** 27.5%
- **Lithuania:** 23.1%
- **Cyprus:** 20.9%
- **Portugal:** 17.5%.

The EU average stood at **8.2%**,
placing Greece 5th in energy
poverty among EU member
states.

According to data from ELSTAT (Hellenic Statistical Authority),
based on **three key indicators of energy poverty in Greece** for
2020:

- 17.1% of households (39.1% of poor households) reported
being unable to afford adequate heating.
- 28.2% of households (50.1% of poor households) experienced
difficulty in paying utility bills on time, including electricity,
water, and natural gas.
- 12.5% of households (20.3% of poor households) lived in
homes with leaking roofs, damp walls, damaged floors, or
rotting window frames.

In comparison, the corresponding
EU averages (EU27) are:

- 8.2% for heating inability,
- 6.3% for utility bill payment
difficulties,
- 14% for poor housing conditions.

Reference: Energy Poverty Advisory Hub

Energy Poverty in Greece (INZEB Data)

TA2022.27: Technical Assistance to Ampelokipi-Menemeni Municipality

TA2022.44: Technical Assistance to 4 Islands – Corfu, Lefkada, Kalymnos, Mytilene

TA2022.48: Technical Assistance to 9 Islands – Mykonos, Skiathos, Sifnos, Psara, Ikaria, Lemnos, Kasos, Astypalea, Antiparos

TA2023.20: Technical Assistance to Eastern Macedonia & Thrace – Drama, Kavala, Nestos, Paggaio

TA2023.94: Technical Assistance to Western Macedonia – Grevena, Eordaia







Reference: INZEB







DIAGNOSIS RESULTS AT A GLANCE

Municipality of
Ampelokipi – Menemeni

North Greece
Central Macedonia Region

651 P2P Questionnaires
Summer 2022

	55.2% of the houses were built before 1979 (no insulation regulation at that time) 22.6% were built between 1980 and 1990 (limited use of insulation despite the regulation)
	81.4% live in apartments in a block of flats 88.1% are adjoining buildings
	74.4% live in houses with a total surface area of 50-99m ²
	69.7% are privately owned and used only as housing buildings
	21.7% of the respondents don't know what an Energy Performance Certificate (EPC) is 69.7% states that their house doesn't have or don't know the existence of EPC
	A+ and A EPC categories correspond only to 2%

	Inability to keep a stable indoor temperature	<ul style="list-style-type: none"> 41.2% don't heat the entire house 24.3% don't heat the entire house while the inside temperature was 15-18 °C 	
	Inability to pay the energy bills on time	<ul style="list-style-type: none"> 36.1% don't pay energy bills on time 65% stated that the annual income cannot cover the needs and obligations 46.7% are beneficiaries of the Social Tariff 	
	Inadequate living conditions	<ul style="list-style-type: none"> 35.8% have mould problems in the house 32.9% complain about air pollution 	













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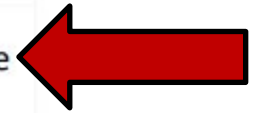
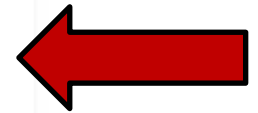
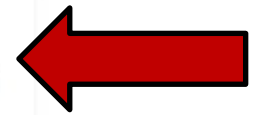


Corfu Island

Ionian Sea

454 Online Questionnaires
Autumn 2023

	31.1% of the houses were built before 1979 (no insulation regulation at that time) 31.9% were constructed between 1980 and 1990 (limited use of insulation despite the regulation)	
	5.9% live in apartments in a block of flats 50.2% are nonadjacent buildings	
	53.5% live in houses with a total surface area of 50-99m ²	
	67.2% are privately owned and used only as housing buildings	
	4.6% of the respondents don't know what an Energy Performance Certificate (EPC) is 65.9% states that their house doesn't have or don't know the existence of EPC	
	A+ and A EPC categories correspond to 0.0%	
	56.17% said that some appliances were burnt due to power failure/voltage fluctuation	
	Inability to keep a stable indoor temperature	<ul style="list-style-type: none"> ▪ 53.3% don't heat the entire house ▪ 20.5% don't heat the entire house while the inside temperature was 15-18 °C
	Inability to pay the energy bills on time	<ul style="list-style-type: none"> ▪ 13.2% don't pay energy bills on time ▪ 66.3% stated that the annual income cannot cover the needs and obligations ▪ 11.2% are beneficiaries of the Social Tariff
	Inadequate living conditions	<ul style="list-style-type: none"> ▪ 38.5% have mould problems in the house



