

# *The Italian case study*

*Giacomo Di Foggia, Bicocca University, Milan, Italy*

The research project is implemented in the framework of H.F.R.I call “Basic research Financing (Horizontal support of all Sciences)” under the National Recovery and Resilience Plan “Greece 2.0” funded by the European Union –Next Generation EU (H.F.R.I. Project Number: 016638).

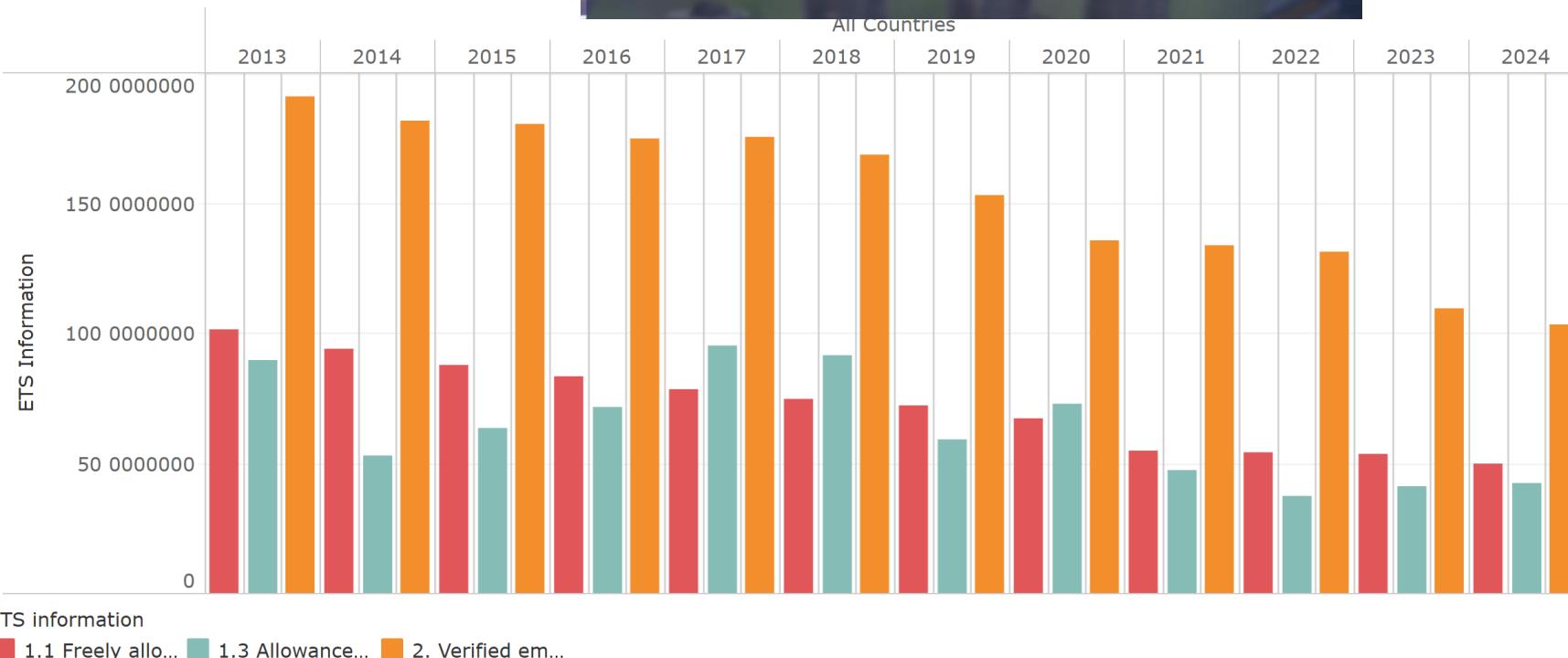
**Regulation (EU) 2023/955 of 10  
May 2023**

In relation to the additional efforts required to reduce emissions in the building and transport sectors, as provided for in Directive 2003/87/EC (ETS2), the **Climate Social Fund** is being established to finance **concrete measures to tackle energy poverty and transport poverty, both in the short and long term**, in order to limit the impact on the most vulnerable consumers.

The **Social Climate Plan (SCP)** draws on the resources of **the Climate Social Fund**, which has an estimated total budget of around €87 billion at European level. The SCP must be submitted by June 2025 and must be aligned with the **provisions of the PNIEC** (Integrated National Energy and Climate Plan).

The research project is implemented in the frame of the National Recovery and Resilience Plan "Greece 2.0" funded by the European Union.

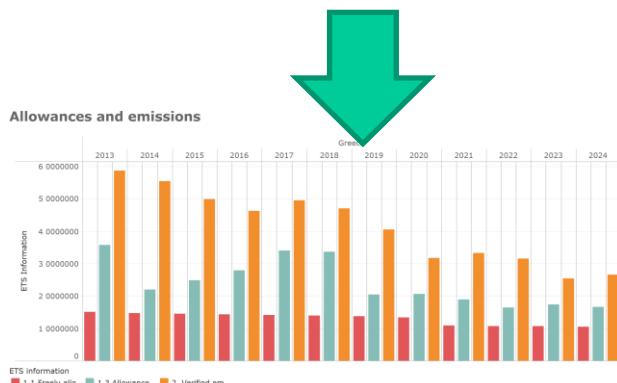
## Allowances and emissions



support of all Sciences)" under the National Recovery and Resilience Plan (Project ID: 016638).

| Year | Euro / ton |
|------|------------|
| 2025 | 73         |
| 2020 | 25         |
| 2015 | 8          |

## Greece



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# ETS2: buildings, road transport and additional sectors

*Energy/Fuel and human **PO**verty: public policy and **RE**commendations in **Southern Europe***  
December 3-4, 2025

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## OBJECTIVE OF THE FUND

The introduction of the emissions trading system for buildings and road transport in the **ETS II Directive** could have an impact on energy and transport costs. These effects will mainly affect the most vulnerable groups, who may also lack the **financial capacity to invest in reducing fossil fuel consumption**. Therefore, **support measures** have been provided for investments aimed at increasing energy efficiency and access to zero- and low-emission mobility and transport.

