



Measuring energy poverty in Italy

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Definition and perimeter

In Italy, energy poverty is defined as <the difficulty of purchasing a **minimum basket** of energy goods and services or, **alternatively**, access to energy services that involves a **distraction of resources**, in terms of expenditure or income, exceeding a normal value>

National Energy Strategy, 2017

Perimeter of analysis:

- all energy uses in **home** (space heating/**cooling**, cooking, water heating, lighting and other appliances).
- **NO TRANSPORTATION**

- The official indicator of EP is an expenditure-based version of the LIHC approach (**M_LIHC**), developed by Faiella and Lavecchia (2014),
- Measure **consistently** used in the 2017 National energy strategy, 2019 National energy and climate plan, 2022 Plan for the ecological transition, Istat Annual reports (2023 and 2024) but not in the 2024 NECP.
- Annual updates provided by the Italian energy poverty observatory (OIPE; last update, 2023, published on 4 Dec 2024).
- European version (**M_LIHC_EU**) developed by Adera et al. (2025)

Measurement of EP in Italy

$$z = \frac{1}{n} \sum_{i=1}^n w_i \left\{ I \left[\frac{s_{ie}^{eq}}{s_i^{eq}} > 2 * \left(\frac{\sum_{i=1}^n s_{ie}^{eq}}{\sum_{i=1}^n s_i^{eq}} \right) \right] * I[(s_i - s_{ie}) < s_i^*] \cup [I(s_i^r = 0) * I(S_i^{eq} < P50_t(S_i^{eq}))] \right\}$$

a1. high energy costs
& **a2. low expenditure**

(1,2 mln HHs in 2023)

b. hidden energy poverty

(1,2 mln HHs in 2023)

The i-th household is energy poor if

a1. high energy costs (share > 2x the average);

a2. low expenditure (total eq. expenditure, net of energy costs, below the relative poverty threshold)

OR

b. hidden energy poverty
(zero heating expenditure AND total eq. expenditure < median value)

Energy poverty in Italy 1997-2023

Data:

