



“Existing challenges and potential improvements to energy poverty measurement”

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Energy poverty and its measurement

CONCEPT & POLICY

- Energy poverty is broadly defined as inadequate levels of essential energy services experienced by households
- It has various forms and is predicated upon a multitude of vulnerability factors
- Increasing priority in EU policy-making (i.e. Clean energy for all Europeans, Just Transition Mechanism, Fit for 55)

MEASUREMENT

- Measurement is not straightforward due to its private, culturally sensitive and multi-dimensional character
- Commission's Recommendation (EU 2020/1563) provides guidance on definitions and lists primary indicators
 - Inability to keep home warm & arrears on utility bills [based on EU-SILC]
 - Various metrics related to HH's energy expenditures (i.e. high expenditure share [2M] or low absolute expenditures [M/2]) [based on EU-HBS]

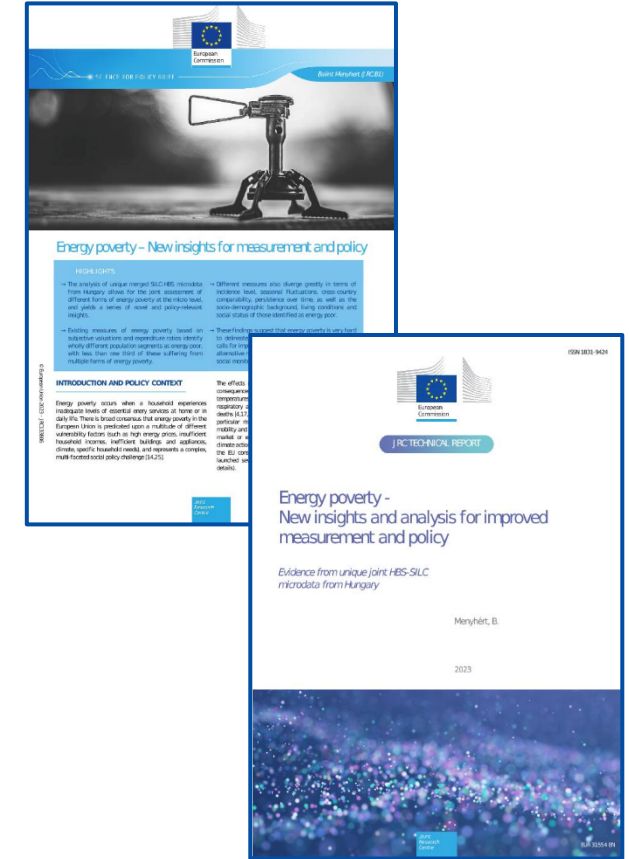
JRC work on energy poverty

- Past and ongoing JRC work on energy poverty is part of research portfolio on “Inclusive and resilient society” https://joint-research-centre.ec.europa.eu/jrc-science-and-knowledge-activities/inclusive-and-resilient-society_en
- Recent research and analysis includes the detailed analysis of energy poverty in the context of
 - EU data and existing indicators <https://publications.jrc.ec.europa.eu/repository/handle/JRC128084>
 - gender-related aspects <https://publications.jrc.ec.europa.eu/repository/handle/JRC132612>
 - EU climate action <https://publications.jrc.ec.europa.eu/repository/handle/JRC130057>
 - energy citizenship <https://publications.jrc.ec.europa.eu/repository/handle/JRC127631>