## STAKEHOLDERS

- Vulnerable households, including households in energy poverty
- Vulnerable micro-enterprises
- Vulnerable transport users who are particularly affected by energy and transport poverty

### SOCIAL CLIMATE FUND

Fund capacity: **€65 billion**

Reference period: **2026-2032**

Addendum to Member States' national contributions: **min. 25%**

Total Fund: **€86.7 billion**

Allocation to Italy: **€7 billion**

If the emissions trading system established under Directive 2003/87/EC is postponed until 2028, the maximum amount available to the Fund would be €54.6 billion – Italy €5.9 billion [By 15 July 2026 – Article 30k of Directive 2003/87/EC]



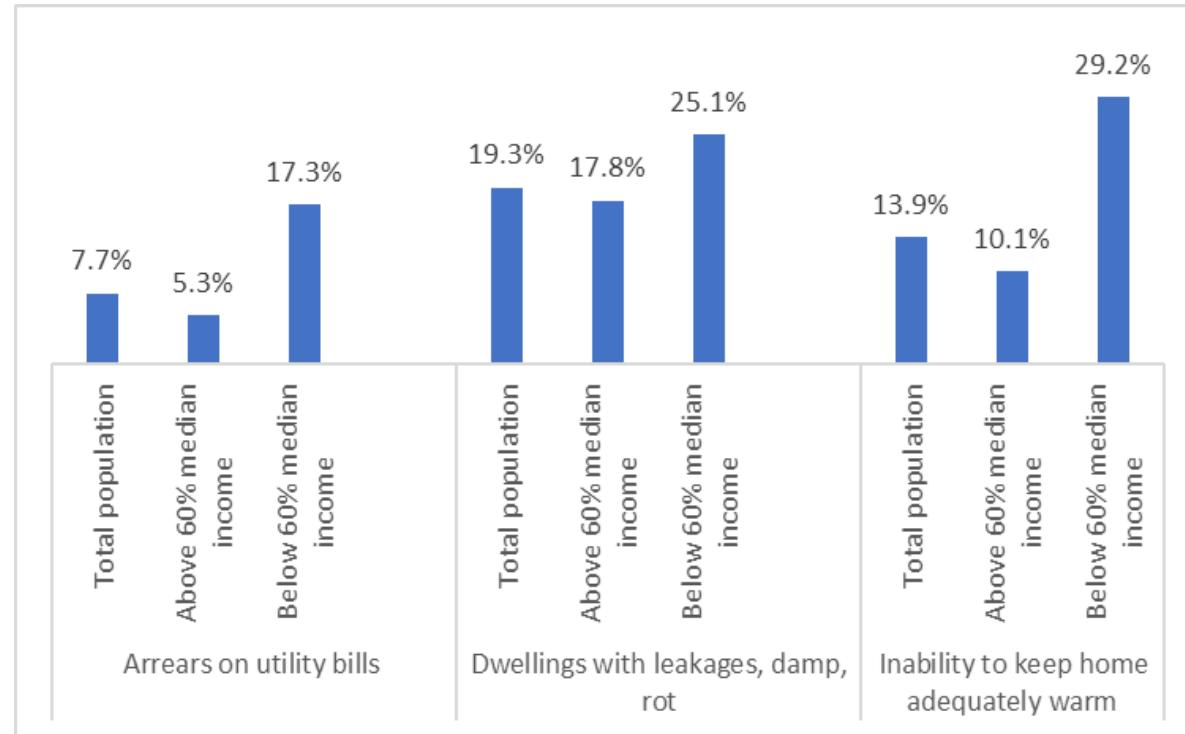
In order to access Social Fund contributions, a **Social Climate Plan (SCP)** must be submitted by June 2025, 'based on the 2024 update of the PNIEC' (\*)



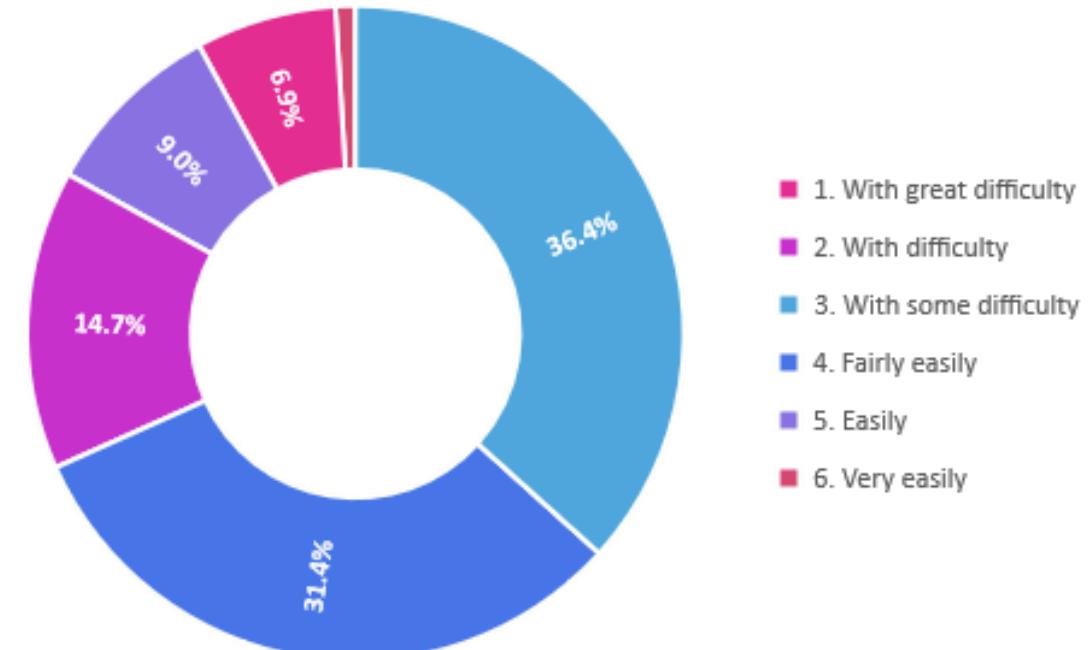
## MEASURES

- **Temporary:**  
*income support – **may not exceed 37.5% of total costs***
- **Long-term:**  
*structural – 'lasting'*

*Average values of energy poverty EU-SILC indicators*



*Ability to make ends meet, average values*



Trends in energy expenditure over time for a typical family  
 (ARERA electricity and gas consumption).

| Classe di valore ISEE    | Numero DSU        |             |
|--------------------------|-------------------|-------------|
|                          | valori assoluti   | valori %    |
| nullo                    | 343.518           | 3,3%        |
| da 0,01 a 4.999,99       | 1.750.294         | 16,9%       |
| da 5.000,00 a 9.999,99   | 2.222.152         | 21,4%       |
| da 10.000,00 a 14.999,99 | 1.752.404         | 16,9%       |
| da 15.000,00 a 19.999,99 | 1.282.970         | 12,4%       |
| da 20.000,00 a 24.999,99 | 929.629           | 9,0%        |
| da 25.000,00 a 29.999,99 | 654.589           | 6,3%        |
| da 30.000,00 a 34.999,99 | 449.989           | 4,3%        |
| da 35.000,00 a 39.999,99 | 304.526           | 2,9%        |
| da 40.000,00 a 44.999,99 | 199.588           | 1,9%        |
| da 45.000,00 a 49.999,99 | 131.342           | 1,3%        |
| da 50.000,00 a 59.999,99 | 152.737           | 1,5%        |
| da 60.000,00 a 69.999,99 | 79.323            | 0,8%        |
| da 70.000,00 a 79.999,99 | 44.221            | 0,4%        |
| da 80.000,00 a 89.999,99 | 25.084            | 0,2%        |
| da 90.000,00 a 99.999,99 | 14.950            | 0,1%        |
| oltre 100.000,00         | 34.031            | 0,3%        |
| <b>Totale</b>            | <b>10.371.347</b> | <b>100%</b> |

**ISEE Observatory:** Single Substitute Declarations (DSU) and ISEE value  
**INPS February 2025** (The data reported in this Statistical Observatory refer  
 to DSU certified with Ordinary ISEE value  
 in the period 2016-2024).

| ISEE value class          | INPS DATA<br>DSU<br>NUMBER |
|---------------------------|----------------------------|
| nil                       | 343,518                    |
| from 0.01 to 4,999.99     | 1,750,294                  |
| from 5,000.00 to 9,999.99 | 2,222,152                  |
| <b>TOTAL =</b>            | <b>4,315,964</b>           |

For ISEE below €4,999.99, a benefit of 100% of the cost of the intervention should be considered.