Reference: INZEB













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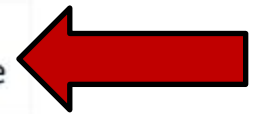
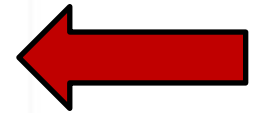
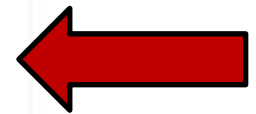


Kalymnos Island

Aegean Sea

147 Online Questionnaires
Autumn 2023

	29.9% of the houses were built before 1979 (no insulation regulation at that time) 29.9% were constructed between 1980 and 1990 (limited use of insulation despite the regulation)	
	55.1% live in single-family houses 98.6% are nonadjacent buildings	
	48.3% live in houses with a total surface area of 50-99m ²	
	63.3% are privately owned residencies	
	2.7% of the respondents don't know what an Energy Performance Certificate (EPC) is 55.1% states that their house doesn't have or don't know the existence of EPC	
	A+ and A EPC categories correspond to 0%	
	98% said that some appliances were burnt due to power failure/voltage fluctuation	
	Inability to keep a stable indoor temperature	<ul style="list-style-type: none"> ▪ 27.2% don't heat the entire house ▪ 12.2% don't heat the entire house while the inside temperature was 15-18 °C
	Inability to pay the energy bills on time	<ul style="list-style-type: none"> ▪ 21.1% don't pay energy bills on time ▪ 57.8% stated that the annual income cannot cover the needs and obligations ▪ 22.4% are beneficiaries of the Social Tariff
	Inadequate living conditions	<ul style="list-style-type: none"> ▪ 33.3% have mould problems in the house












Reference: INZEB

Drama Municipality

North Greece

405 P2P Questionnaires
February 2024

	31.1% of the houses were built before 1979 (no insulation regulation at that time) 27.4% were constructed between 1980 and 1990 (limited use of insulation despite the regulation)	
	32.6% live in single-family houses 45.7% are nonadjacent buildings	
	50.9% live in houses with a total surface area of 50-99m ²	
	63.0% are privately owned residencies	
	16.5% of the respondents don't know what an Energy Performance Certificate (EPC) is 63.7% states that their house doesn't have or don't know the existence of EPC	
	A+ and A EPC categories correspond only to 7.9%	
	Inability to keep a stable indoor temperature	<ul style="list-style-type: none"> ▪ 41.9% don't heat the entire house ▪ 9.1% don't heat the entire house while the inside temperature was 15-18 °C
	Inability to pay the energy bills on time	<ul style="list-style-type: none"> ▪ 2.5% don't pay energy bills on time ▪ 31.6% stated that the annual income cannot cover the needs and obligations ▪ 26.4% are beneficiaries of the Social Tariff
	Inadequate living conditions	<ul style="list-style-type: none"> ▪ 26.2% have mould problems in the house



Energy Poverty in Greece – National Energy & Climate Plan

ENERGY POVERTY AS A PRIORITY IN GREECE

Energy poverty became a significant issue after 2011 due to the economic recession. Combatting energy poverty is a priority under Greece's National Energy and Climate Plan (NECP) with a goal to:

- Reduce energy poverty by 50% by 2025.
- Achieve a 75% reduction by 2030, compared to 2016 levels.

KEY INDICATOR FOR MEASUREMENT

The I&Ileq Index is used to measure and monitor energy poverty levels.

- **Condition I:** Annual energy cost must be lower than 80% of the minimum required energy consumption cost.
- **Condition II:** Annual net household income must be lower than 60% of the median equivalent income (as defined by OECD scales).

The number of **households affected by energy poverty in 2021 was 513,000**, based on the performance of the I&Ileq Index.

The number of affected households in 2016 was 573,000. A decrease of **10.47%**

In **2021, the I&Ileq Index indicated that 12.4% of households were affected by energy poverty, up from 12% in 2020**. Despite the slight increase, there was an overall 10% reduction in energy poverty levels between 2016 (13.8%) and 2021.