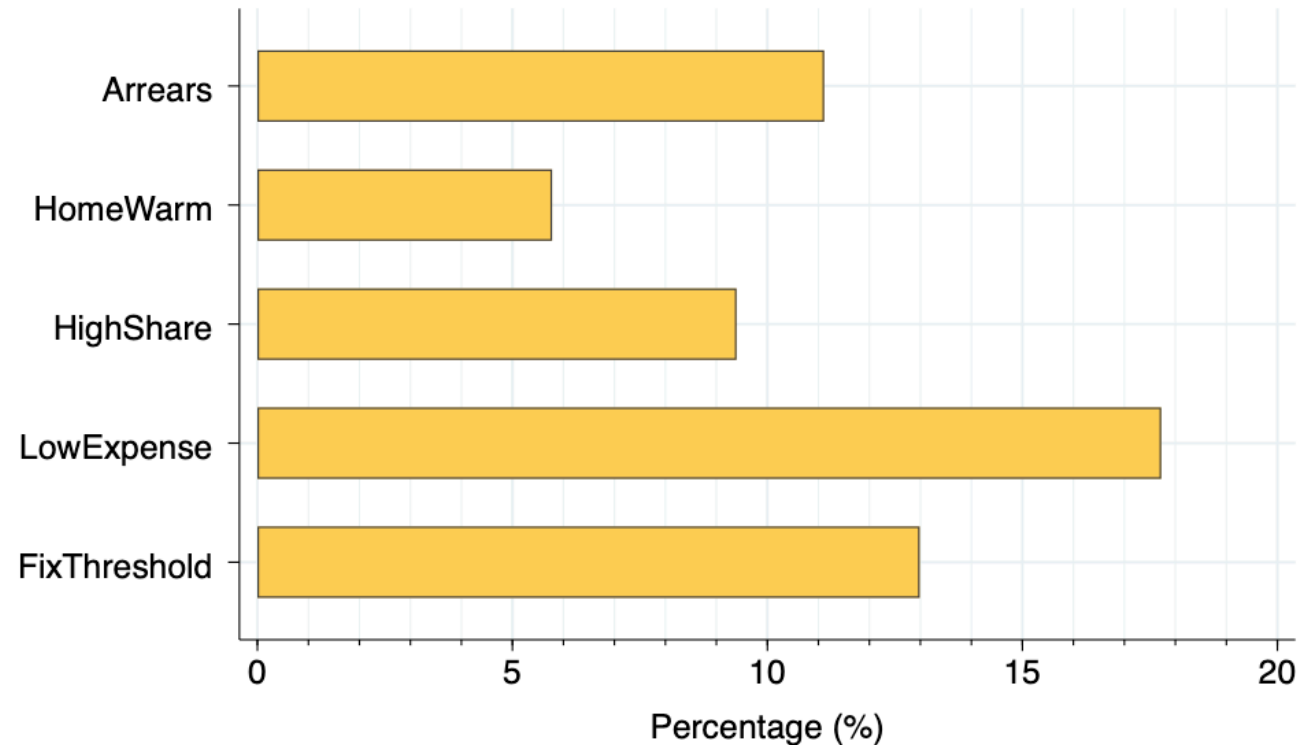


Recent evidence from joint HBS-SILC survey data from Hungary

- Two recent JRC reports focus directly on the issue of measurement
 - <https://publications.jrc.ec.europa.eu/repository/handle/JRC133804>
 - <https://publications.jrc.ec.europa.eu/repository/handle/JRC133806>
- These exploit unique merged SILC-HBS microdata from Hungary to yield a series of novel and policy relevant insights.
- The empirical analysis concentrates on the following five primary indicators:
 - the share of population having arrears on utility bills (**Arrears**);
 - the share of population not able to keep home adequately warm (**HomeWarm**);
 - the share of population living in households where the energy expenditure-to-income ratio is more than twice the national median (**HighShare**);
 - the share of population living in households where the absolute level of energy expenditures is less than half the national median (**LowExpense**);
 - the share of population living in households where the energy expenditure share exceeds 30% relative to total expenditures (**FixThreshold**).