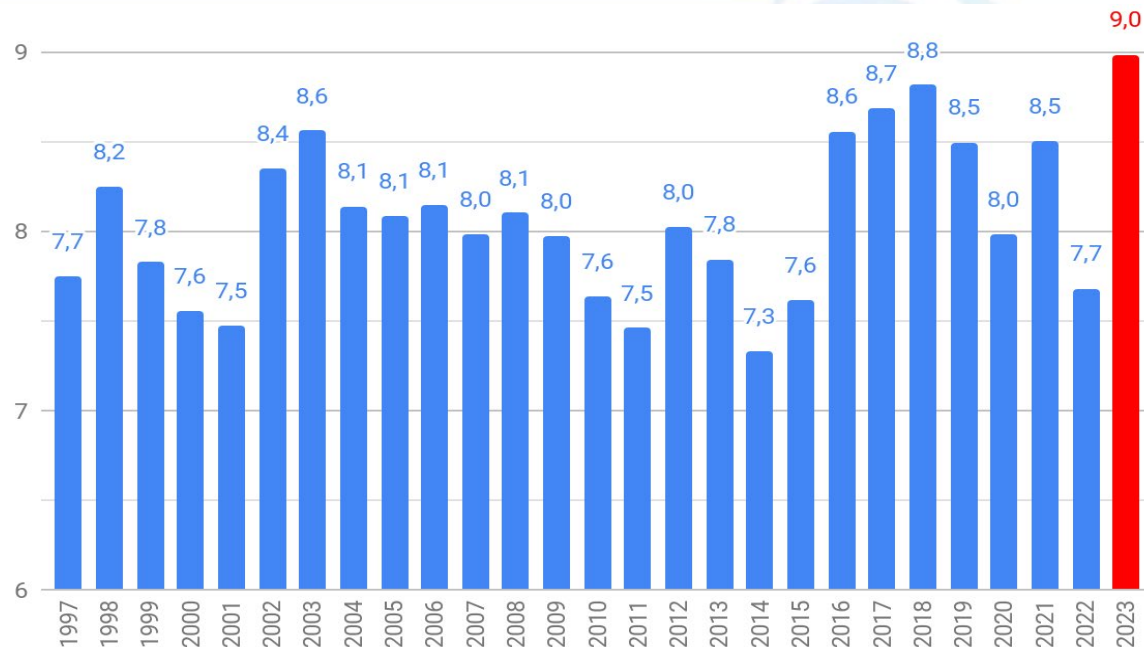
Household budget survey, Istat

Timing:

