# Policy Routes towards Residential Energy Efficiency: A Social Distribution Perspective

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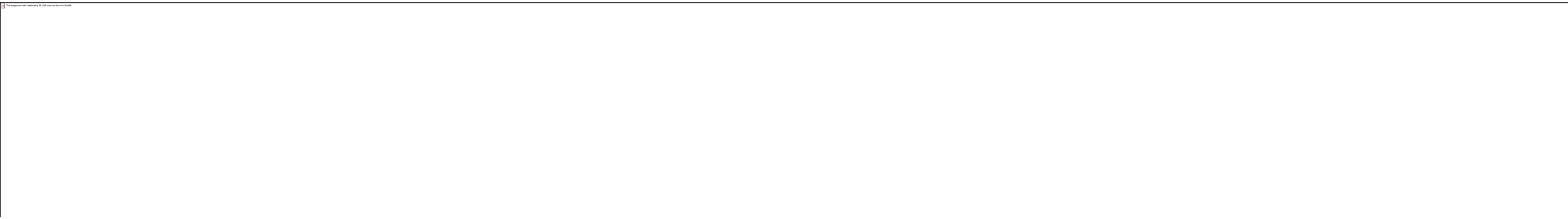


# Outline

- Starting premises
- Research Questions
- Data & Methods
- Results
- Conclusions

# Starting premises

- Important role of energy efficiency in buildings
  for reaching climate goals consistent with Paris Agreement
  - Fossil fuel use in Belgian buildings = 22% of Belgium's non-EU-ETS emissions
  - Largest cost-effective gains to be obtained from increasing energy efficiency

- Implying (deep) energy renovation for 98% of Belgian dwellings by 2050

- Need for strong increase in renovation rates
  will require substantial reinforcement of policy stimulating EE retrofits

# Research Questions

(1) How are retrofitting needs socially distributed?
A micro-level perspective to physical & energy quality of Belgian dwellings

(2) Towards energy efficiency for all?
Zooming in on barriers and levers for vulnerable groups

# Data & Methods

(1) How are retrofitting needs socially distributed?
A micro-level perspective to physical & energy quality of Belgian dwellings

- Socio-economic, housing & utilities expenditure info in BE-SILC 2015
- PEACH2AIR emission coefficients for dwelling energy use

(2) Towards energy efficiency for all?
Zooming in on barriers and levers for vulnerable groups

- literature study
- semi-structured interviews with local operators of innovative policy experiments, targeted at a specific groups of vulnerable households

# (1) How are retrofitting needs socially distributed?

Variables in dataset

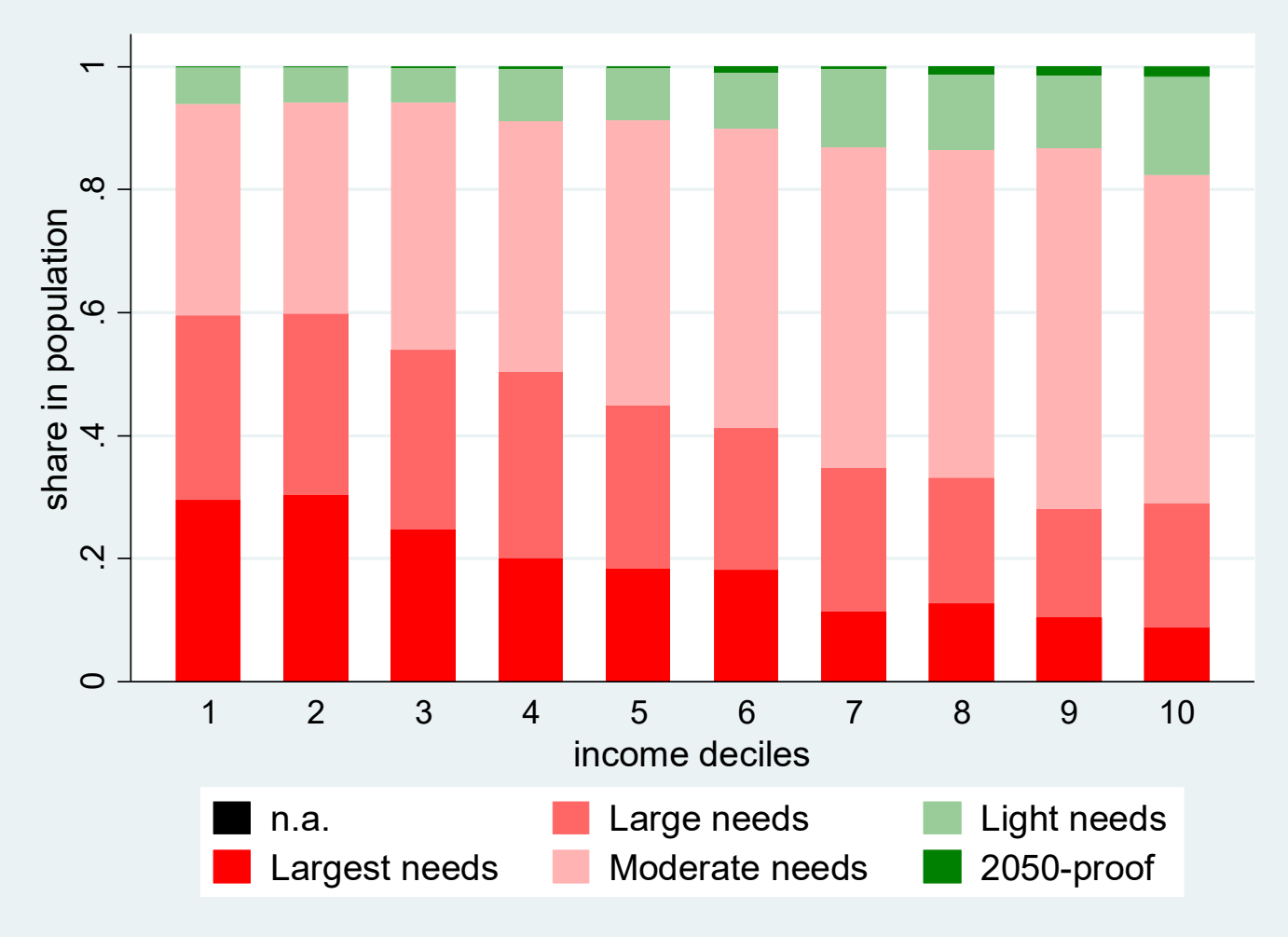
| Socio-economic characteristics of the household | Housing characteristics | Variables on dwelling insulation (yes/no) + (fully/partly) | Variables on dwelling deficiencies (yes/no) + (small/large) intervention necessary | Variables on Housing & energy expenditures |
|---|---|---|---|---|
| Income | Dwelling type | Roof insulation | Leaking roof | Electricity |
| Tenure status | Floor surface | Wall insulation | Moist walls | Natural gas |
| Household size | Construction year | Pipe insulation | Rotten window frames | Heating oil |
| Household type | Heating type & fuel | Floor insulation | Inadequate electrical configuration | Coal |
| | Degree of urbanisation | Double glazing | | Wood |