For lower incomes (ISEE between €5,000.00 and €9,999.99), an ADDITIONAL benefit could be considered to supplement the existing tax deduction (36% tax deduction for main residences in 2026) using part of the funds from the Social Climate Plan.

| ISEE                         | 0 | Households in absolute poverty | 5,000 | Families in energy poverty                           | 10,000 |
|------------------------------|---|--------------------------------|-------|--|--------|
| Maximum cost of intervention |   | <b>€5,500</b>                  |       | <b>€5,500</b>  |        |
| Tax deduction                |   |                                |       | 36% = €1,980.0 (*)<br>(over 10 years: £198 per year) |        |
| PSC benefit                  |   | 100% non-repayable<br>€5,500   |       | 64% non-repayable<br>€3,520                          |        |

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## SOCIAL FUND FOR THE CLIMATE (Reference period 2026-2032)

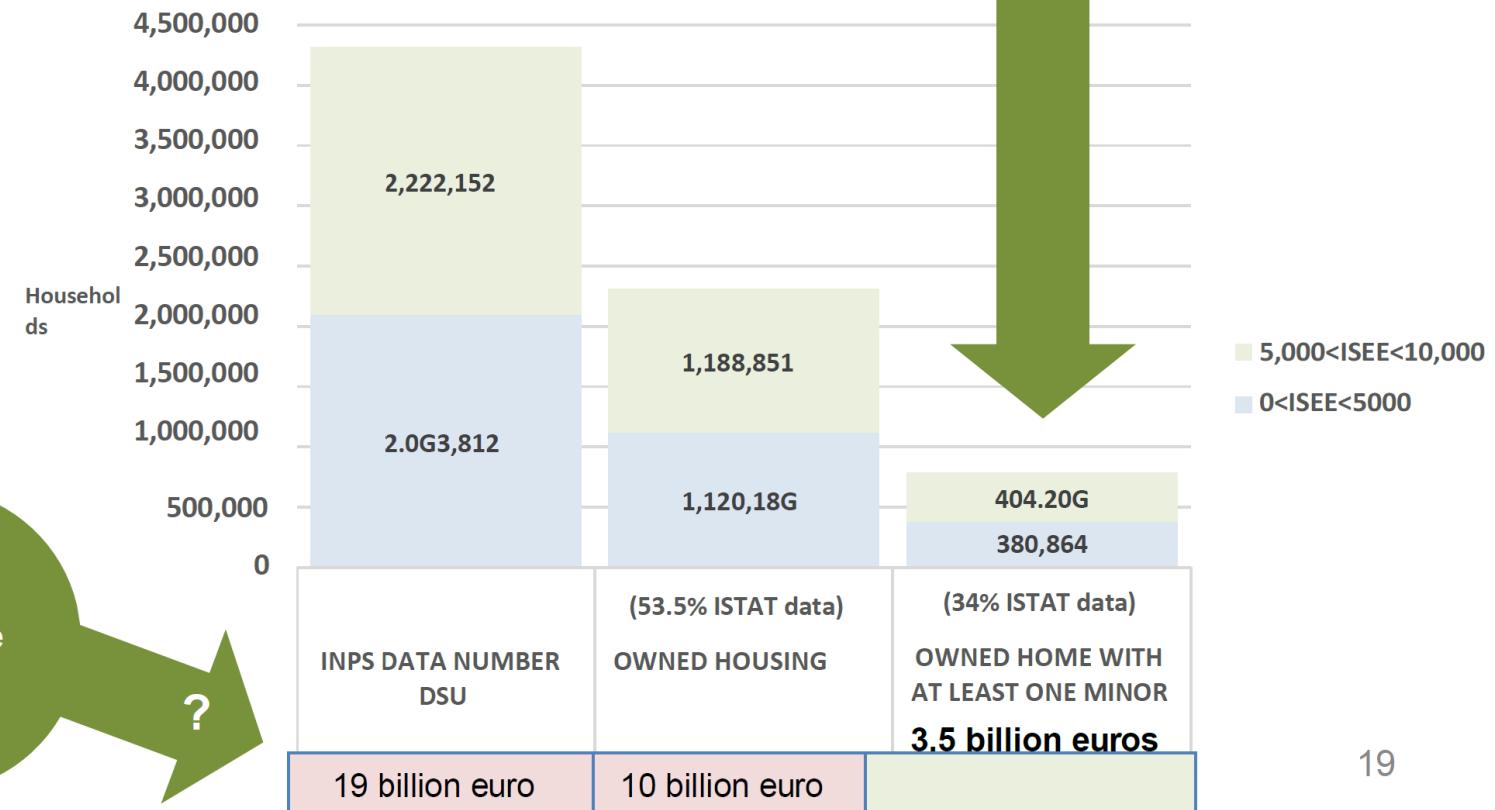
- a) **Vulnerable households, including households in energy poverty**
- b) Vulnerable micro-enterprises
- c) Vulnerable transport users who are particularly affected by energy and transport poverty



