

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

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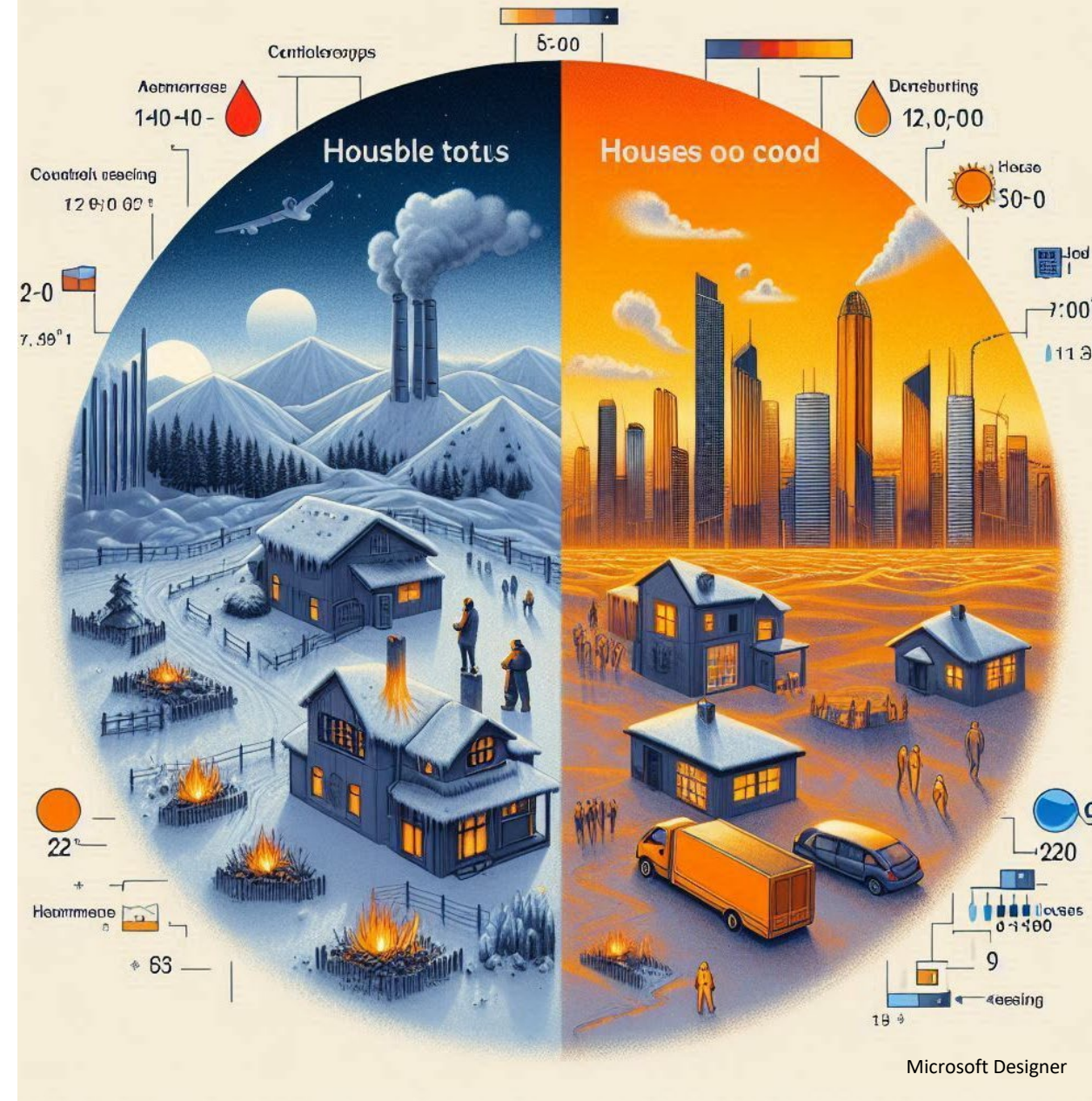
Iska Brunzema