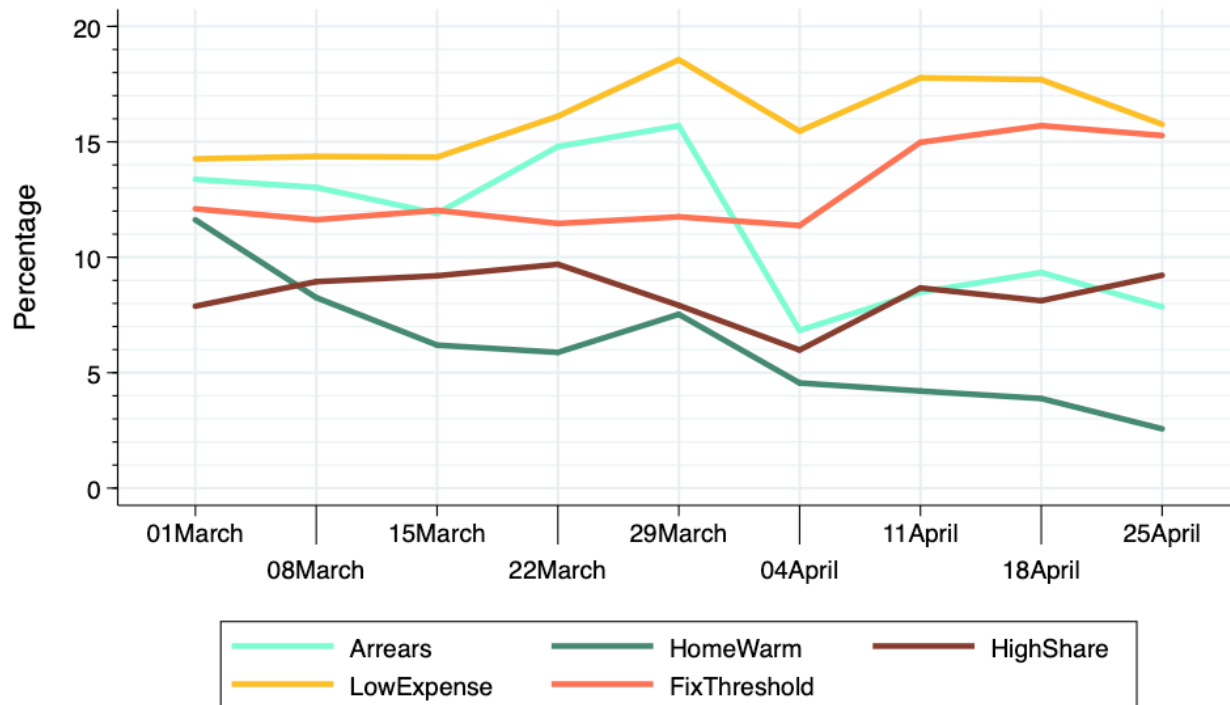


Differences in the poverty rate



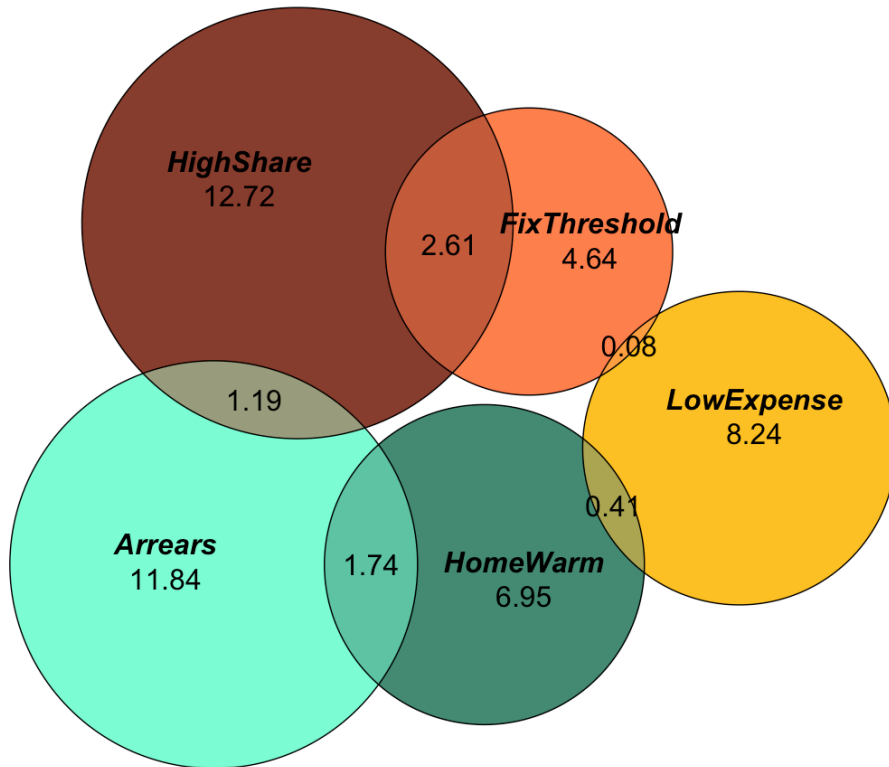
- Different metrics yield highly different energy poverty rates (between 6% and 18% as of 2018 in Hungary).
- This demonstrates the importance of clearly specifying the underlying metric used when discussing energy poverty.