Allocation Italy  
**7 billion euro**

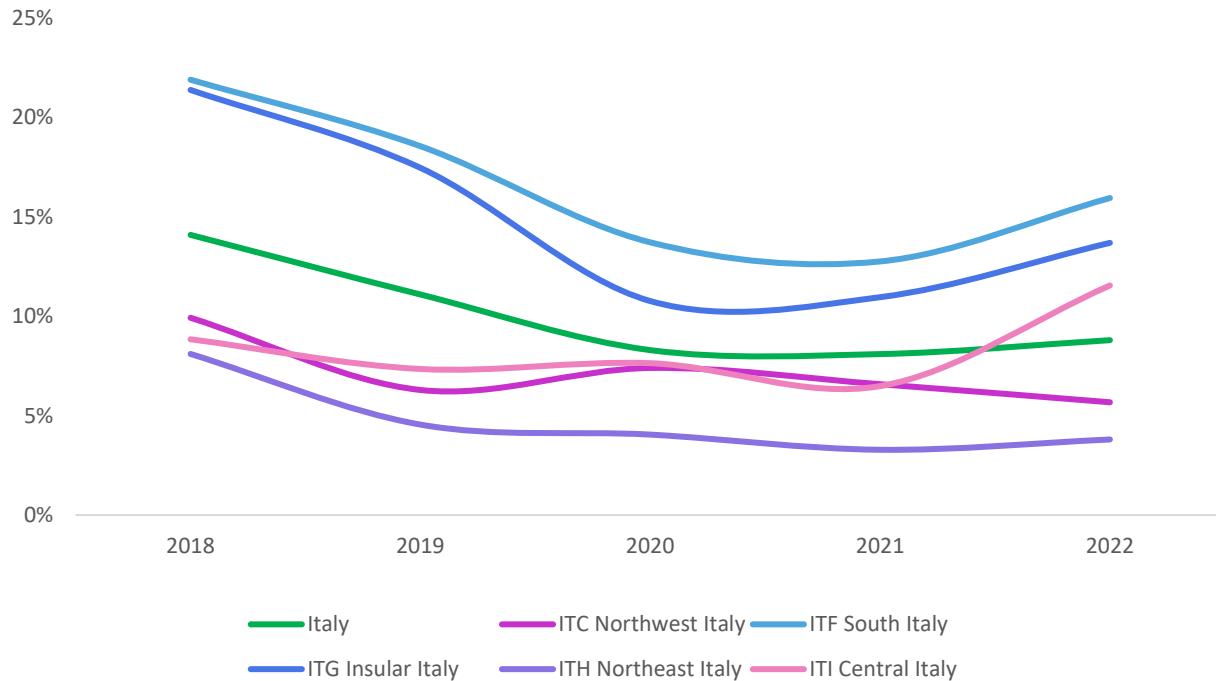
For budgetary reasons, the proposed measures are aimed exclusively at households with:

- OWNED PROPERTY (**53.5% of households**) and
- AT LEAST ONE DEPENDENT CHILD (**34% of households**)

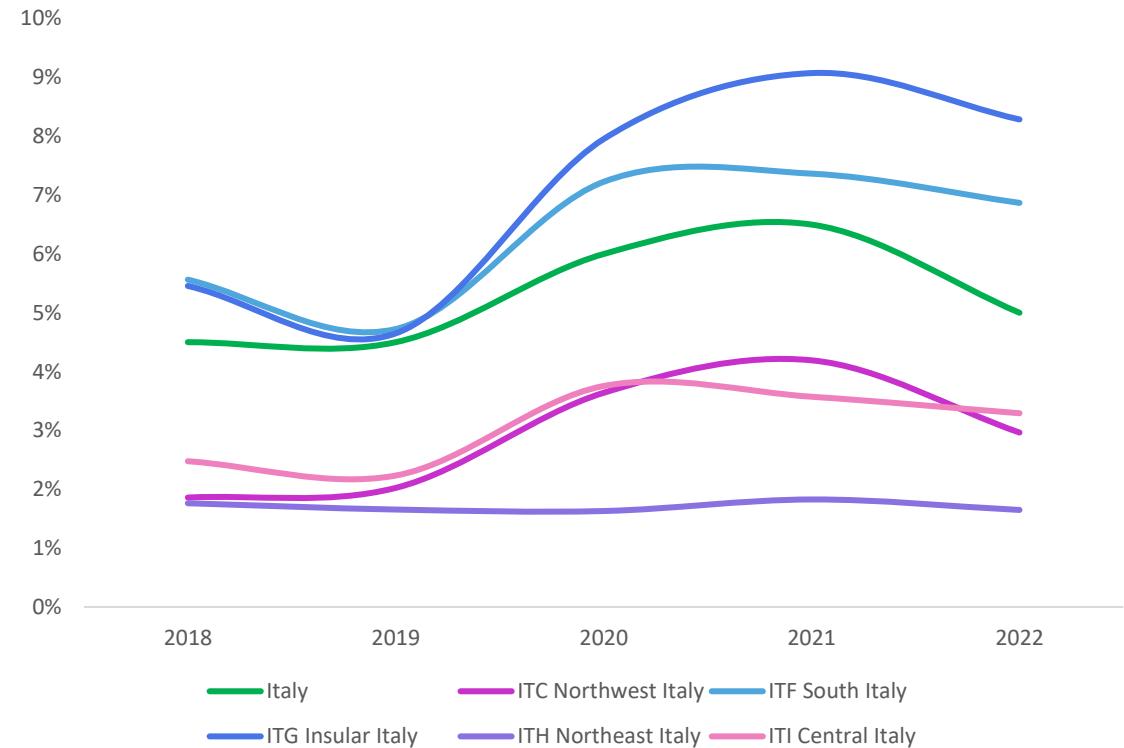


Sharp increase in electricity prices

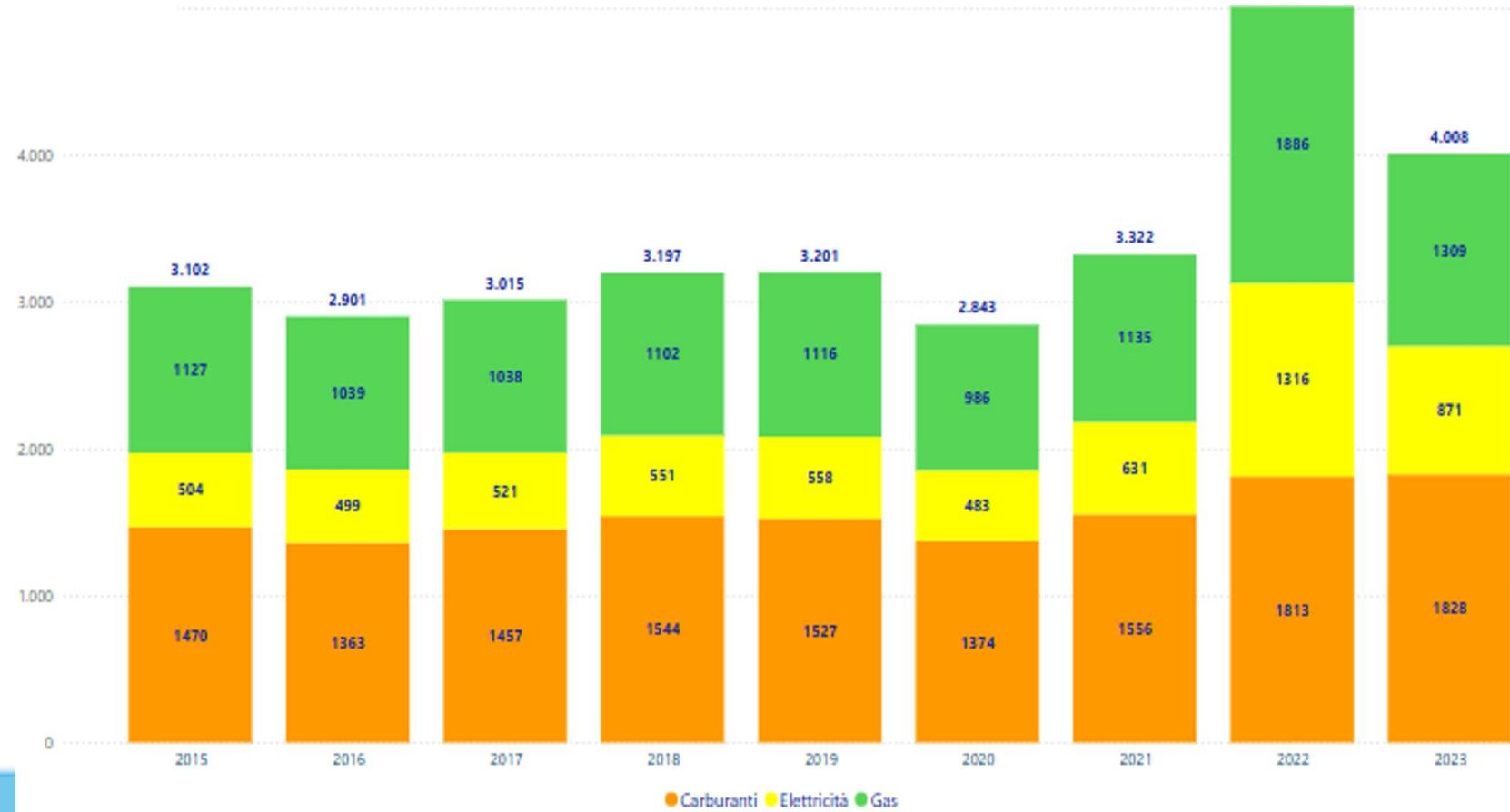
Inability to keep home adequately warm – NUTS1



