

# How to identify and monitor households in energy poverty – Insights from Odyssee-Mure

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**Workshop - Energy Community Energy Efficiency and Energy Poverty Coordination Group**

**26.06.2024**



# Outline

## 1. Who is energy poor and how can we quantify them?

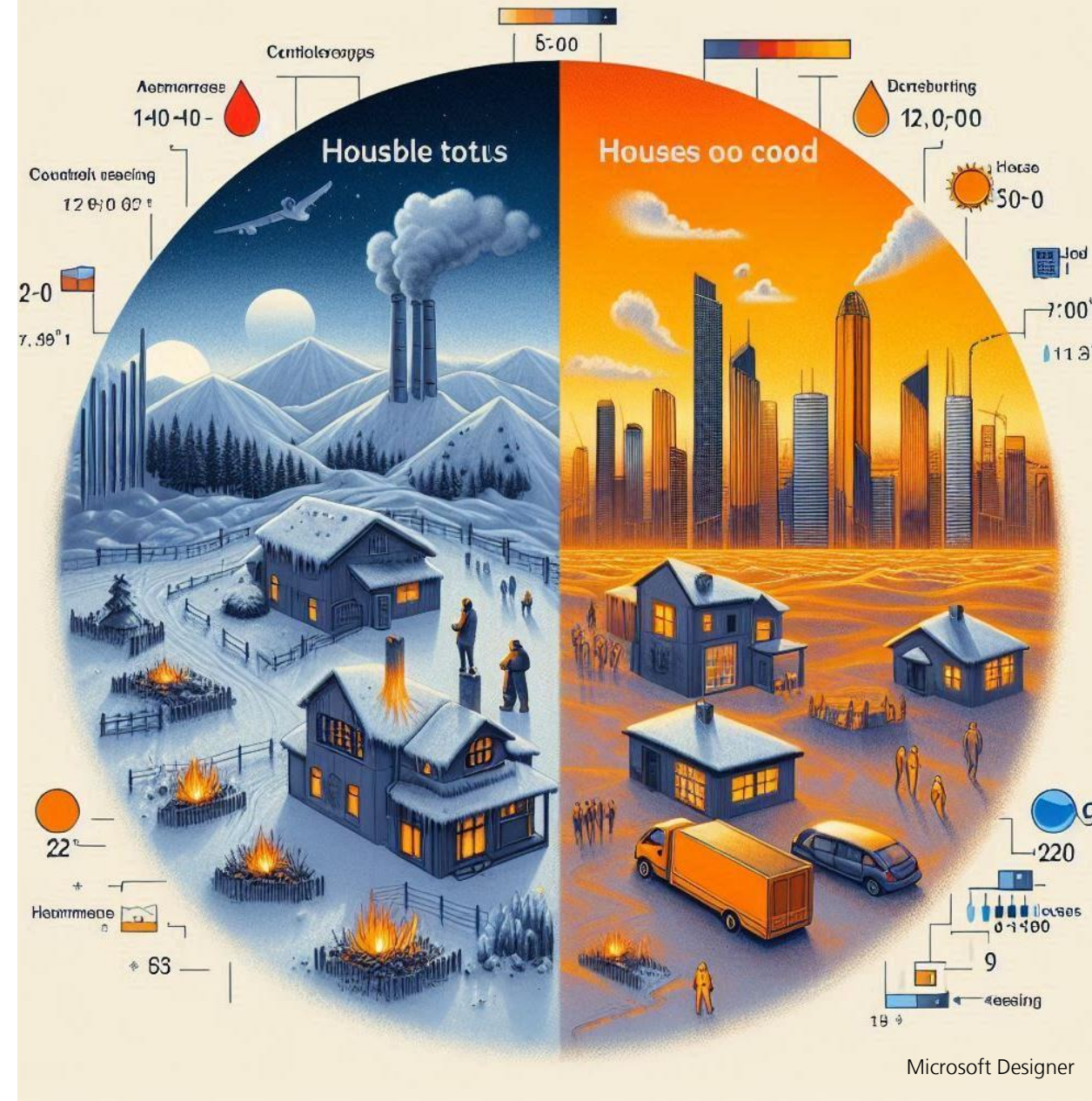
- Energy poverty in the EED
- Identifying energy poor households – Examples from the UK
- Data and Indicators – what can we really use?

## 2. How to proceed

- Targets for alleviating energy poverty
- What measures are energy poverty measures?