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

**26.06.2024**

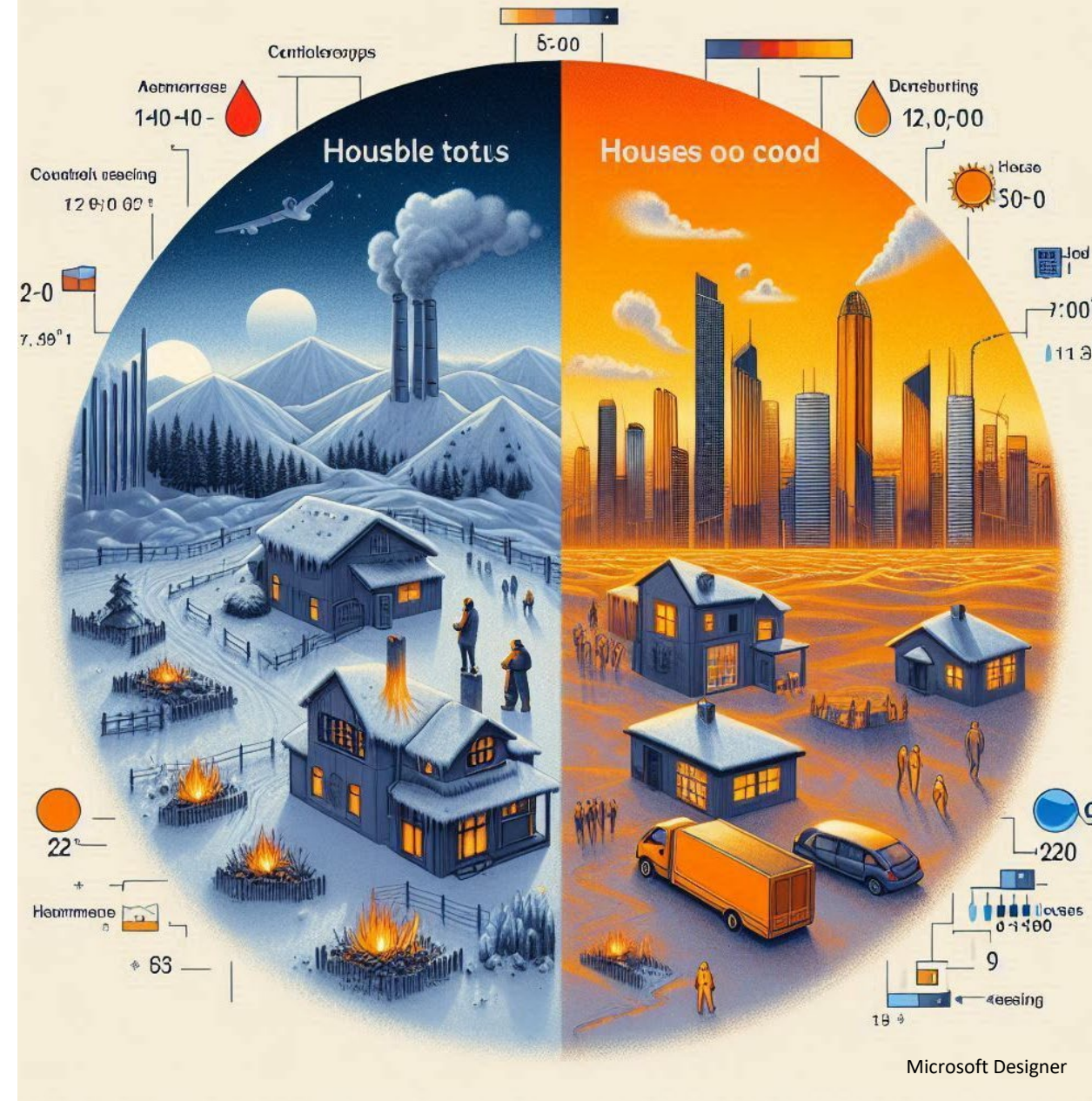
# Outline

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
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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

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- 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’ 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

## NECPs

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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
- four primary indicators
  - high energy burdens
  - low absolute energy expenditure
  - arrears on utility bills
  - self-reported inability to keep the home adequately warm

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)

# Examples from the UK

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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