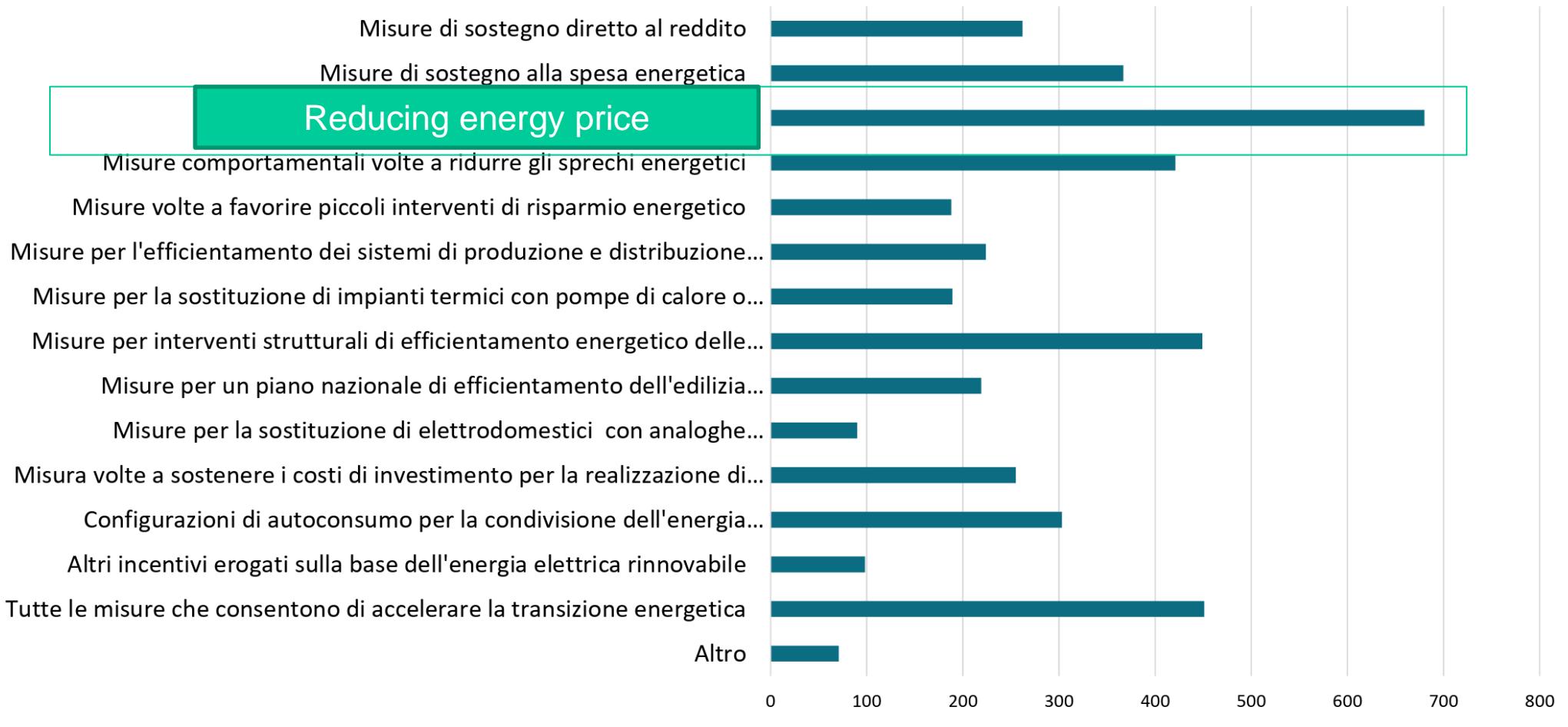
on utility bills – NUTS1



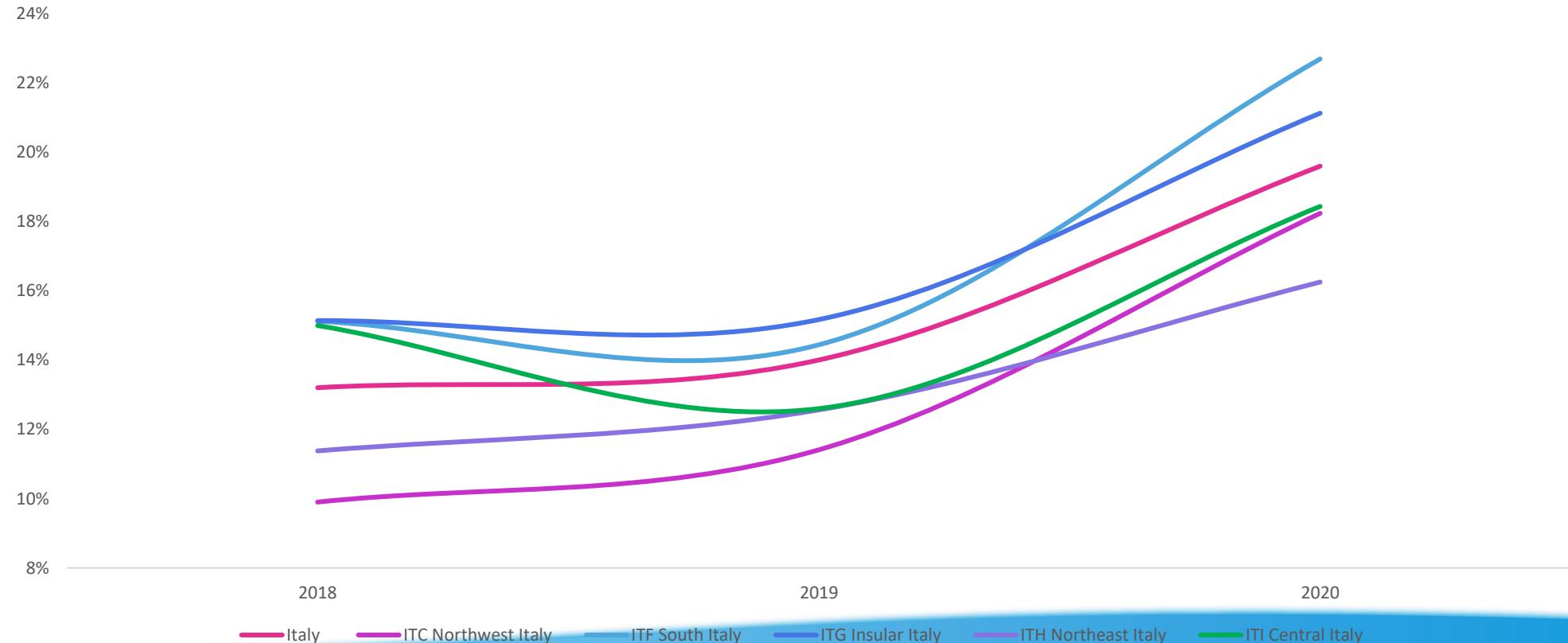
Trends in energy expenditure over time for a typical family  
(ARERA electricity and gas consumption).