- Release by November t+1
- OIPE's estimate: December 2025

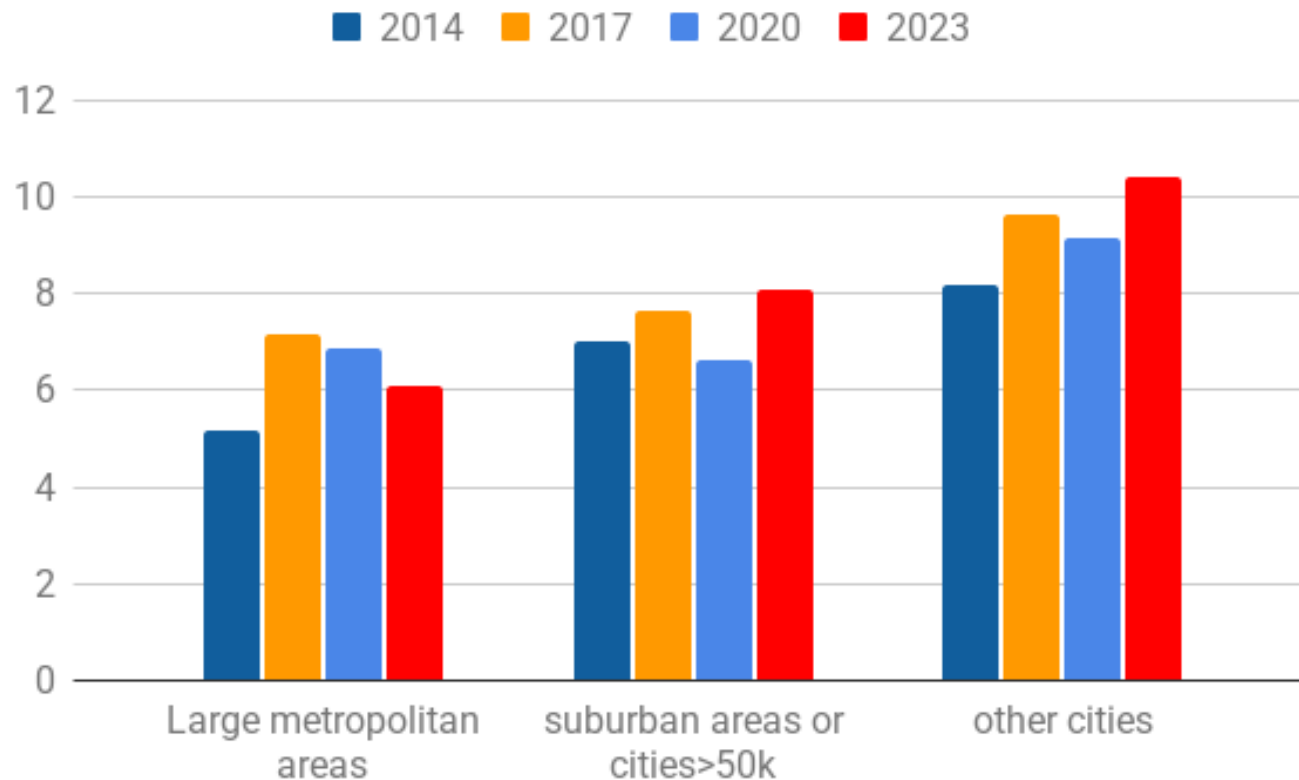
Lengthy release, rapid elaboration

The [open-source](#) code for R and Stata can be found on OIPE's website

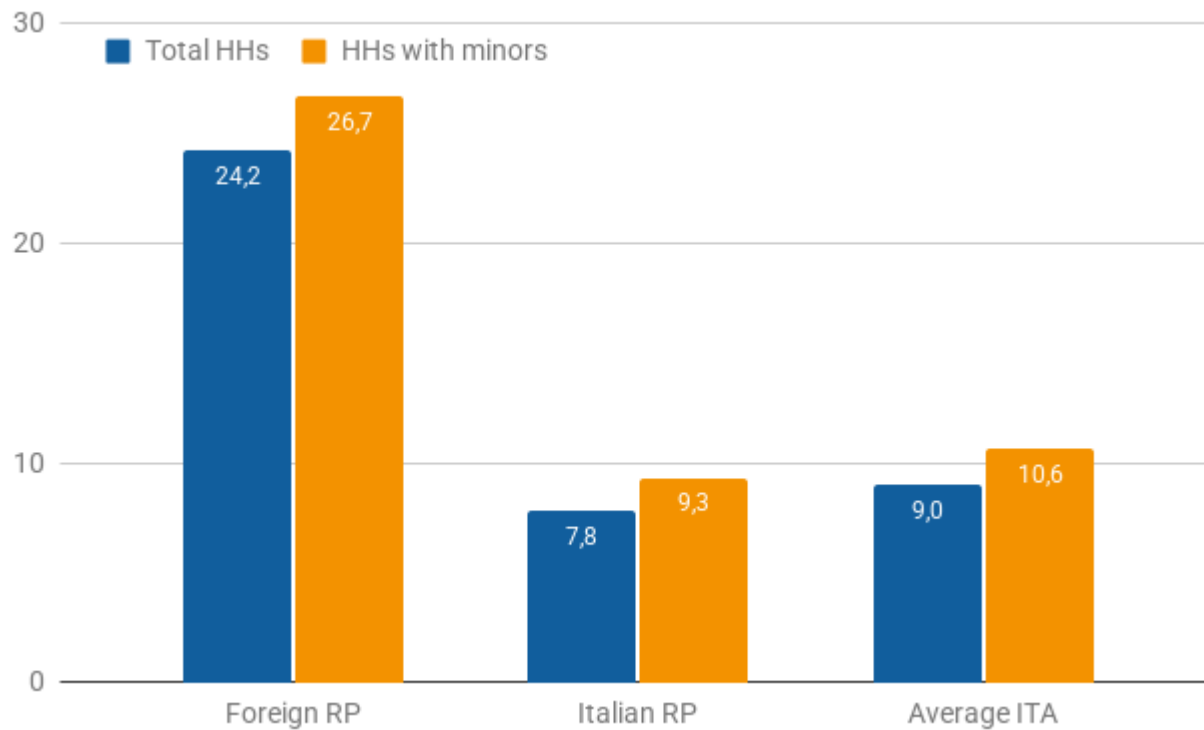


Average 1997 - 2023: 8,1% or 2 mln HHs
(2,4 mln HHs in PE in 2023 – 9%)

