



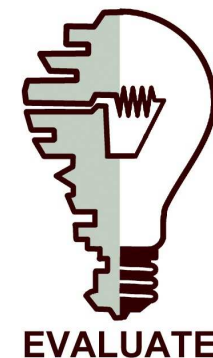
# Fuel poverty and energy vulnerability in Europe:

Definitions and indicators

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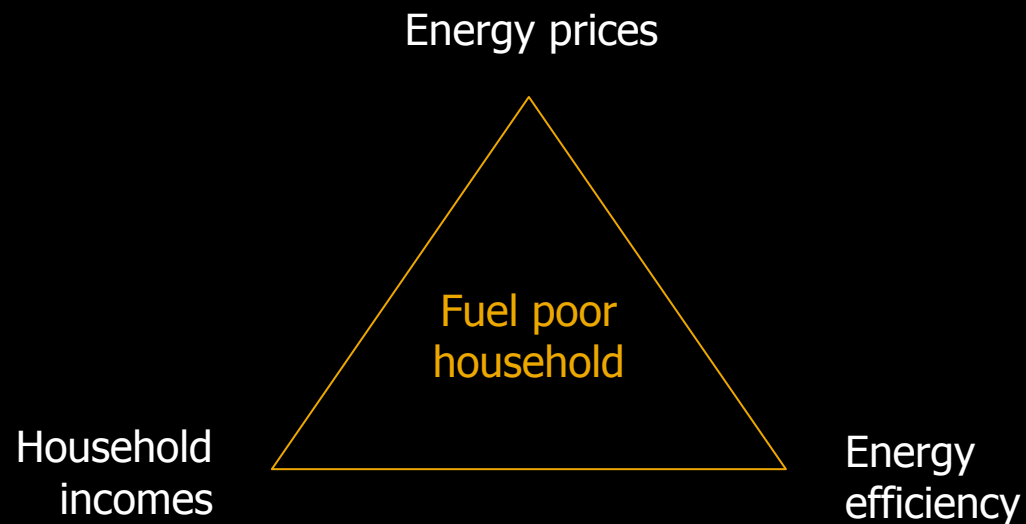
Dr Harriet Thomson