# What are the priority measures to reduce household vulnerability to rising energy costs?



*Dwelling with leak, damp, or rot – NUTS1*



## The Italian case study - Econometric analysis

| <b>Model 1</b> - Inability to keep home warm | 2018        | 2020      | 2022       |
|--|-------------|-----------|------------|
| Ln(income)                                   | -0.016***   | -0.008*** | -0.011***  |
| Education                                    | -0.014**    | -0.018*** | -0.001     |
| Age  | -0.002***   | 0.0001    | 0.0007     |
| Age2   | 2.36e-05*** | -5.05E-07 | -1.35e-05* |
| Unemployed                                   | 0.035***    | 0.024***  | 0.009      |
| Persons-per-rooms                            | -0.004      | -0.007*   | -0.012**   |
| Health                                       | -0.004*     | n/a       | 0.023***   |
| Gender                                       | -0.004      | -0.002    | 0.008**    |
| Ability to make ends meet                    | 0.070***    | 0.042***  | 0.054***   |
| Observations                                 | 20,614      | 12,915    | 14,063     |

| <b>Model 2</b> – Arrears on utility bills | 2018         | 2020         | 2022         |
|---|--------------|--------------|--------------|
| Ln(income)                                | -0.002***    | -0.002***    | -0.0007      |
| Education                                 | 0.0004       | -0.005*      | 0.004*       |
| Age                                       | 0.001***     | 0.001***     | 0.002***     |
| Age2                                      | -1.19e-05*** | -1.20e-05*** | -2.21e-05*** |
| Unemployed                                | 0.006***     | 0.012***     | 0.004*       |
| Persons-per-rooms                         | 0.00453***   | 0.008***     | 0.009***     |
| Health                                    | 0.003***     | n/a          | 0.006***     |
| Gender                                    | -0.0003      | 0.0008       | 0.002        |
| Ability to make ends meet                 | 0.012***     | 0.016***     | 0.016***     |
| Observations                              | 20,614       | 12,915       | 14,063       |

|   | 2018        | 2020      | 2023 |
|---|-------------|-----------|------|
| <b>Model 3 - Dwelling with a leaking roof, damp walls/floors/foundation, or rot</b> |             |           |      |
| Ln(income)  | -0.004      | -0.008*   | n/a  |
| Education   | 0.019***    | 0.00372   | n/a  |
| Age   | 0.002**     | 0.002     | n/a  |
| Age2  | -2.15e-05** | -1.20E-06 | n/a  |
| Unemployed  | 0.012       | 0.026     | n/a  |
| Persons-per-rooms   | 0.012**     | 0.019**   | n/a  |
| Health  | 0.041***    | n/a       | n/a  |
| Gender  | -0.003      | -0.007    | n/a  |
| Ability to make ends meet   | 0.048***    | 0.044***  | n/a  |
| Observations  | 20,614      | 12,915    |      |

| Model 4 -<br>AROPE        | 2018        |             |           |              |              | 2020        |            |             |             |              | 2022        |           |            |             |             |
|---------------------------|-------------|-------------|-----------|--------------|--------------|-------------|------------|-------------|-------------|--------------|-------------|-----------|------------|-------------|-------------|
|                           | Coefficient | Outcome 1   | Outcome 2 | Outcome 3    | Outcome 4    | Coefficient | Outcome 1  | Outcome 2   | Outcome 3   | Outcome 4    | Coefficient | Outcome 1 | Outcome 2  | Outcome 3   | Outcome 4   |
| Ln(income)                | -2.109***   | 0.213***    | -0.170*** | -0.037***    | -0.007***    | -2.245***   | 0.227***   | -0.177***   | -0.041***   | -0.008***    | -2.294***   | 0.232***  | -0.171***  | -0.048***   | -0.012***   |
| Education                 | -0.190**    | .019**      | -0.015**  | -0.003**     | -0.006**     | -0.325***   | 0.032***   | -0.025***   | -0.006***   | -0.001***    | -0.391***   | 0.039***  | -0.029***  | -0.008***   | -0.002***   |
| Age                       | 0.049***    | -0.005***   | 0.004***  | 0.0008***    | 0.0002***    | 0.047***    | -0.004***  | 0.003***    | 0.0008***   | 0.0001***    | 0.084***    | -0.008*** | 0.006***   | 0.002***    | 0.0004***   |
| Age2                      | -0.0005***  | 0.00005 *** | -0.00004  | -9.09e-06*** | -1.76e-06*** | -0.0005***  | 0.00004*** | -0.00003*** | -0.00001*** | -0.000001*** | -0.0001***  | 0.0001*** | -0.0001*** | -0.00002*** | 0.000004*** |
| Unemployed                | 1.631***    | -0.165***   | 0.131***  | 0.028***     | 0.005***     | 1.128***    | -0.114***  | 0.089***    | 0.021***    | 0.004***     | 1.905***    | -0.193*** | 0.142***   | 0.040***    | 0.010***    |
| Persons-per-rooms         | 0.886***    | -0.090***   | 0.071***  | 0.015***     | 0.003***     | 1.069***    | -0.108***  | 0.084***    | 0.019***    | 0.004***     | 1.005***    | -0.102*** | 0.075***   | 0.021***    | 0.005***    |
| Health                    | 0.142***    | -0.014***   | 0.011***  | 0.002***     | 0.0004***    | n/a         | n/a        | n/a         | n/a         | n/a          | 0.122***    | -0.012*** | 0.009***   | 0.002***    | 0.0006***   |
| Gender                    | 0.105**     | 0.008**     | 0.002**   | 0.001**      | 0.0004**     | 0.126**     | -0.012**   | 0.009**     | 0.002**     | 0.0004**     | 0.269***    | -0.027*** | 0.020***   | 0.005***    | 0.001***    |
| Ability to make ends meet | 0.638***    | -0.064***   | 0.051***  | 0.011***     | 0.002***     | 0.575***    | -0.058***  | 0.045***    | 0.010***    | 0.002***     | 0.681***    | -0.069*** | 0.051***   | 0.014***    | 0.003***    |
| Observations              | 20,614      |             |           |              |              | 12,915      |            |             |             |              | 14,063      |           |            |             |             |