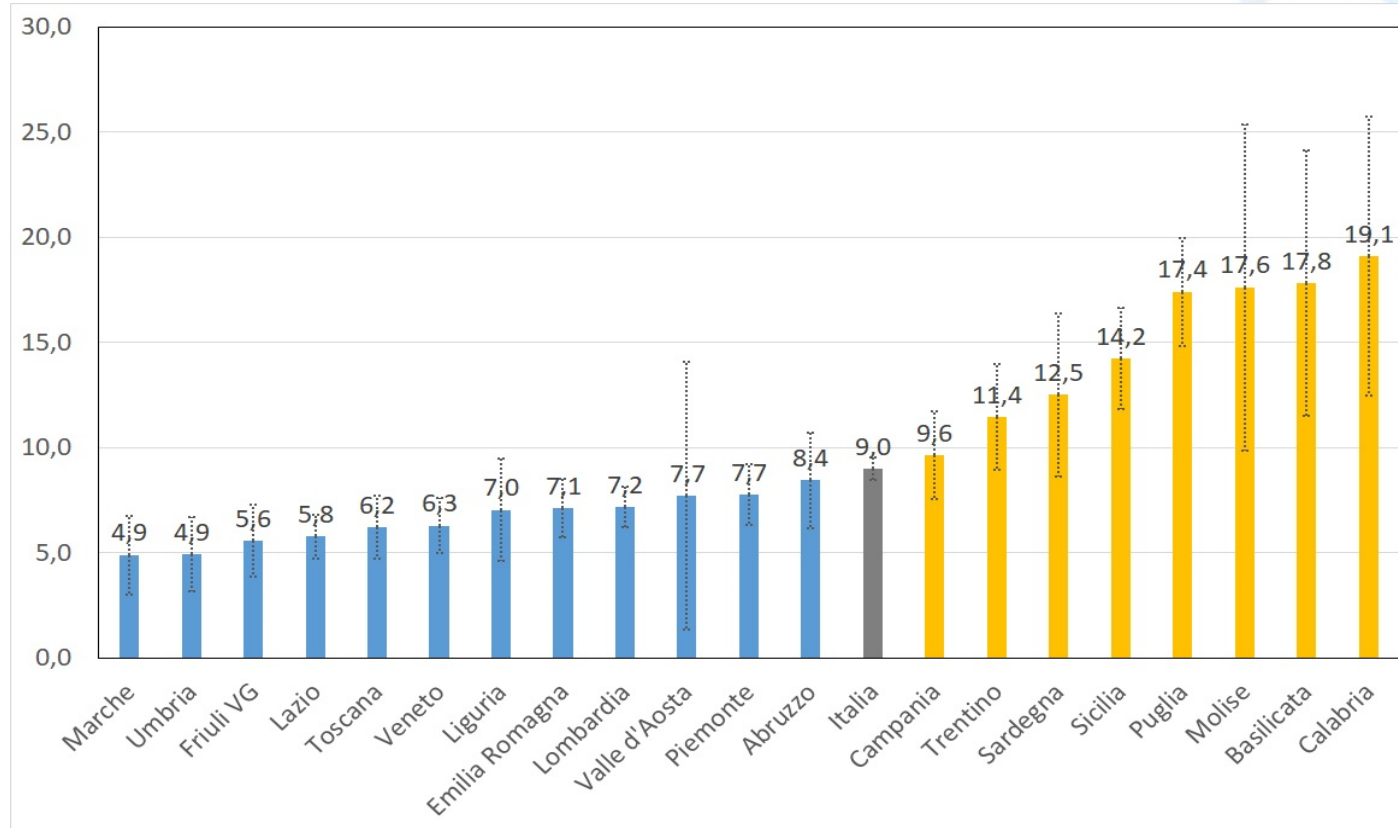
Higher shares are found in suburban areas or smaller cities