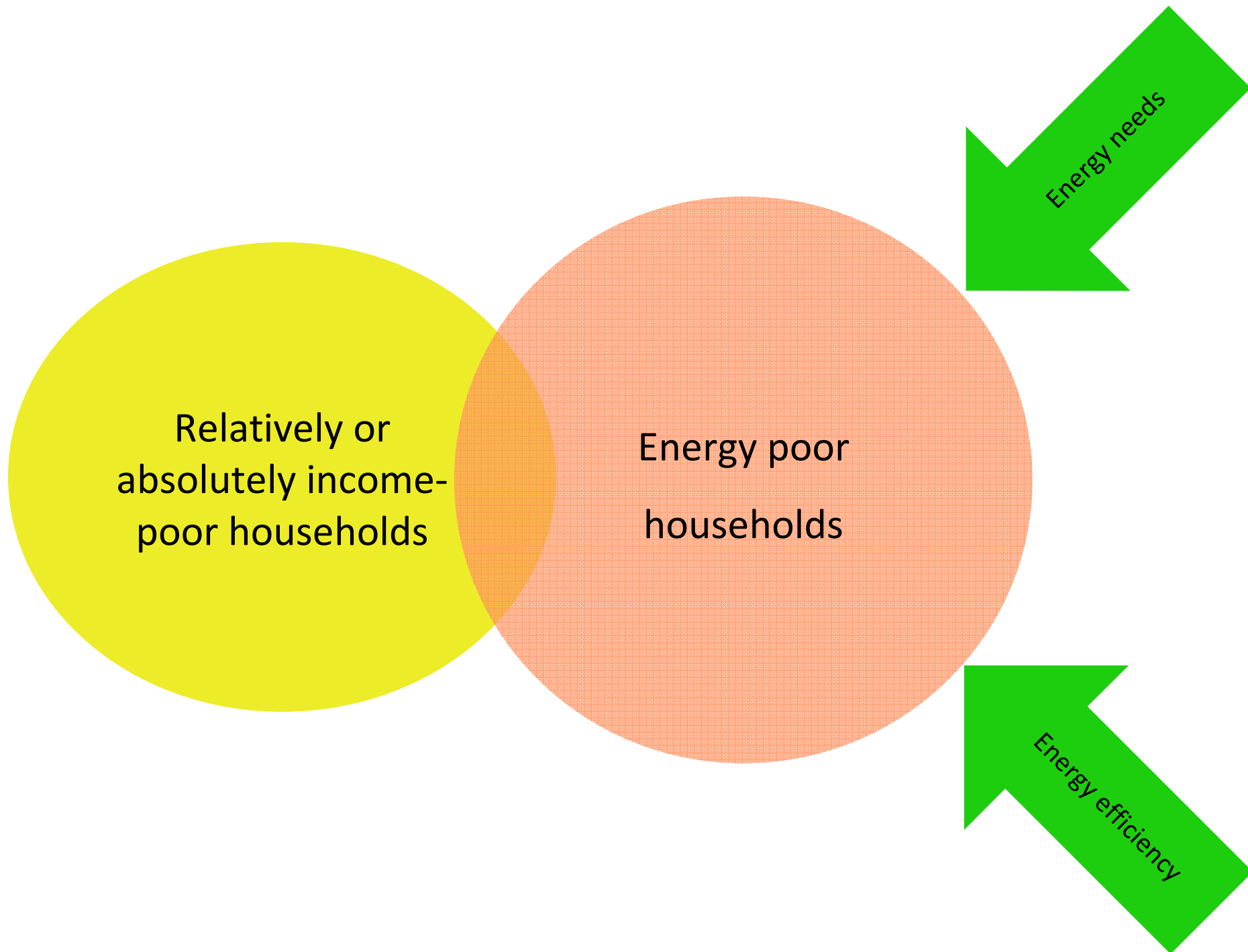
Professor Stefan Bouzarovski



# Energy/fuel poverty

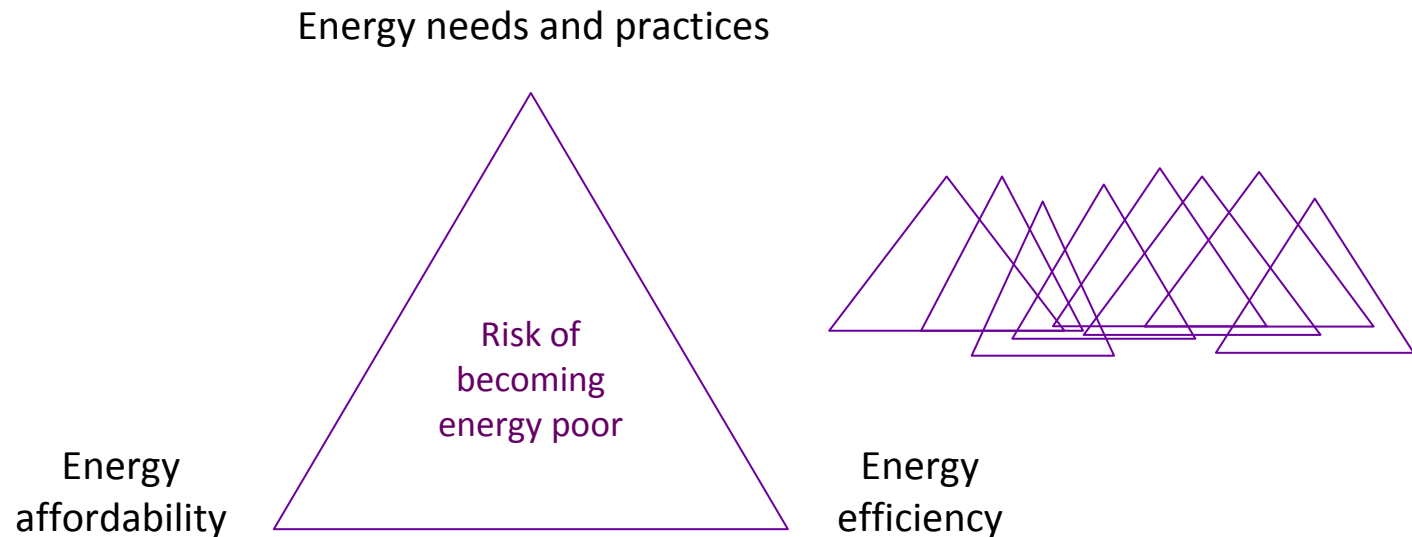
*A lack of affordable warmth in the home  
(Boardman 1991)*