## 3. ODYSSEE-MURE

- Project overview
- ODYSSEE
- MURE





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# Energy Poverty in the EED

New EED provides a definition, a sub-target to the energy savings obligation and a new prioritisation

- energy efficiency was identified as the most effective solution to alleviate energy poverty and overcome some of the potential negative distributional impacts of pricing measures
- first binding **EU definition** of energy poverty (EED Art. 2 (52))
- **EED Art. 8 (3)**: Minimum share of energy savings must be achieved for groups affected by energy poverty, based on the proportion of energy poverty specified in the NECPs (if not available, on the average of four indicators)
- **EED Art. 24**: Prioritisation, higher protection and empowerment of vulnerable groups

**“people affected by energy poverty, vulnerable customers, people in low-income households, and, where applicable, people living in social housing”**

Veronicka Jirickova (European Commission, DG ENER B2.): Energy Efficiency Directive recast (2023) energy poverty provisions.

EU (2023): Directive (EU) 2023/1791 of the European Parliament and of the Council of 13 September 2023 on energy efficiency and amending Regulation (EU) 2023/955 (recast). [https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ%3AJOL\\_2023\\_231\\_R\\_0001&qid=1695186598766](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ%3AJOL_2023_231_R_0001&qid=1695186598766)

# Energy Poverty in the EED

## Definition of the target groups

- **people affected by energy poverty**: based on the definition of energy poverty in Art. 2 (52) EED
- **vulnerable customers** (Art 28(1) and Art 28(3) Directive (EU) 2019/944):
  - national definitions
  - may include income levels, the share of energy expenditure of disposable income, the energy efficiency of homes, critical dependence on electrical equipment for health reasons, age or other criteria
- **people in low-income households** (Article 8(3) of Directive (EU) 2023/1791, but no Union law definition):
  - based on the indicator of at-risk-of-poverty rate referring to the threshold of 60% of the national median equivalised disposable income after social transfers
  - unless the use of another national definition can be justified (e.g. related to the eligibility criteria to certain social benefits)
- **social housing** (defined in a 2020 OECD policy brief, no Union law definition):
  - residential rental accommodation provided at sub-market prices that is targeted and allocated according to specific rules, such as identified need or waiting lists
  - differences across Member States in the definition, size, scope, funding, target population, and type of provider (e.g. public, private, non-profit or limited-profit entities, co-operatives, or a mix of these)



'energy poverty' means a household's **lack of access to essential energy services**, where such services provide basic levels and decent **standards of living and health**, including adequate heating, hot water, cooling, lighting, and energy to power appliances,

in the relevant **national context**, existing national social policy and other relevant national policies,

caused by a combination of factors, including at least **non-affordability, insufficient disposable income, high energy expenditure and poor energy efficiency of homes**.

EU (2023): Directive (EU) 2023/1791 of the European Parliament and of the Council of 13 September 2023 on energy efficiency and amending Regulation (EU) 2023/955 (recast).  
[https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ%3AJOL\\_2023\\_231\\_R\\_0001&qid=1695186598766](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ%3AJOL_2023_231_R_0001&qid=1695186598766)

# Identifying Energy Poor Households

## NECP requirements

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- assessment of number of energy poor households based on the basic living standard in the national context
- assessment under consideration of
  - needed energy services per household
  - social policy measures and other relevant policies and measures
  - Commission indicative guidance on relevant indicators, including geographical dispersion, that are based on a common approach for energy poverty

EU (2018): Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action. <https://eur-lex.europa.eu/eli/reg/2018/1999/oj>

EPAH (2022): Energy Poverty National Indicators. Insights for a more effective measuring. [https://energy-poverty.ec.europa.eu/document/download/687479a2-de64-4e04-8449-77b9729cb8b3\\_en?filename=EPAH\\_Energy%20Poverty%20National%20Indicators%20Report\\_0.pdf](https://energy-poverty.ec.europa.eu/document/download/687479a2-de64-4e04-8449-77b9729cb8b3_en?filename=EPAH_Energy%20Poverty%20National%20Indicators%20Report_0.pdf)

EPAH (2023): Energy Poverty National Indicators. Uncovering New Possibilities for Expanded Knowledge. [https://energy-poverty.ec.europa.eu/document/download/b00326ad-da4b-43cd-a99e-574eb587fce7\\_en?filename=EPAH2023\\_2nd%20Indicators%20Report\\_Final\\_0.pdf](https://energy-poverty.ec.europa.eu/document/download/b00326ad-da4b-43cd-a99e-574eb587fce7_en?filename=EPAH2023_2nd%20Indicators%20Report_Final_0.pdf)

Bouzarovski, S, Thomson, H, Cornelis, M (2021): Confronting Energy Poverty in Europe: A Research and Policy Agenda. *Energies* 2021, 14, 858. <https://doi.org/10.3390/en14040858>