Reference: NECP 2024

Energy Poverty in Greece – National Energy & Climate Plan

LONG-TERM STRATEGY REQUIRED

- The focus is on permanent, long-term solutions rather than short-term measures.
- Immediate support for the most vulnerable households is also emphasised to ensure access to basic energy services.

ACTION PLAN FOR ENERGY POVERTY

- A **National Action Plan** to tackle energy poverty was drafted in **September 2021**.
- It includes specific **quantitative criteria** to define households affected by energy poverty.
- Emphasis is placed on targeted policy measures using **existing and new funding programmes** and market mechanisms.

MONITORING AND EVALUATION MECHANISM

- A monitoring and control mechanism has been established to evaluate the implementation of energy poverty policies.
- Annual progress reports assess: Changes in energy poverty levels.
- Policy adjustments needed to address significant deviations.
- Collaboration with stakeholders for effective policy implementation.

TOP-DOWN AND BOTTOM-UP MONITORING

Progress is tracked through:

- **Top-down monitoring** using the Energy Poverty Observatory.
- **Bottom-up reporting** to ensure a comprehensive understanding of the phenomenon.

Reference: NECP 2024



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Thank you for your attention!

Q&As?

Alice Corovessi, Managing Director INZEB
Country Coordinator for Greece for the EU Climate Pact



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Energy Poverty in the Netherlands

Causes, Impacts, and Long-Term Solutions

Presented by: ECREC



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Introduction



- Energy poverty is not just about energy; it's about poverty itself.



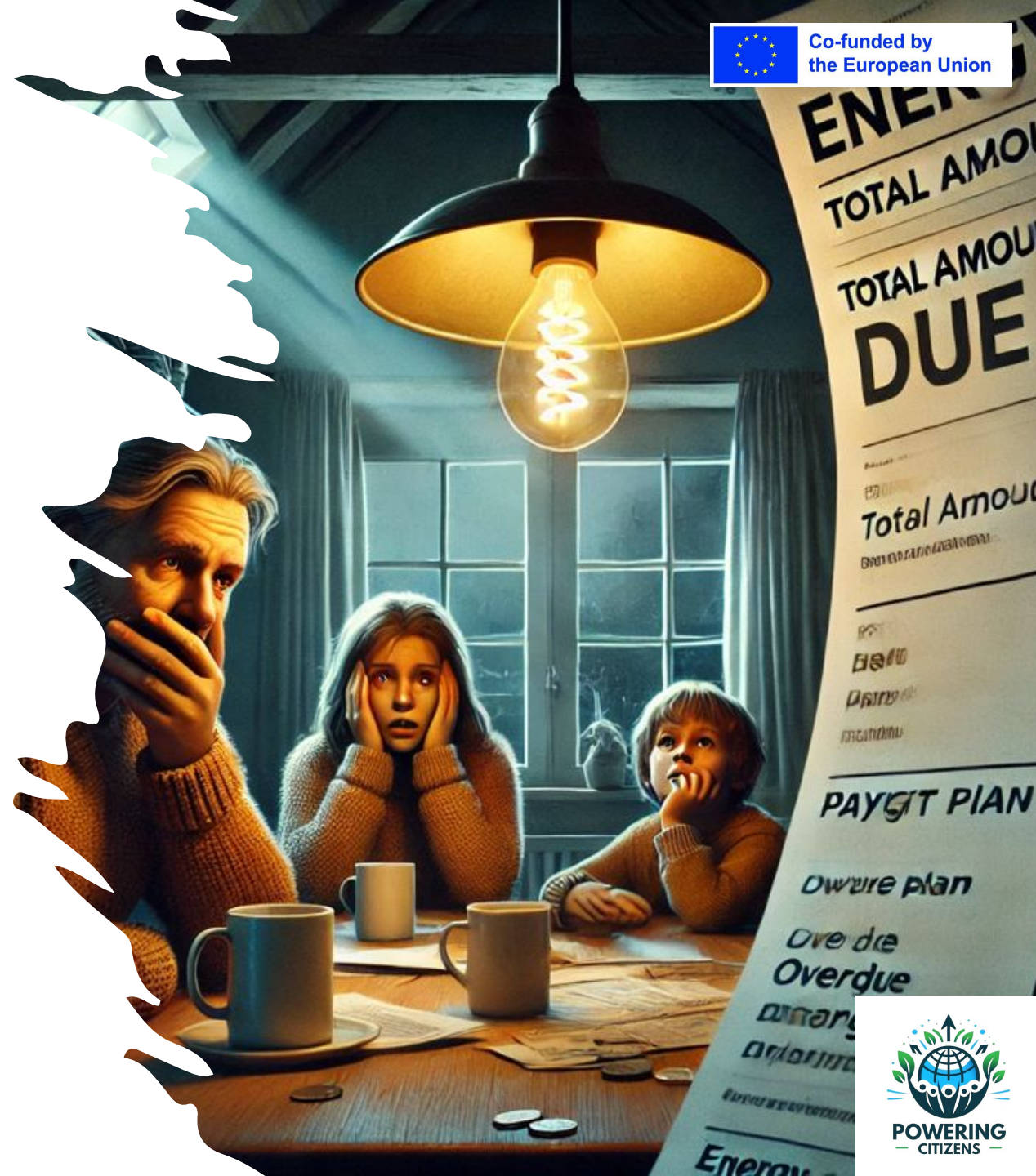
- This presentation explores the causes, impacts, and potential solutions to energy poverty in the Netherlands.