# Energy vulnerability

*Propensity of being unable to secure materially- and socially-necessitated levels of domestic energy services  
(Bouzarovski and Petrova, 2015)*



# Operationalizing energy vulnerability

- Understanding the broader socio-technical risks that ‘tip’ households into energy poverty:
  - Higher energy prices and lower incomes (Hills 2012)
  - Inability to invest in the energy efficiency of the home (Boardman 2013)
  - Greater energy needs (Thomson and Snell 2013)
  - Inability to access cheaper fuels (Li et al 2014)
  - Policy marginalization (O’Sullivan et al 2011)
- Assessing the distribution of such risks **across space and time**

# Measurement and indicators

- **Expenditure-based**
  - Expenditure does not equal consumption and/or level of energy service
  - There is no established expenditure level at which deprivation occurs
  - Equivalence scales
  - Relative vs. absolute expenditure
- **Self-reporting**
  - Individual and group differences in perceptions of thermal comfort
  - Influence of external factors
  - Capturing persistency vs. intermittence
  - Objective housing variables
- **Direct measurement**
  - Measurements of temperature, lighting, cooling, etc.
  - Issues of access / intrusion / privacy / sampling frame

# Definitions

- **UK (2001-2013):**

“A household is said to be in fuel poverty if it **needs** to spend more than 10% of its income on fuel to maintain an adequate level of warmth”

- **England (new LIHC 2013-):**

A household is said to be in fuel poverty if it

1. has required fuel costs that are above average (the national median level)
2. were they to spend that amount, they would be left with a residual income below the official poverty line (60% median income)

- **Ireland (2007-):**

“the inability to afford adequate warmth in a home, or the inability to achieve adequate warmth because of the energy inefficiency of the home”

- **France (2009-):**

A person is considered fuel poor "if he/she encounters particular difficulties in his/her accommodation in terms of energy supply related to the satisfaction of elementary needs, this being due to the inadequacy of financial resources or housing conditions”

# Pan-European data context

- Main data source is the EU Statistics on Income and Living Conditions:
  - 1) Ability to afford to keep the home warm
  - 2) Leaking roof, damp, and/or rot in home
  - 3) Arrears on utility bills in the last 12 months
    - **52.1 million households** across EU27 reported one or more indicators in 2010 (Thomson, 2015)
- Household Budget Surveys
  - Provides actual expenditure data at national level
  - Not currently standardised across Europe



# Pan-EU composite index

## index

- PhD (Thomson, 2015)
- Uses self-reported indicators from EU-SILC
- Index weighted by severity:

**Key:**

$a$  = % of households reporting 1 indicator

$b$  = % of households reporting 2 indicators

$c$  = % of households reporting 3 indicators

**Weighted by severity**

$$0.1667 a + 0.3333 b + 0.5000 c$$

2011 composite index rankings (Thomson, 2015)	
Sweden	1
Finland	2
Luxembourg	3
Netherlands	4
Slovakia	5
Austria	6
Denmark	7
Czech Republic	8
France	9
Germany	10
United Kingdom	11
Spain	12
Estonia	13
Belgium	14
Malta	15
Poland	16
Italy	17
Hungary	18
Portugal	19
Greece	20
Slovenia	21
Romania	22
Cyprus	23
Lithuania	24
Latvia	25
Bulgaria	26