# Identifying Energy Poor Households

Indicators mentioned in Article 8(3) of Directive (EU) 2023/1791 to set the energy poverty share

Name	Eurostat reference	Eurostat definition
Inability to keep home adequately warm	SILC [ilc_mdcs01]	% of persons in the total population who are in the state of enforced inability to keep home adequately warm
Arrears on utility bills	SILC [ilc_mdcs07]	% of persons in the total population who are in the state of arrears on utility bills, expressing the enforced inability to pay their utility bills on time due to financial difficulties
Total population living in a dwelling with a leaking roof, damp walls, floors or foundation, or rot in window frames or floor	SILC [ilc_mdho01]	% of persons in the total population living in a dwelling either a leaking roof, or damp walls/floors/foundation, or rot in window frames or floor
At-risk-of-poverty rate	SILC and ECHP surveys [ilc_li02]	share of people with an equivalised disposable income (after social transfer) below the at-risk-of-poverty threshold, which is set at 60% of the national median equivalised disposable income after social transfers

COM (2024): Commission Recommendation (EU) 2024/1590 of 28 May 2024 on transposing Articles 8, 9 and 10 on the energy saving obligation's provisions of the Directive (EU) 2023/1791 of the European Parliament and of the Council on energy efficiency. [https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L\\_202401590](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202401590)



# Examples from the UK

Income, housing cost and energy performance of buildings

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## English *Low Income Low Energy Efficiency (LILEE)*

### **fuel poverty definition:**

- Requires information on housing costs and benefits received
- Energy efficiency threshold : EPC A, B or C does not qualify
- Low income threshold : 60% of median income
- Based on modelled rather than actual energy demand (depends on accurate EPC information)

# Examples from the UK

Different measures of fuel poverty and used across the UK

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## Scotland

- unable to maintain adequate living standards, if energy expenditure is >10%

## Northern Ireland

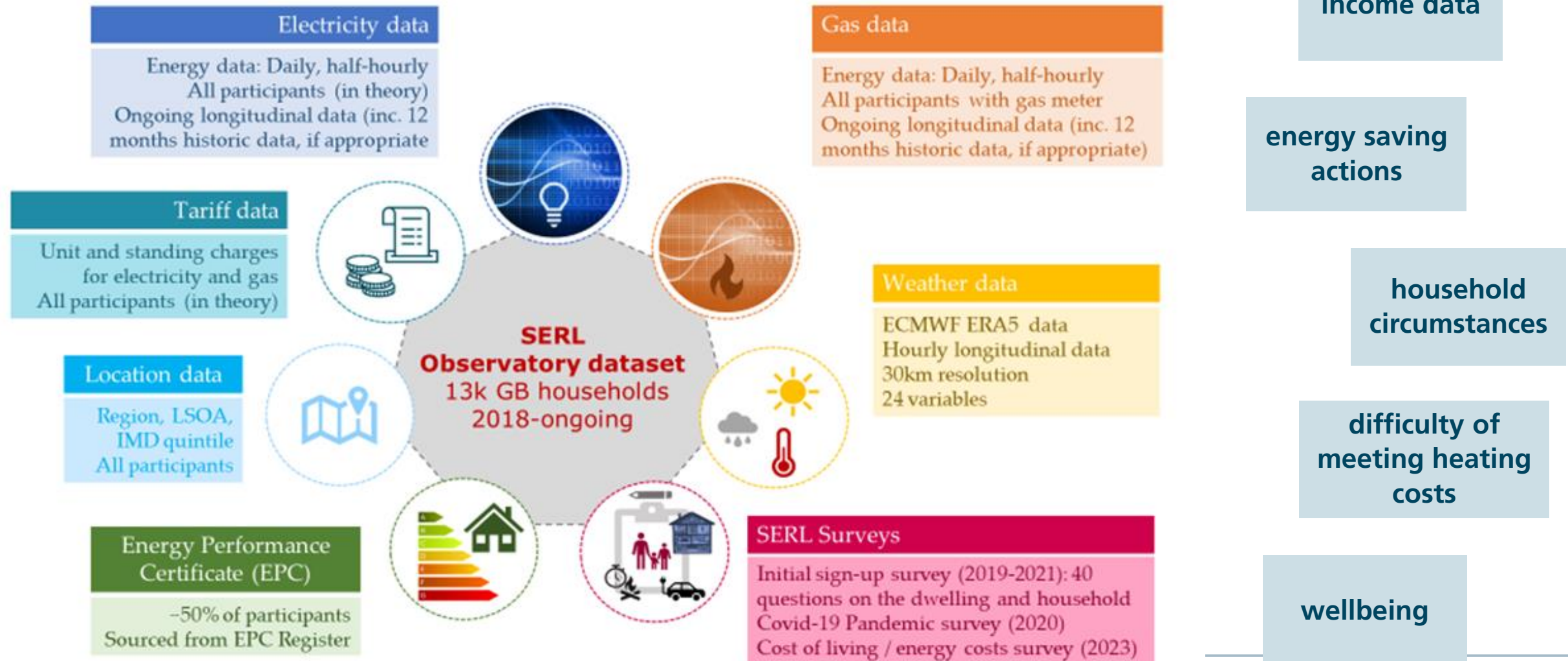
- >10% energy expenditure on all household fuel use
- severe fuel poverty energy expenditure >15%