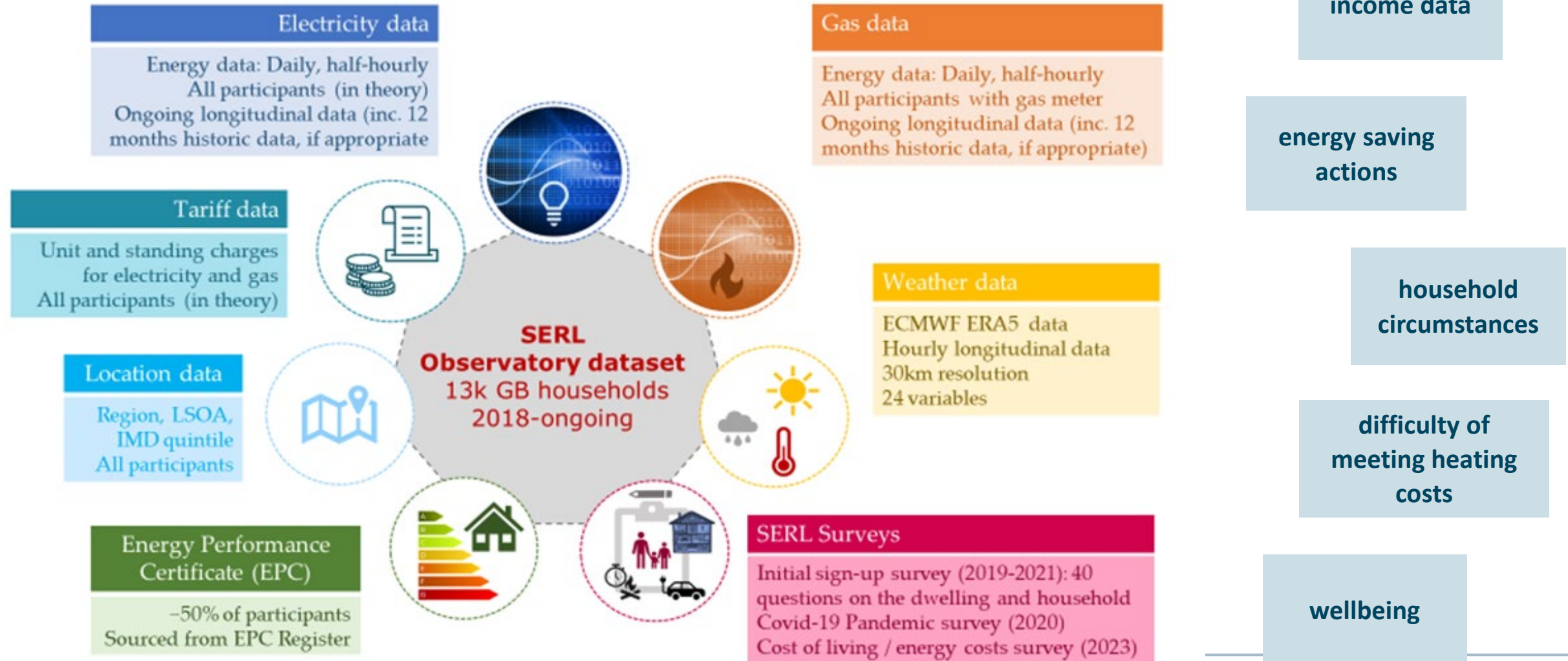
- >10% energy expenditure on all household fuel use
- severe fuel poverty energy expenditure >15%