Model 1 - Inability to keep home adequately warm, for NUTS1 regions of Italy (2018, 2020, 2022)

|                            | <b>2018</b>          | <b>2020</b>          | <b>2022</b>         |
|----------------------------|----------------------|----------------------|---------------------|
| <b>ITF South Italy</b>     | 0.0529***<br>(0.006) | 0.005<br>(0.005)     | 0.031***<br>(0.005) |
| <b>ITG Insular Italy</b>   | 0.044***<br>(0.008)  | -0.004<br>(0.006)    | 0.024***<br>(0.006) |
| <b>ITH Northeast Italy</b> | -0.001<br>(0.005)    | -0.019***<br>(0.005) | -0.009**<br>(0.005) |
| <b>ITI Central Italy</b>   | -0.0005<br>(0.004)   | -0.004<br>(0.005)    | 0.037***<br>(0.005) |
| <i>Observations</i>        | 20,614               | 12,915               | 14,063              |

Model 2 - Arrears on utility bills, for NUTS1 regions of Italy (2018, 2020, 2022)

|                            | <b>2018</b>         | <b>2020</b>          | <b>2022</b>          |
|----------------------------|---------------------|----------------------|----------------------|
| <b>ITF South Italy</b>     | 0.007***<br>(0.002) | 0.002<br>(0.002)     | 0.002<br>(0.002)     |
| <b>ITG Insular Italy</b>   | 0.005***<br>(0.002) | 0.004<br>(0.003)     | 0.013***<br>(0.004)  |
| <b>ITH Northeast Italy</b> | 0.0003<br>(0.001)   | -0.007***<br>(0.002) | -0.007***<br>(0.002) |
| <b>ITI Central Italy</b>   | 0.003**<br>(0.001)  | -0.0008<br>(0.002)   | -0.002<br>(0.002)    |
| <i>Observations</i>        | 20,614              | 12,915               | 14,063               |

## Econometric analysis – pseudo panels

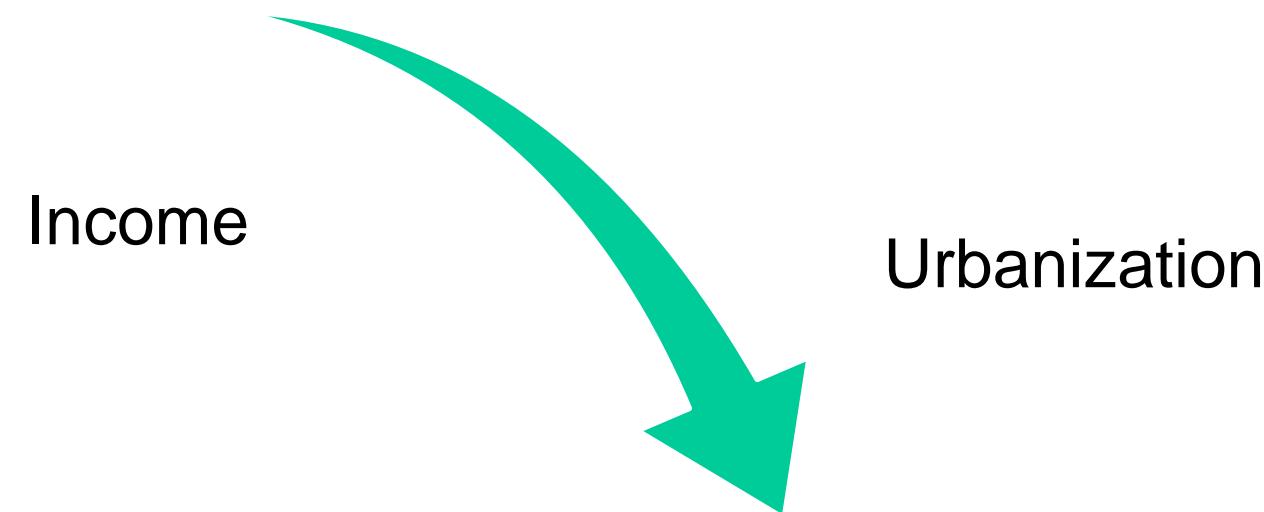
| Models                     | Inability to keep home adequately warm |           |          |                |           |          |                    |           |         |
|----------------------------|--|-----------|----------|----------------|-----------|----------|--------------------|-----------|---------|
|                            | LPM                                    |           |          | Fraction Logit |           |          | Group binomial GLM |           |         |
| Income                     | -0.141***                              | -0.135*** | -0.089** | -1.079***      | -1.445*** | -0.768** | -1.187***          | -1.189*** | -0.573* |
| Household size             | 0.085***                               | 0.041***  | 0.044**  | 0.473***       | 0.226     | 0.073    | 0.549***           | 0.25      | 0.067   |
| Urbanization               | -0.087*                                | 0.214**   | 0.091    | -1.031**       | 1.123     | -0.571   | -1.103**           | 1.480**   | -0.025  |
| Detached house             | -0.016*                                | -0.007    | 0.112*   | -0.174**       | -0.201**  | -0.414   | -0.321***          | -0.228*** | -0.368  |
| Employment                 | -0.025***                              | -0.030*** | -0.013   | -0.246***      | -0.311*** | -0.002   | -0.233***          | -0.347*** | -0.016  |
| Tertiary ratio             | -0.252***                              | -0.244*** | -0.05    | -2.214***      | -1.015    | -0.828   | -2.220***          | -1.971**  | -1.331* |
| HDD/CDD                    | -0.182***                              | 0.126***  | 0.123**  | -1.839***      | 2.202***  | 0.179    | -1.535***          | 1.963***  | 1.395*  |
| Constant                   | 1.226***                               | 0.609**   | 0.329    | 7.436***       | 2.05      | 2.829    | 7.665***           | 0.942     | -0.411  |
| Cohort effects<br>(NUTS 1) | No                                     | Yes       | Yes      | No             | Yes       | Yes      | No                 | Yes       | Yes     |
| Time effects               | No                                     | No        | Yes      | No             | No        | Yes      | No                 | No        | Yes     |
| Observations               | 480                                    | 420       | 420      | 480            | 480       | 480      | 480                | 480       | 480     |