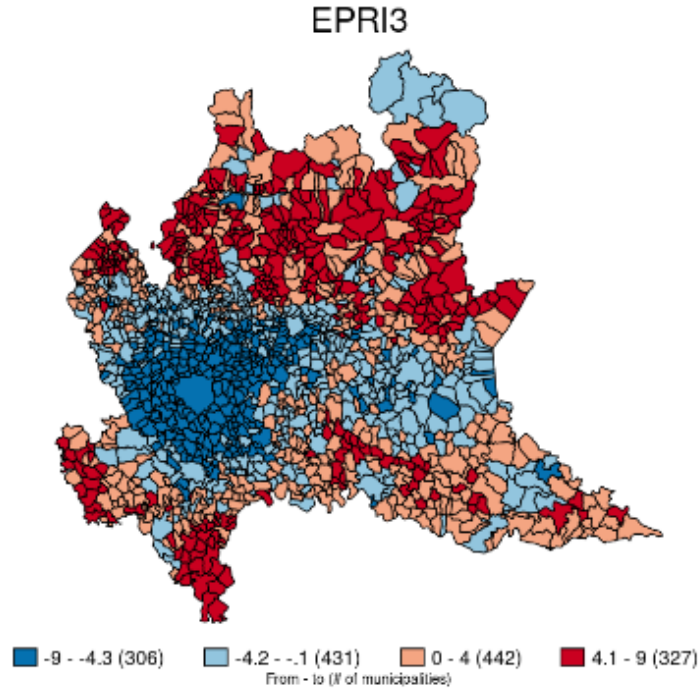
Higher concentration in HHs with minors and/or foreign RP



Southern regions are more exposed



Increasing the spatial analysis: a new risk index



Four components:

- Modeled energy costs
- Climate conditions
- Building quality (**EPC**)
- Income and education



Next step: map of risk of EP in the metropolitan areas (Milan, Rome)

Energy poverty across European countries (M_LIHC_EU)

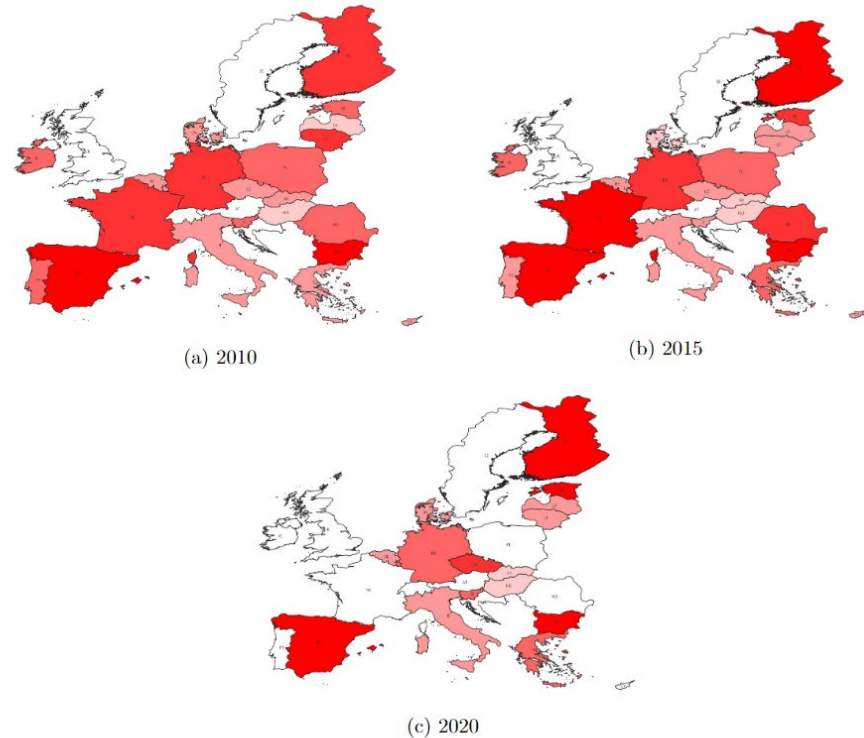


Figure 1: Energy poverty per country

Activate Windows

Conclusions

- **Proper definition and (harmonized) measure** are essential tools for policymakers.
- However, we are currently facing challenges due to a lack of **reliable data** (<*Database Hugging Disorder*>).
- Our attempt to utilize the EU-HBS largely did not succeed because the **data quality** is quite low, despite years of waiting for its availability.
- We need better data to inform better policy, but will policymakers pay attention?



Thank you

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www.oipe.it