- Focus: Sustainable and community-driven approaches.

Understanding Energy Poverty

- Affordability: High energy costs force households to make tough choices.
- Housing Quality: Poor insulation and inefficient systems drive energy costs higher.
- Access to Renewable Energy: Limited financial capacity keeps low-income families reliant on fossil fuels.



The Extent of Energy Poverty

- 7% of Dutch households are energy poor.
- Rural areas like Groningen and Friesland have rates as high as 15%.
- 75% of energy-poor households are renters in social housing.
- Homes built before 1980 lack insulation, increasing energy costs by up to 30%.

Regional and Social Disparities

- **Geographic Variations:**

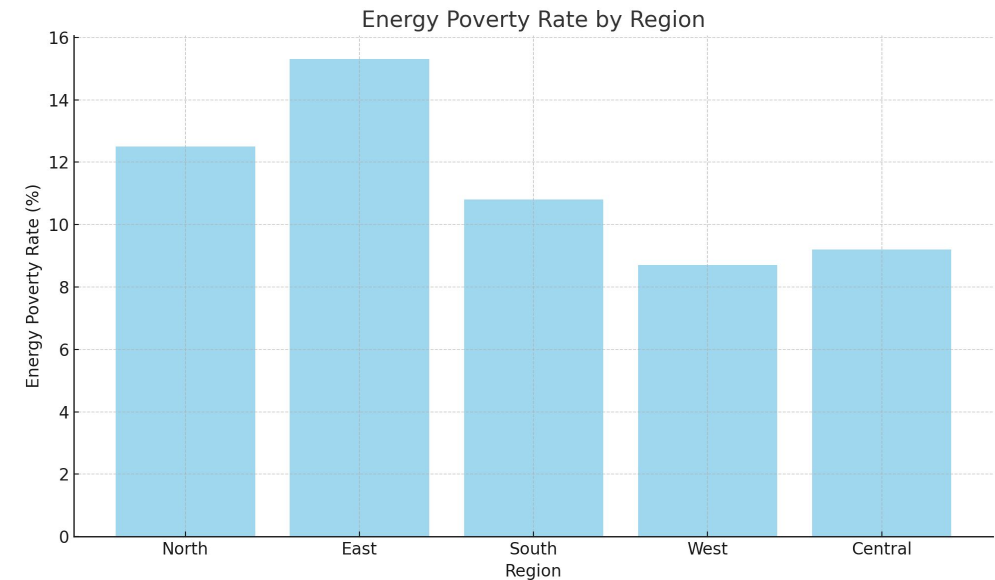
- North and East: Colder winters and older housing stock.
- West (Randstad): Urban poverty pockets in Rotterdam and The Hague.

- **Vulnerable Groups:**

- Single-parent households (20% of energy-poor).
- Elderly residents with fixed pensions.
- Immigrant families in older, poorly maintained housing.