## Wales

- unable to keep the home warm at a reasonable cost
- >10% energy expenditure threshold to maintain satisfactory heating
- satisfactory heating
  - 21°C in the main living area
  - 18°C in other occupied rooms

# Examples from the UK

## Smart Energy Research Lab – Observatory Dataset



Elam, S., Few, J., McKenna, E., Hanmer, C., Pullinger, M., Zapata-Webborn, E., Oreszczyn, T., Anderson, B., Department for Levelling Up, Housing and Communities, European Centre for Medium-Range Weather Forecasts, Royal Mail Group Limited. (2024). Smart Energy Research Lab Observatory Data, 2019-2023: Secure Access. [data collection]. 7th Edition. UK Data Service. SN: 8666, DOI: <http://doi.org/10.5255/UKDA-SN-8666-7>

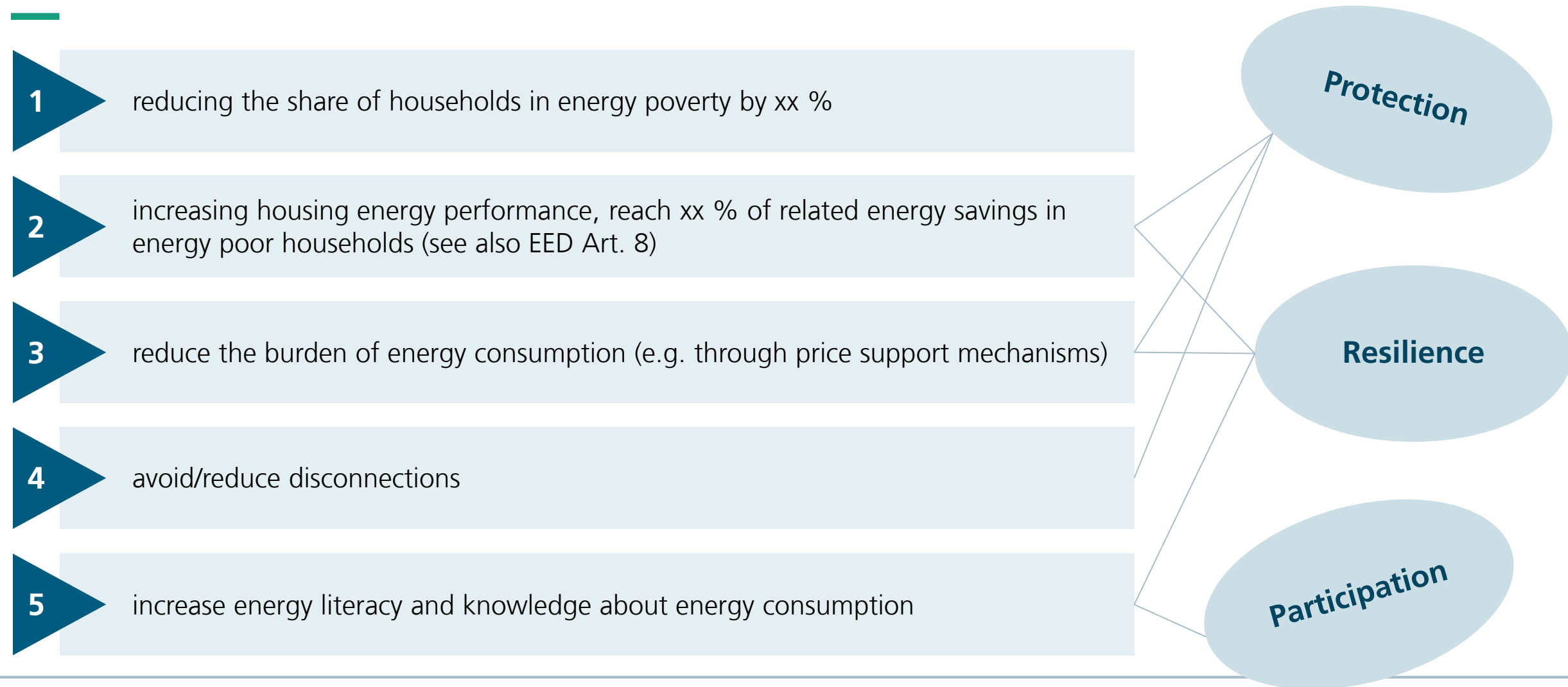
Huebner, G.M., Hanmer, C., Zapata-Webborn, E., Pullinger, M., McKenna, E.J., Few, J., Elam, S., Oreszczyn, T., 2023. Self-reported energy use behaviour changed significantly during the cost-of-living crisis in winter 2022/23: insights from cross-sectional and longitudinal surveys in Great Britain. *Sci Rep* 13, 21683