# (1) How are retrofitting needs socially distributed?

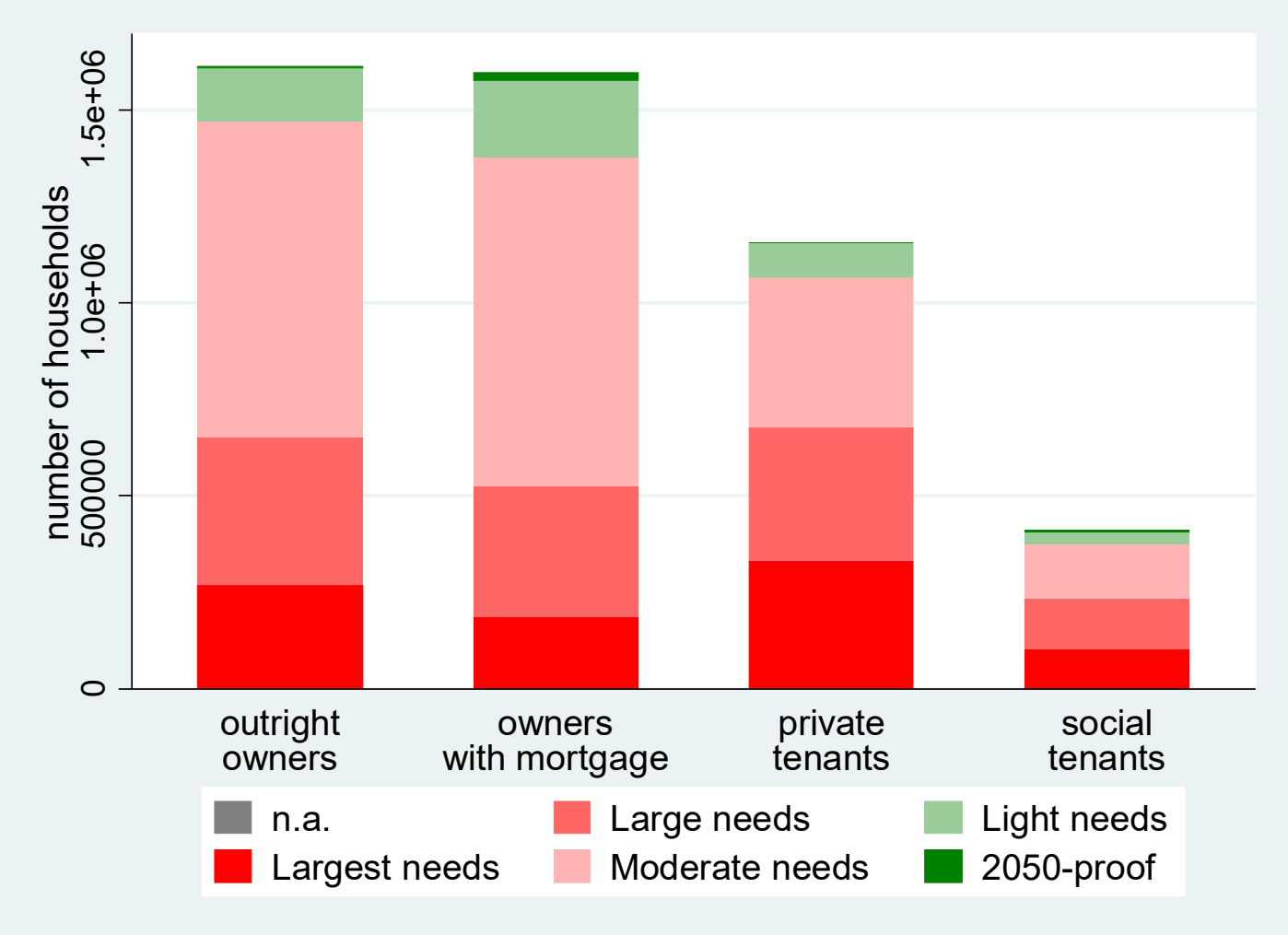
- Constructing a “renovation needs” indicator