Geographic Variations

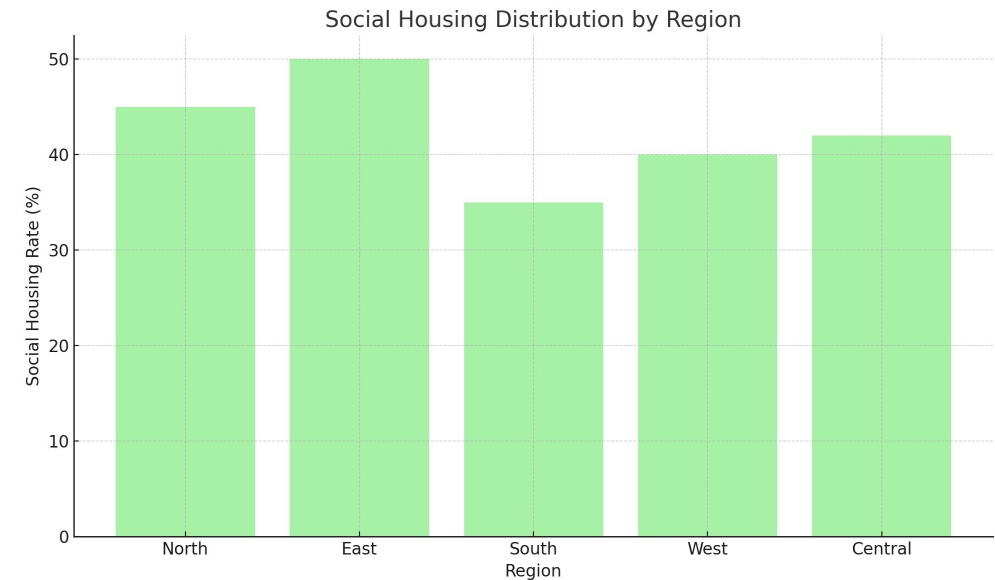
- **North and East:** Colder winters and older housing stock lead to higher energy consumption. Rural areas like Drenthe and Groningen are particularly affected due to lower incomes and less access to subsidies.
- **West (Randstad):** Urban poverty pockets exist, especially in cities like Rotterdam and The Hague, where social housing dominates.
- **South and Central:** While overall rates are lower, rural communities often lack access to renewable energy infrastructure.



Social Vulnerabilities

Certain groups are disproportionately impacted:

- **Single-Parent Households:** Represent 20% of energy-poor households, often due to lower disposable incomes and higher childcare costs.
- **Elderly Residents:** Fixed pensions limit their ability to upgrade homes, and health issues are exacerbated by underheated living conditions.
- **Immigrant Families:** Often concentrated in older, poorly maintained housing, these groups face compounding barriers due to language and financial constraints.





Impacts of Energy Poverty

- Health: Increased respiratory and cardiovascular diseases.
- Education: Children lack conducive study environments.
- Social Isolation: Strained finances limit social activities.

Policy Interventions: Housing Improvements

- Retrofitting poorly insulated homes.
- Expanding funding for social housing upgrades.
- Creating job opportunities through retrofitting programs.



Policy Interventions: Financial Support

- Targeted subsidies for low-income households.
- Energy vouchers to offset winter costs.
- Low-interest loans for energy-efficient upgrades.

Policy Interventions: Community- Based Solutions

- ZonOpSchool: Solar energy for schools.
- Windpark Krammer: Community-driven wind energy.
- De Stichtse Rijnlanden: Biogas from organic waste.

Geothermal Energy: A New Frontier

- Haagse Aardwarmte: Sustainable heating for urban areas.
- Potential to heat over 20,000 homes annually.
- Reduces reliance on fossil fuels while lowering costs.



Future Challenges

- Rising energy prices and economic inequality.
- Aging infrastructure requiring significant retrofitting.
- Funding gaps for community-based projects.

Opportunities in the Energy Transition

- Scaling renewable energy initiatives.
- Promoting community-driven projects.
- Investing in education and innovation.



Key Takeaways

- Energy poverty is rooted in broader poverty issues.
- Community-based solutions are pivotal for a just energy transition.
- Collaboration and policy innovation can break the cycle of deprivation.

Call to Action

- Raise awareness about energy poverty.
- Advocate for inclusive and sustainable policies.
- Empower communities to lead the energy transition.



Thank You

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