# Targets for alleviating energy poverty

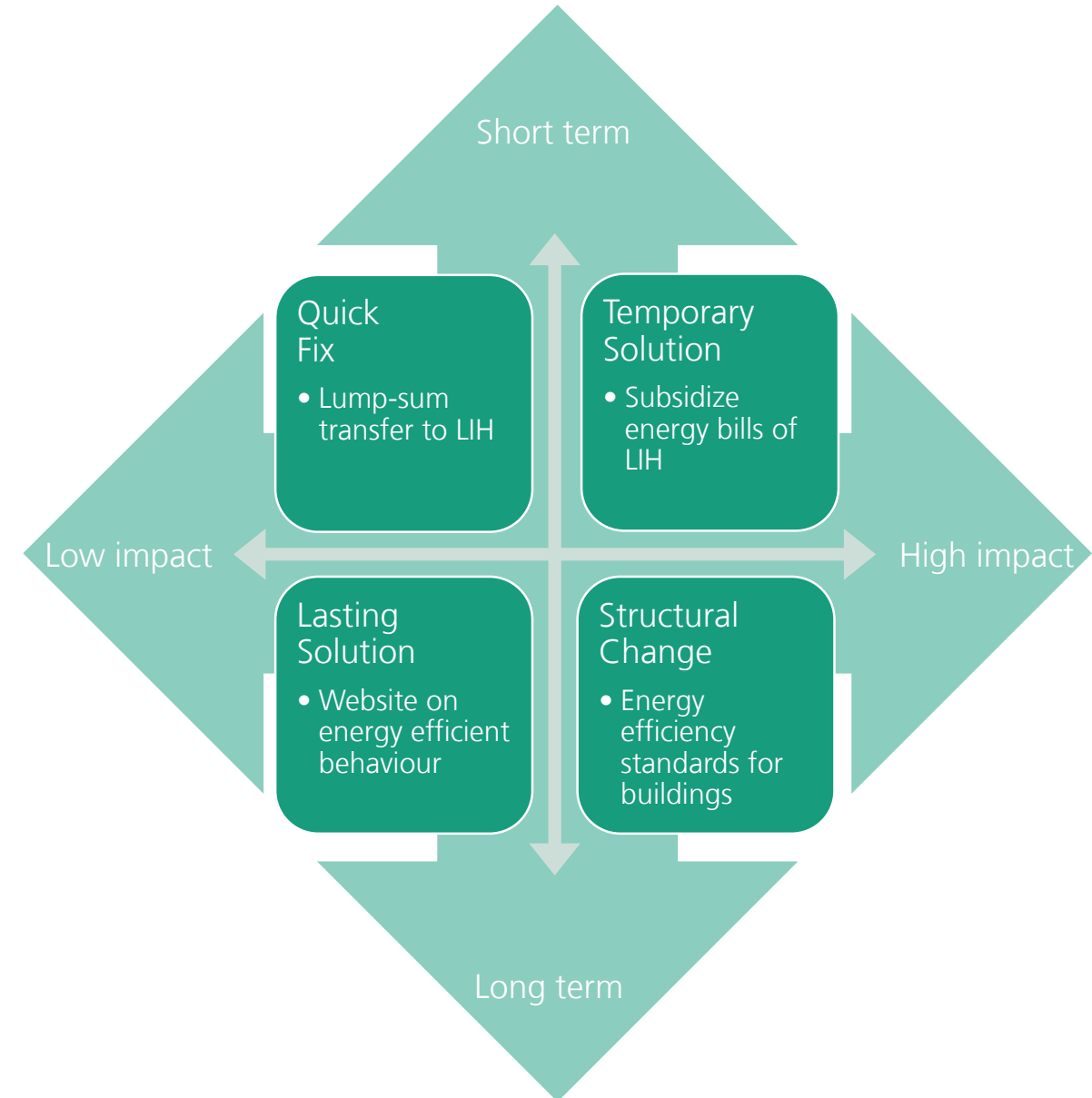
## Looking at Action Plans and National Strategies to Combat Energy Poverty