# EVALUATE project

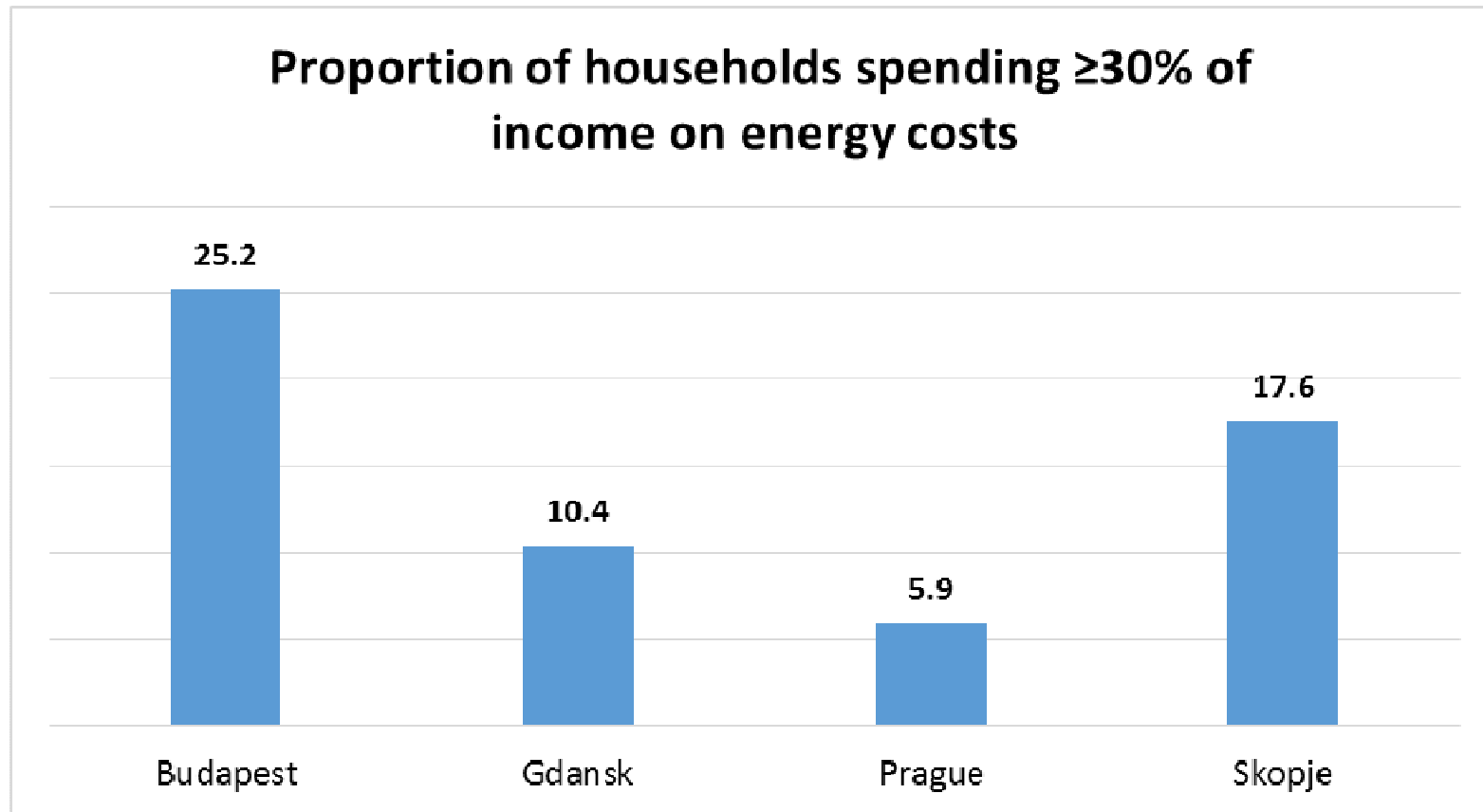
- Energy Vulnerability and Urban Transitions in Europe (EVALUATE)
- Five-year European Research Council funded project, underway since March 2013
- It aims to **establish the driving forces of urban energy (or fuel) poverty** in the post-socialist states of Eastern and Central Europe, and to determine **which types of households are vulnerable to the condition**