### 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

# Headline, Frutiger LT Com Bd, 24 pt

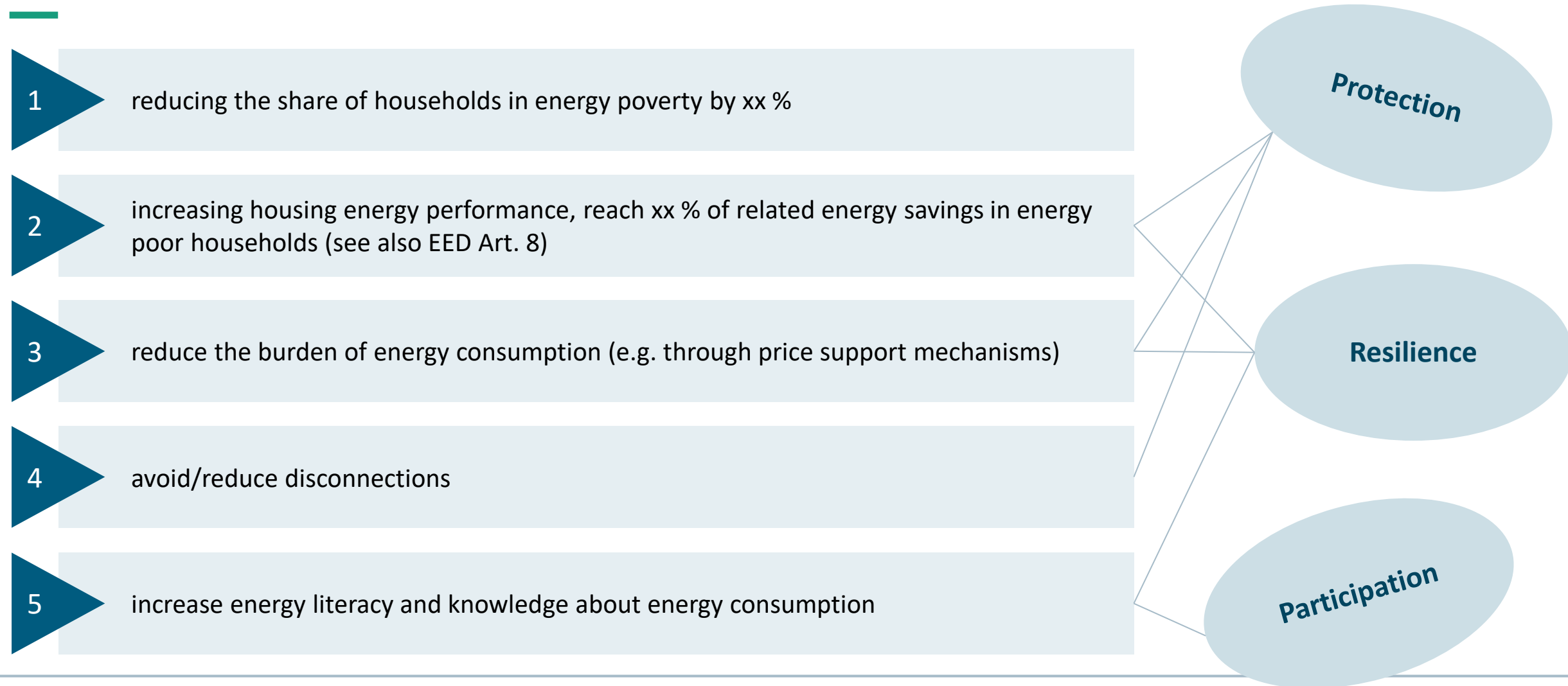
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Microsoft Designer