# Energy poverty measures

## Structural measures over time and impact

- different kinds of measures can structurally help to alleviate energy poverty
- systematic measures are implemented by institutional actors
- structural change addresses root causes of energy poverty and enables long term prevention

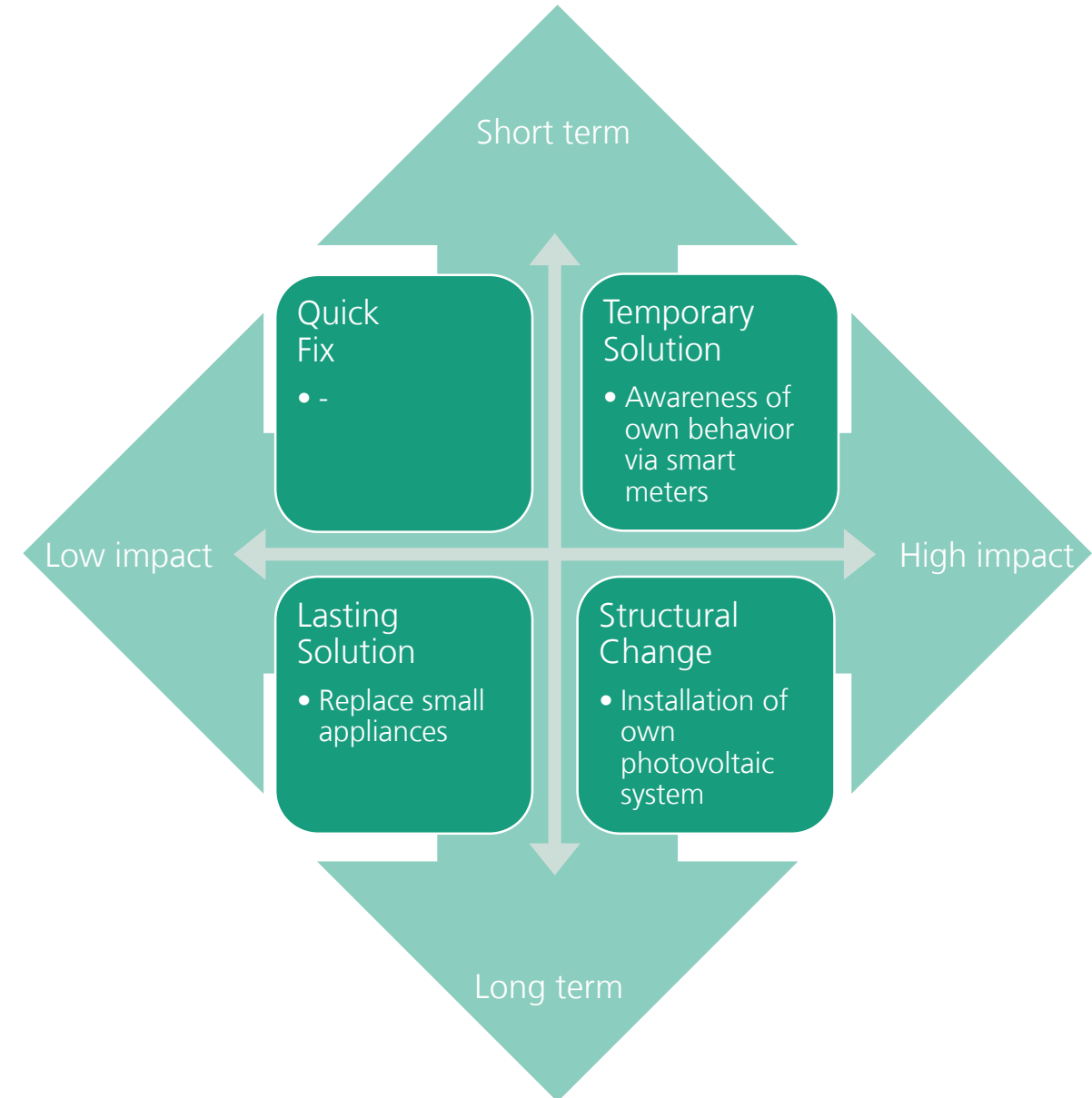




# energy poverty measures

## Behavioural measures over time and impact

- behavioural measures are initiated by vulnerable individuals



# What measures to meet those targets?

## Best-Practice examples from Europe

Category	Instrument Type	Countries with similar measures
<b>Instruments and measures related to CO<sub>2</sub> pricing</b>	Revenue recycling options from CO <sub>2</sub> pricing	Germany, Denmark, Switzerland
<b>Protection: Regulatory instruments</b>	Disconnection Protections	UK, Finland, Spain, Belgium, Romania, France, (Austria, Belgium, Ireland)
	Social Domestic Tariffs	Greece, UK, France, Belgium, Portugal
<b>Participation: Infrastructure and technology</b>	Smart Meters	across the EU and UK
	Self-generated electricity for tenants	Germany
<b>Resilience: Energy efficiency instruments</b>	Financial support for low income owner-occupiers	France, Belgium, UK, Germany
	Electricity and energy savings check	Germany, Netherlands, Austria, France, Belgium
	Energy Company Obligations	Lithuania, Latvia, Luxemburg, Malta
<b>Resilience: Direct financial support</b>	Electricity and Gas funds	Belgium, Ireland, Italy, Poland, Bulgaria, Denmark

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# Odyssee-Mure fit-4-55

## Project Overview

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- comprehensive monitoring of efficiency trends and policy evaluation in EU Member States, Norway, Switzerland, UK and Energy Community Countries
- EU LIFE Project
- 10/2022–03/2025
- Project Lead: ADEME, Fraunhofer ISI and Enerdata as Work Package Leads
- 34 partners + the energy community countries



# Energy poverty measures in MURE

Target group design is crucial to address vulnerable households specifically

1

Include a definition of energy poverty

2

Service is free of charge

3

Higher support for low-income households

4

Only targets low-income households



no social policy measures in MURE

# Subcontractors from the Energy Community Region

## Contacts



ELECTRICAL ENGINEERING  
INSTITUTE NIKOLA TESLA

Serbia



Energy Efficiency Centre  
Georgia



Government  
of Montenegro

Ministry of Energy and Mining  
Montenegro



Ministry of Economy  
Kosovo



North Macedonia



Ukraine



Agency for Energy Efficiency  
(AEE) - Albania



Moldova



Bosnia and Herzegovina

# Odyssee-Mure fit-4-55

## Who to contact

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- in case you would like to contact the Odyssee-Mure Partners from your country, we can forward questions and possibly connect you