| Models                     | Arrears on utility bills |          |          |                |          |         |                    |          |        |
|----------------------------|--------------------------|----------|----------|----------------|----------|---------|--------------------|----------|--------|
|                            | LPM                      |          |          | Fraction Logit |          |         | Group binomial GLM |          |        |
| Income                     | -0.045***                | -0.041** | -0.026   | -0.881***      | -1.112*  | -1.080* | -0.859***          | -0.759*  | -0.698 |
| Household size             | 0.074***                 | 0.011*   | 0.01     | 1.325***       | 0.276    | 0.169   | 1.543***           | 0.382**  | 0.256  |
| Urbanization               | -0.065**                 | -0.023   | -0.023   | -0.758         | 0.211    | 0.184   | -1.398**           | -0.364   | -0.322 |
| Detached house             | -0.001                   | 0.012*** | 0.024    | 0.438***       | 0.445*** | 0.054   | 0.027              | 0.305*** | 0.173  |
| Employment                 | -0.009**                 | 0.014*** | -0.011** | -0.191         | 0.628*** | -0.08   | -0.237*            | 0.587*** | -0.151 |
| Tertiary ratio             | -0.043*                  | -0.077   | -0.049   | -0.482         | 0.118    | 0.306   | -0.905*            | -1.262   | -1.109 |
| HDD/CDD                    | -0.061***                | 0.130*** | -0.03    | -1.542***      | 3.590*** | 1.135   | -1.241**           | 3.609*** | 1.245* |
| Constant                   | 0.382***                 | 0.111    | 0.245*   | 3.433***       | -3.129   | 1.253   | 3.469***           | -4.579** | -0.716 |
| Cohort effects<br>(NUTS 1) | No                       | Yes      | Yes      | No             | Yes      | Yes     | No                 | Yes      | Yes    |
| Time effects               | No                       | No       | Yes      | No             | No       | Yes     | No                 | No       | Yes    |
| Observations               | 480                      | 420      | 420      | 480            | 480      | 480     | 480                | 480      | 480    |

| Leaking roof, damp walls/floors/foundation, or rot in window frames or floor |           |          |        |                |            |          |                    |           |         |
|--|-----------|----------|--------|----------------|------------|----------|--------------------|-----------|---------|
| Models   | LPM       |          |        | Fraction Logit |            |          | Group binomial GLM |           |         |
| Income   | -0.023*   | 0.024    | 0.002  | -0.066         | 0.472      | 0.279    | -0.161             | 0.356     | 0.029   |
| Household size   | 0.035***  | 0.005    | -0.016 | 0.215**        | 0.025      | -0.172   | 0.356***           | 0.087     | -0.085  |
| Urbanization   | 0.005     | 0.024    | 0.023  | -0.138         | 0.362      | 0.193    | -0.012             | -0.07     | 0.103   |
| Detached house   | 0.065***  | 0.033*** | -0.027 | 0.465***       | 0.272***   | -0.443   | 0.436***           | 0.337***  | -0.214  |
| Employment   | 0.044***  | 0.056*** | -0.009 | 0.340***       | 0.470***   | -0.065   | 0.351***           | 0.470***  | -0.142* |
| Tertiary ratio   | -0.046    | -0.037   | 0.031  | -0.362         | 0.26       | 0.346    | -0.445             | -0.278    | 0.102   |
| HDD/CDD  | -0.099*** | 0.473*** | 0.11   | -0.630***      | 3.637***   | 1.573**  | -0.624***          | 3.449***  | 1.384*  |
| Constant   | 0.370***  | -0.674** | 0.011  | -0.719         | -10.634*** | -5.433** | -0.341             | -9.531*** | -3.978* |
| Cohort effects<br>(NUTS 1)   | No        | Yes      | Yes    | No             | Yes        | Yes      | No                 | Yes       | Yes     |
| Time effects   | No        | No       | Yes    | No             | No         | Yes      | No                 | No        | Yes     |
| Observations   | 360       | 300      | 300    | 360            | 360        | 360      | 360                | 360       | 360     |

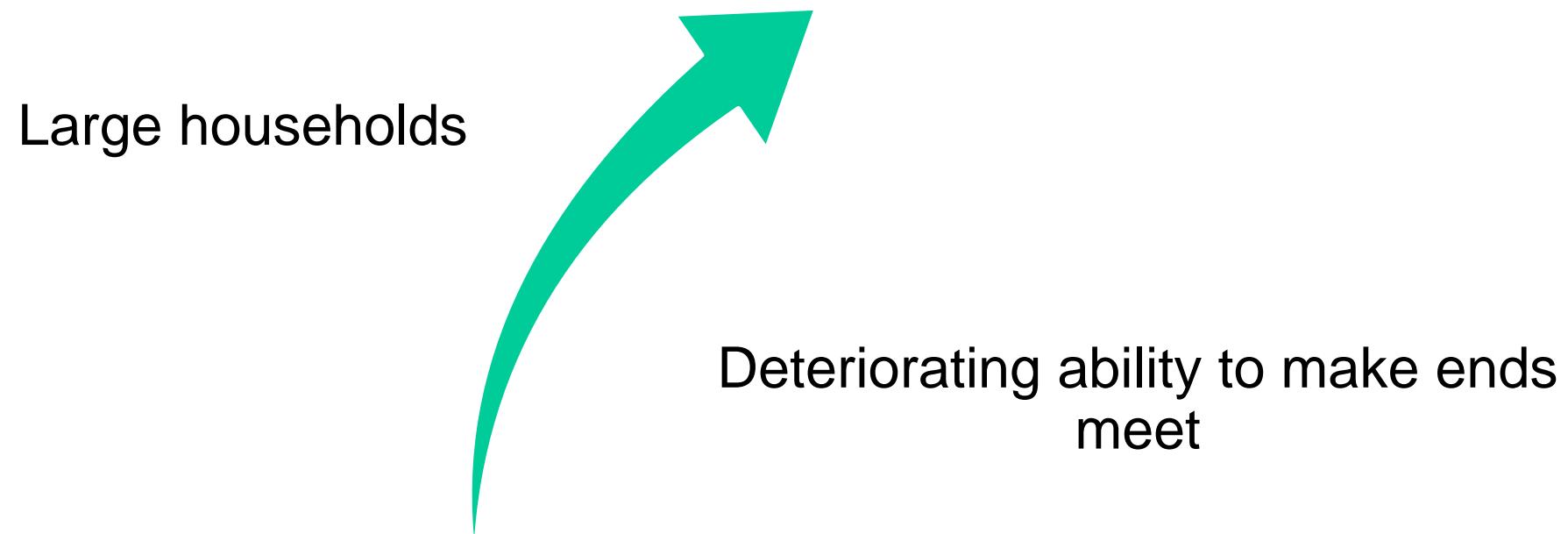
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## Determinants of energy poverty in Italy – overall insights



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## Determinants of energy poverty in Italy – overall insights



Thank you