Seasonality



- Energy poverty may be subject to seasonal variations of up to 10 percentage points during the year.
- This demonstrates the importance of harmonised sampling periods for EU surveys and the use of common and well-defined reference periods for measurement.

Limited overlap between energy poverty dimensions

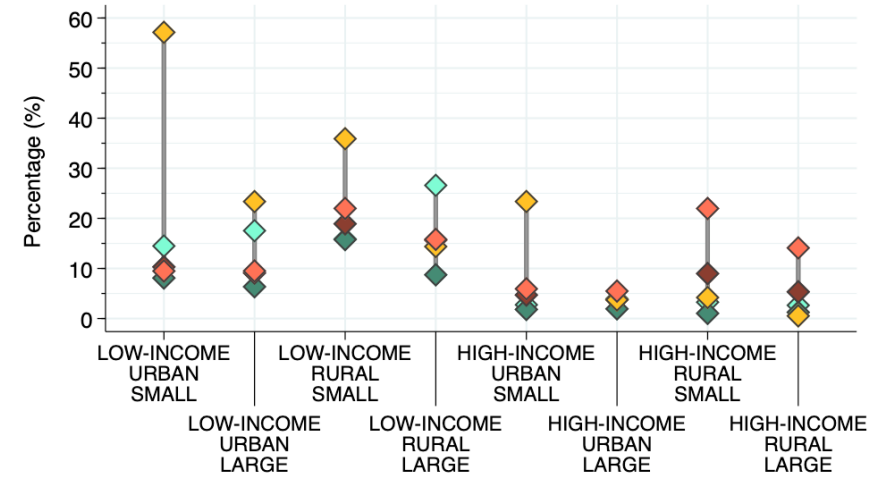


- Misclassification (overlap) between respective energy poverty dimensions is very high (low).
- This suggests that
 - large variations exist in households' energy needs and situation
 - HHs may self-select into different forms of energy deprivation
 - a substantial part of the population is affected or vulnerable.
- This demonstrates the importance of improved measurement and direct assessment of energy-related deprivations.

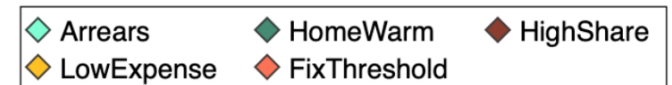
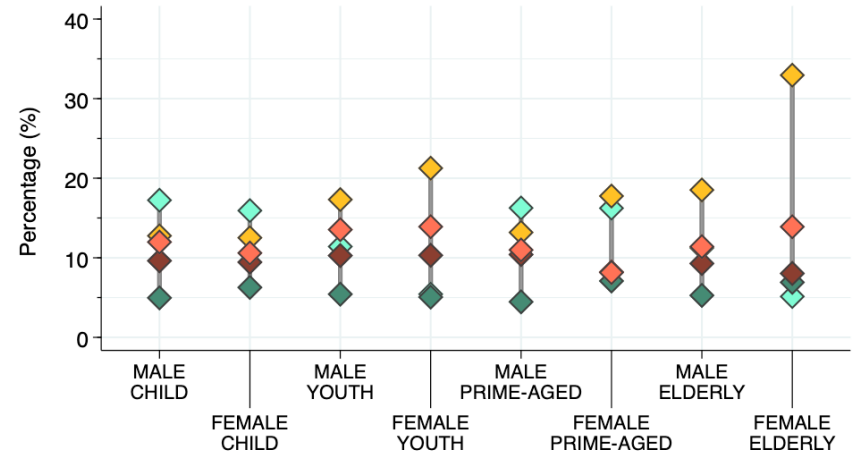
Socio-demographic factors

- Households' socio-demographic background is often a strong predictor of their energy poverty status or exposure
 - largest gaps are observed in relation to household-level characteristics such as income, settlement type and household size;
 - different metrics indicate varying levels of poverty concentrations across households.
- This demonstrates the strong connection between measurement choice, societal outcomes and targeted policy response.