| Renovation Needs | Conditions | % of hh |
|---|---|---|
| Largest needs | At least 1 large intervention required in roof, wall, windows, or electricity, and/or lowest level of insulation (+/- bottom 7%) | 18% |
| Large needs | Min. 2 ‘moderate’ intervention required in roof, wall, windows, or electricity, and/or lowest insulation quartile (bottom 25%) | 23% |
| Moderate needs | Middle level insulation and no immediate renovation needs in roof, wall, windows or electricty | 47% |
| Light needs | Maximal insulation, fossil fuel heated | 10% |
| No needs, 2050-proof | Maximal insulation, renewable heat | 1% |

# Retrofitting needs over deciles (Belgium, 2015)



# Retrofitting needs over tenure status (Belgium, 2015)



# (1) How are retrofitting needs socially distributed?

## Conclusions

Retrofitting needs are higher

- at the bottom of the income distribution
- in rental accommodation (private & social)

Participation in renovation premiums is lower

- Study of Verbeeck (2016) shows that low-income groups are least reached with policy measures based on ex-post subsidies and tax rebates for EE investments.

# (2) Towards energy efficiency for all?

## Zooming in on barriers and levers for vulnerable groups

Qualitative investigation in the Flemish policy context

Overviewing local, small-scale retrofitting programmes that target specific vulnerable groups:

- Owners (with too limited financial means for investment)
- Tenants at private market
- Social tenants

Based on

Vanhille, J., Verbist G., Goedemé T. (2017) *Energie-efficiënt wonen, ook voor gezinnen in armoede? Beleidspistes gericht op private huurders, sociale huurders en precaire eigenaars.* In Goedemé T., Coene J., Hubeau B., van Damme, R. (eds.) Armoede, energie en wonen: creatieve ideeën voor een toekomst zonder energiearmoede. Antwerpen: Universitaire Stichting Armoedebestrijding (USAB).

| | Barriers | Potential levers |
|---|---|---|
| Owners | - Main:<br>  - limited financial resources<br>- Others:<br>  - Incomplete information<br>  - Hidden costs (time, effort, administrative complexity) | Financial model that does not weigh on family budget:<br>- Very high subsidies (>60%) (*Habiter Mieux - FR*)<br>- Third party financing + repayment via savings on the energy bill (*Energiehuis Oostende*)<br>- Subsidy retention (*Dampoort KnapT OP, Ghent*) |
| Tenants at the private market | - Main<br>  - Split incentive (landlord/tenant)<br>- Other<br>  - Time, effort & complexity costs | Need for coordinated programmes targeting landlords<br>- intensified cooperation between actors in the field (*Warmer Wonen*)<br>- development of financial, legal & construction 'tools‘ (*RenBEN*)<br>- Renovation leases via social rental agency (*Gent, Kortrijk, Turnhout*) |
| Social tenants | - Main<br>  - Limited financial resources<br>  - Cost split between social housing company and tenant | Global renovation programme in the social housing sector (vision, strategy)<br>- Monitoring of the quality & energy performance of the dwelling<br>- Prioritising between renovation needs<br>- A long-term financing plan |

# Principles for inclusive energy renovation policy

- Pre-financing of the investment
- Technical support
- Cooperation between the different stakeholders

# (2) Towards energy efficiency for all?
## Zooming in on barriers and levers for vulnerable groups

<u>Conclusions</u>

- Barriers to achieve energy efficiency vary with the household's financial and occupancy status

- Tackling specific obstacles in a targeted manner:
  ex-post subsidy policy measures are not sufficient

- Successful projects and funding models exist

  ➔Need for upscaling

# Thank you!

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