# Targets for alleviating energy poverty

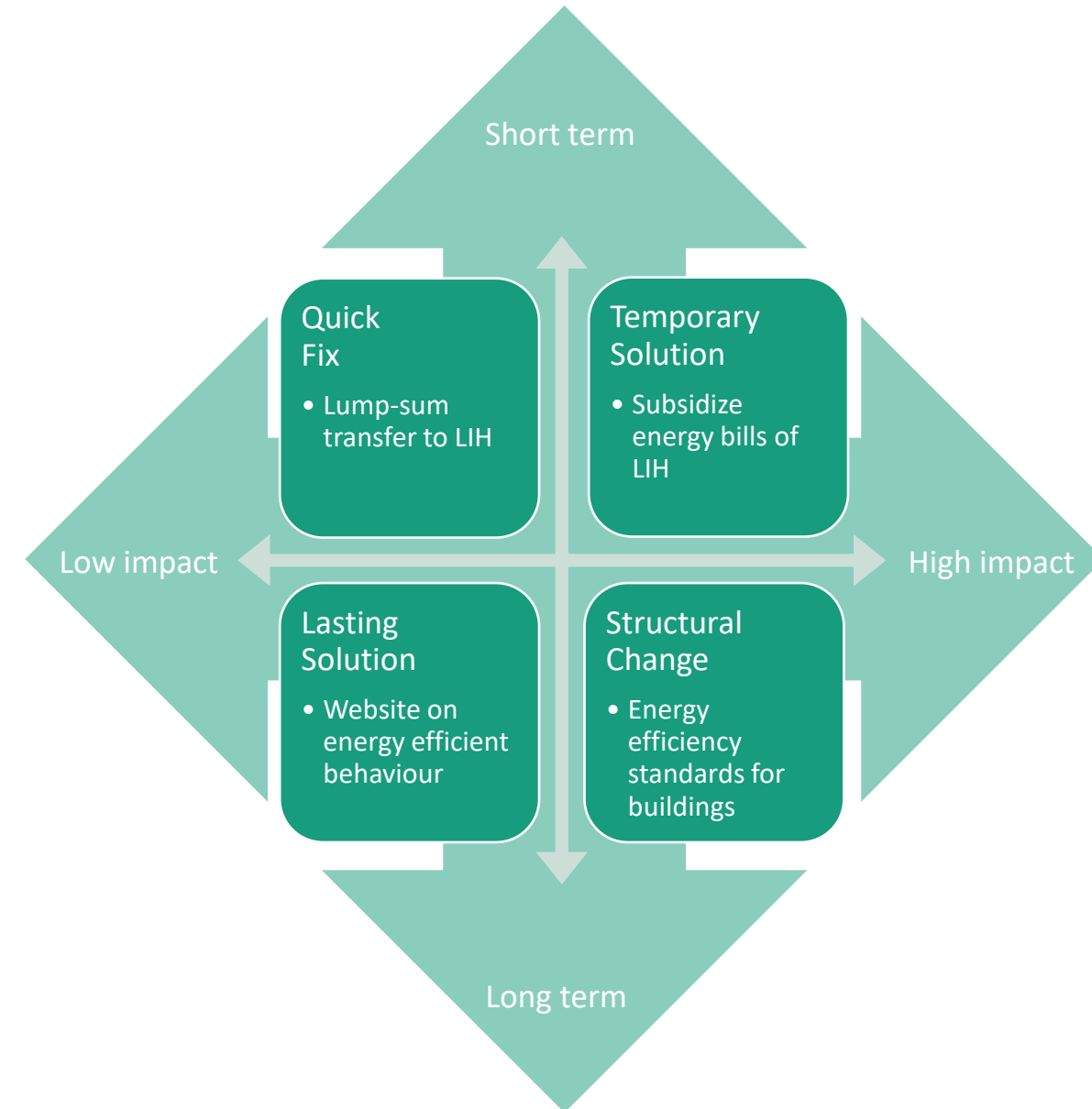
## Looking at Action Plans and National Strategies to Combat Energy Poverty



# Energy poverty measures

## Structural measures over time and impact

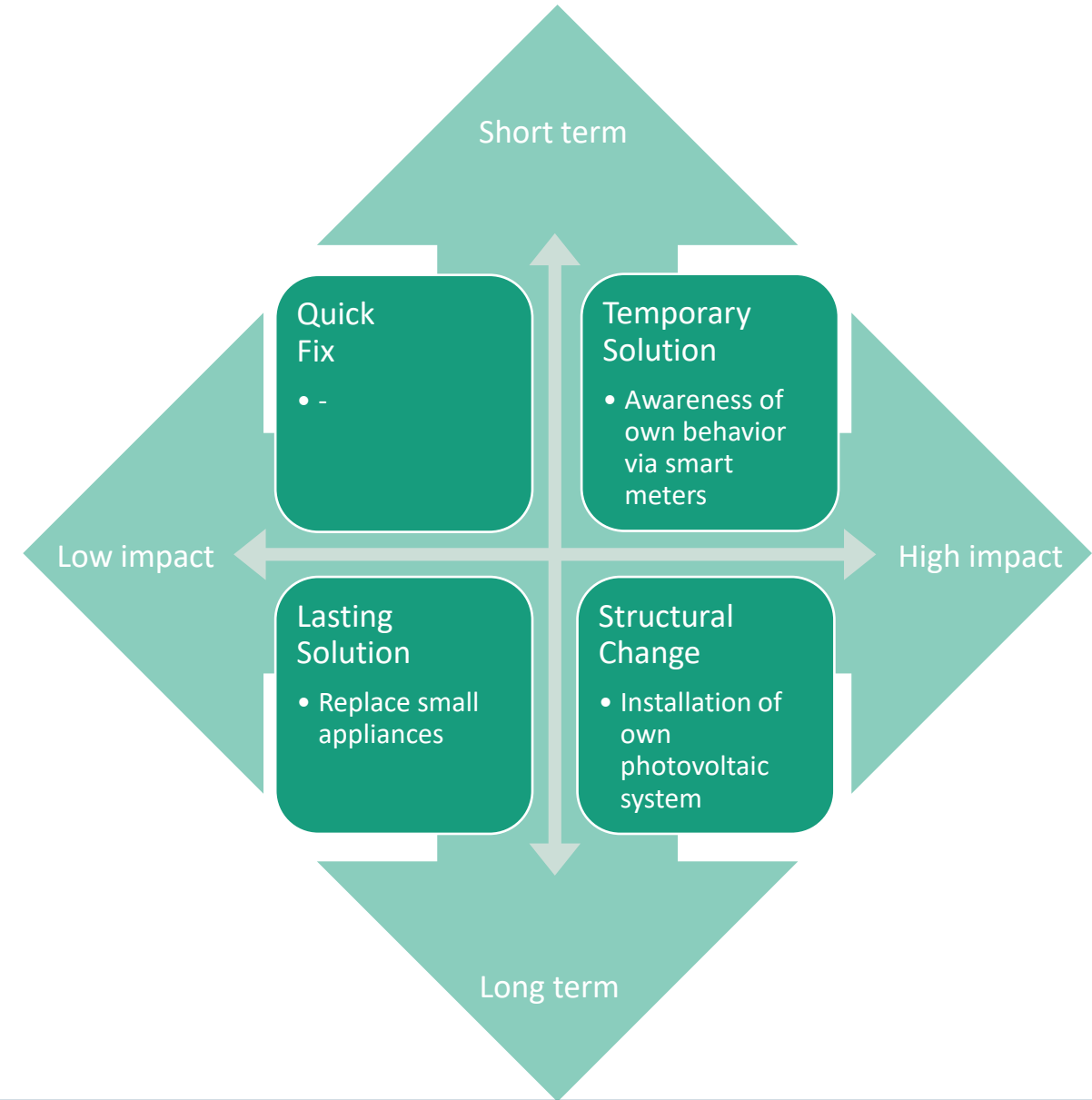
- different kinds of measures can structurally help to alleviate energy poverty
- systematic measures are implemented by institutional actors
- structural change addresses root causes of energy poverty and enables long term prevention