# EVALUATE: An urban and neighbourhood level approach

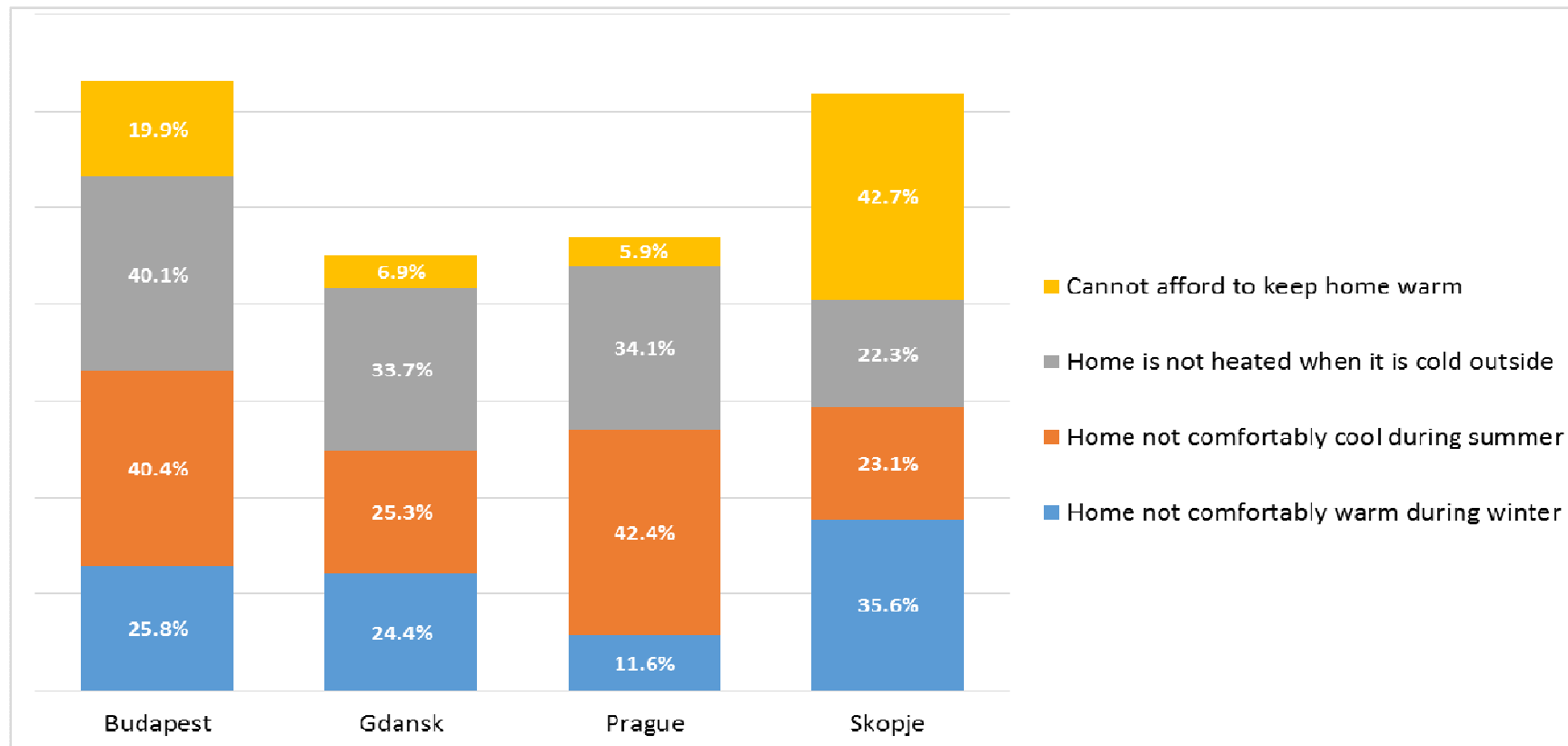
- Focusing on dynamics within two inner-city neighbourhoods, while:
- Exploring national and city-level processes
- Local support (Gdansk University, Charles University, CEU, CUW, Ss. Cyril and Methodius University)



# Neighbourhood survey results: energy burdens



# Neighbourhood survey results: self-reported



# Summary and moving forward

- Fuel poverty and energy vulnerability are complex issues
- Multiplicity of measurement approaches
- Important to recognise specific energy needs and all energy services in the home
- Useful to adopt a broad definition
  - But avoid fixed quantitative thresholds until more is known
- Poor data quality and availability
  - Need to radically improve EU indicators (see Thomson and Snell 2014 for recommendations)
  - Improved data mechanisms would increase our understanding
  - Potential for data collection whenever an intervention is delivered at the households-level, e.g. a simple survey pre-and post-energy efficiency retrofit, on energy needs and practices, socioeconomic status, etc.



# Thank you

[www.urban-energy.org](http://www.urban-energy.org) |  
[www.fuelpoverty.eu](http://www.fuelpoverty.eu)

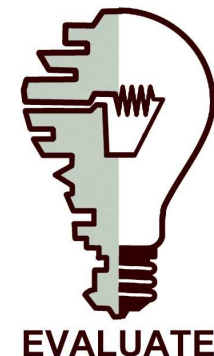
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