- please just contact us via email

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# Contact

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Innovation Research ISI



# National Indicators

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## Energy Expenditure

- Inability to keep home adequately warm
- Arrears on utility bills
- High share of energy expenditure in income
- Low absolute energy expenditure
- Energy Expenses by income quintile
- Final consumption expenditure of households

## Income and cost

- Disposable annual household income
- Final energy consumption in households
- Housing cost overburden rate
- Population who cannot afford a regular use of public transport

EPAH (2022): Energy Poverty National Indicators. Insights for a more effective measuring. [https://energy-poverty.ec.europa.eu/document/download/687479a2-de64-4e04-8449-77b9729cb8b3\\_en?filename=EPAH\\_Energy%20Poverty%20National%20Indicators%20Report\\_0.pdf](https://energy-poverty.ec.europa.eu/document/download/687479a2-de64-4e04-8449-77b9729cb8b3_en?filename=EPAH_Energy%20Poverty%20National%20Indicators%20Report_0.pdf)

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# National Indicators

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## Prices

- Household Electricity Prices
- Household Natural Gas Prices
- Biomass Prices
- Fuel Oil Prices
- Coal Prices
- District Heating Prices

EPAH (2022): Energy Poverty National Indicators. Insights for a more effective measuring. [https://energy-poverty.ec.europa.eu/document/download/687479a2-de64-4e04-8449-77b9729cb8b3\\_en?filename=EPAH\\_Energy%20Poverty%20National%20Indicators%20Report\\_0.pdf](https://energy-poverty.ec.europa.eu/document/download/687479a2-de64-4e04-8449-77b9729cb8b3_en?filename=EPAH_Energy%20Poverty%20National%20Indicators%20Report_0.pdf)

# National Indicators

## Dwellings

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### Quality of Dwellings

- Population Living Dwelling with presence of leak, damp and rot
- Dwellings with energy label A
- Dwellings in populated areas

### Dwellings and Climate Conditions

- Population Living Dwelling comfortably warm in winter time
- Population Living Dwelling comfortably cool in summer time
- Population Living Dwelling equipped with heating facilities
- Population Living Dwelling equipped with air conditioning
- Population considering their dwelling as too dark
- Cooling and Heating degree days

EPAH (2022): Energy Poverty National Indicators. Insights for a more effective measuring. [https://energy-poverty.ec.europa.eu/document/download/687479a2-de64-4e04-8449-77b9729cb8b3\\_en?filename=EPAH\\_Energy%20Poverty%20National%20Indicators%20Report\\_0.pdf](https://energy-poverty.ec.europa.eu/document/download/687479a2-de64-4e04-8449-77b9729cb8b3_en?filename=EPAH_Energy%20Poverty%20National%20Indicators%20Report_0.pdf)