# 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



# 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

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



# Subcontractors from the Energy Community Region Contacts



ELECTRICAL ENGINEERING  
INSTITUTE NIKOLA TESLA

Serbia



EEC · 333

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

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# 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

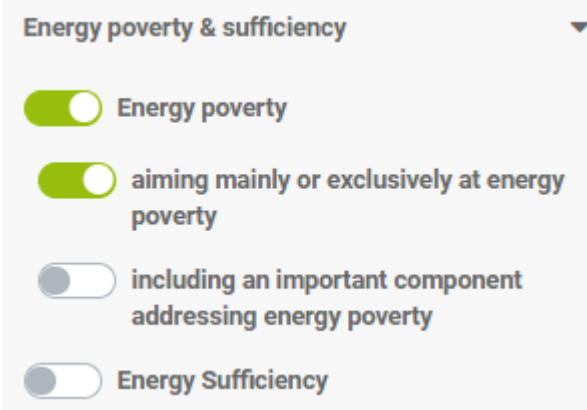
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# Energy poverty measures in MURE

## 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



Energy poverty & sufficiency

- Energy poverty
- aiming mainly or exclusively at energy poverty
- including an important component addressing energy poverty
- Energy Sufficiency

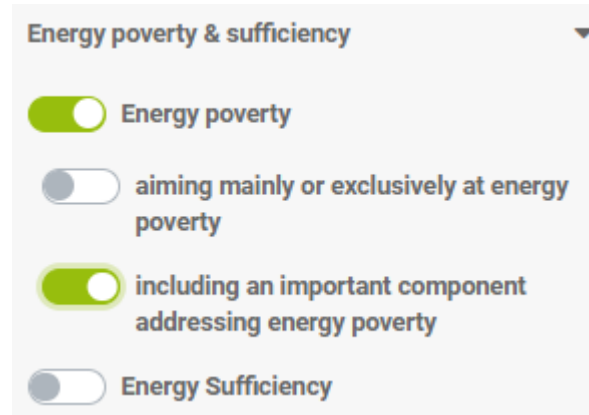
## Examples

- 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



The screenshot shows a filter menu titled "Energy poverty & sufficiency" with a dropdown arrow. It contains four toggle switches:

- Energy poverty
- aiming mainly or exclusively at energy poverty
- including an important component addressing energy poverty
- Energy Sufficiency

## 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