Panel A. HOUSEHOLD-LEVEL CHARACTERISTICS

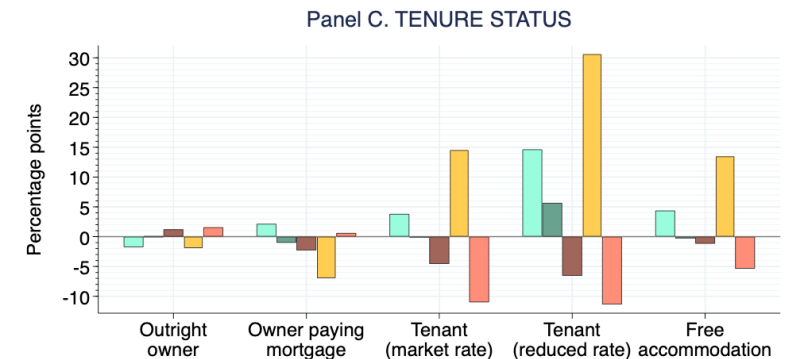
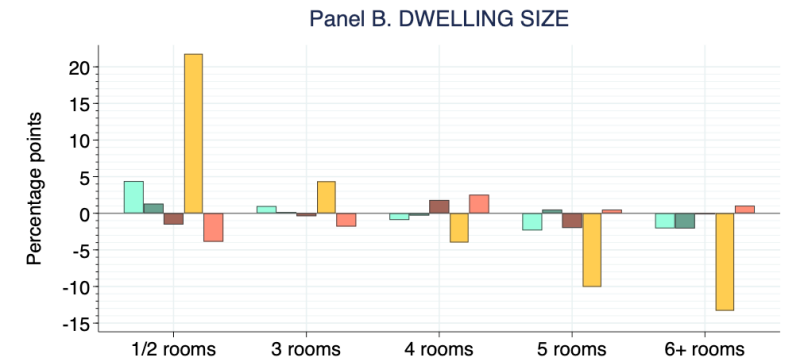
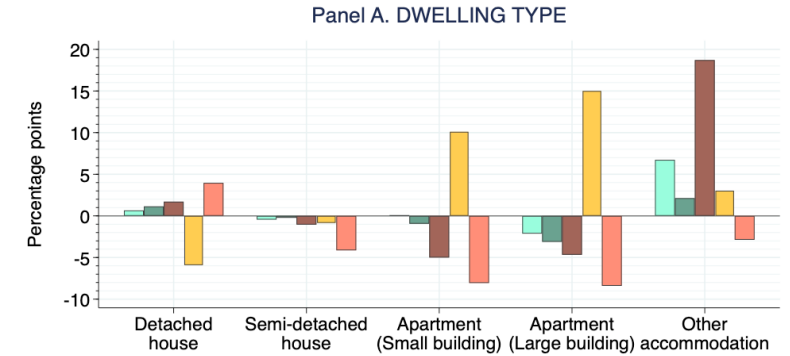


Panel B. INDIVIDUAL CHARACTERISTICS



Living and housing conditions

- Differences in energy poverty rates relative to the national average may also be substantial along various aspects of households' living conditions
 - consensual measures are rather invariant to differences in dwelling characteristics, but expenditure-based measures tend to vary substantially
- This highlights the role of housing conditions for HHs' energy situation and demonstrates the importance of affordable and adequate housing.



Conclusions & potential improvements in measurement

CONCLUSIONS

- Different forms of energy poverty tend to appear in isolation and concern largely different population segments
- In particular, households that struggle to keep their homes warm do not spend uncharacteristically little or much on energy
- There are serious shortcomings and limitations with respect to all existing (indirect) measures of energy poverty

POTENTIAL IMPROVEMENTS

- Upgrade existing survey data architecture
(e.g. synchronisation of data collection periods, convergence of HBS and SILC surveys, revision & extension of specific survey questions)
- Explore new avenues, methodologies and data sources
(e.g. direct measurement of energy consumption & efficiency, administrative / supplier data sources, variations in energy needs & practices)
- Provide a well-defined definition of vulnerable households
- Aim at developing customized energy reference quotas and budgets

Thank you for the attention!

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