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# National Indicators

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## Health

- Excess winter mortality/death
- Population reporting a chronic disease
- causes of death

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# ODYSSEE

## Energy efficiency indicators and energy consumption by end use

### Key indicators

- **Macro:** energy savings rate, energy intensity, CO2 emissions, GDP per capita, private consumption per household
- **Industry:** energy saving rate, energy intensity, specific consumption in energy intensive industries
- **Transport:** energy saving rate, specific consumption by mode, car efficiency, LDV efficiency, Modal split
- **Households:** energy saving rate, consumption per dwelling, heating
- **Services:** energy saving rate, energy intensity, consumption per employee

### Decomposition

- explaining the variation of the energy consumption over a given period through a decomposition into various explanatory effects
- the most important effects are the economic activity and energy savings

### Energy saving tool

- trends and targets

<https://www.indicators.odyssee-mure.eu/>

# MURE

## Energy efficiency policies and measures

### Database

- **Sectors:** General cross-cutting, Industry, Transport, Households, Appliances
- **Impact:** Semi-quantitative impact, multiple benefits, if available **impact evaluation** including quantification (energy savings, reduction of CO<sub>2</sub>eq, budget) and evaluation method
- **Instrument Types:** General programme, mandatory information, mandatory standards, fiscal, financial, market-based instruments, information/training, others
- **Relation to EU policy frame:** EU related measures, NECP measures, Article 8 EED measures, measures using EU funding

- **Measure Characterisation:** Status, starting and end year, actors, sectors, target groups
- **Energy Poverty and Sufficiency**

### Facilities

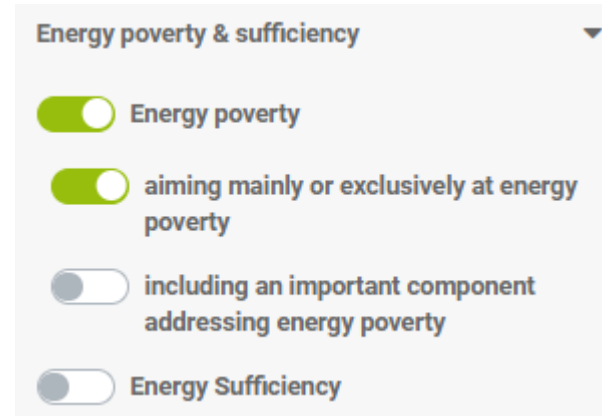
- successful measure facility
- policy mapper
- energy efficiency scoreboard

<https://www.measures.odyssee-mure.eu/>

# Energy poverty measures in MURE

## Measures aiming mainly or exclusively at energy poverty

- main objective is to alleviate energy poverty or mitigate distributional effects of energy policies (like energy or carbon taxes)
- designed and targeted to directly address energy poverty by alleviating the conditions and causes of energy poverty in affected households
- priority groups are e.g. based on income criteria, on eligibility to social benefits or a mix of social criteria and criteria about the energy performance of the dwelling



## Examples

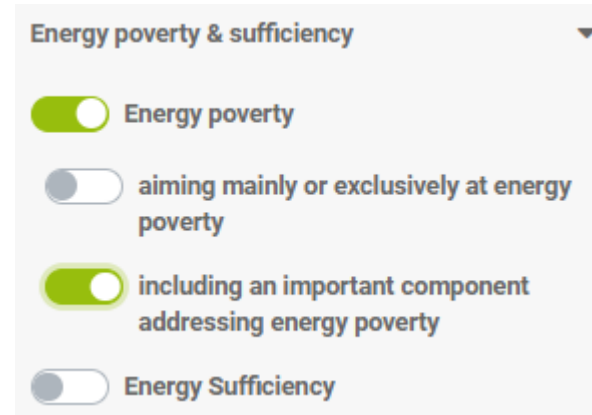
- subsidies for energy-efficient appliances for LIH or vulnerable groups
- renovation programmes focused on G- or F-class buildings in social housing



# Energy poverty measures in MURE

## Measures including an important component addressing energy poverty

- will showcase broader objectives but incorporate a significant component aimed at addressing energy poverty
- not exclusively focused on energy poverty or priority groups, but including elements or provisions related to energy poor households or other priority groups



## Examples

- higher grant rates for LIH in renovation programmes open to all households
- energy advice services free for vulnerable households (but with a fee for other households)
- grant schemes where a share of the budget is reserved to LIH