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# The two faces of energy poverty



**A case study of households' energy burden in the residential and mobility sectors at the city level.**



## Context

Basic ideas – What is energy poverty?

The double energy burden

## Method

LHC Indicator

Integration of mobility

## Results

## Recommandations

## Discussion

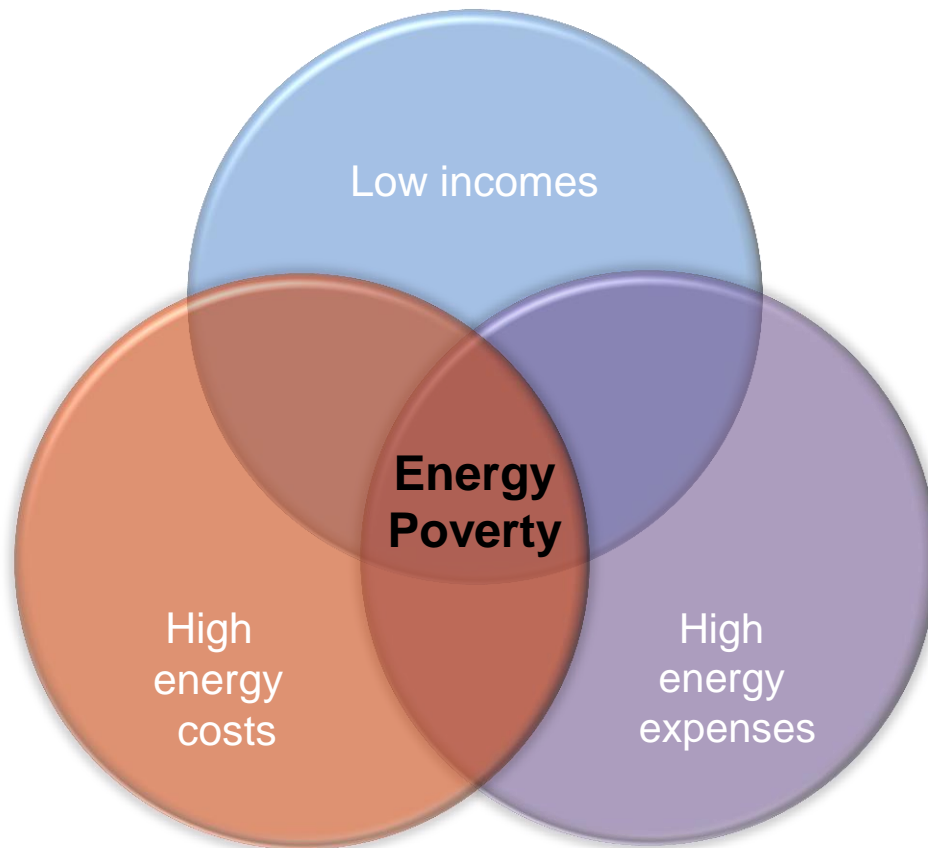


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# Context



## The key elements of energy poverty

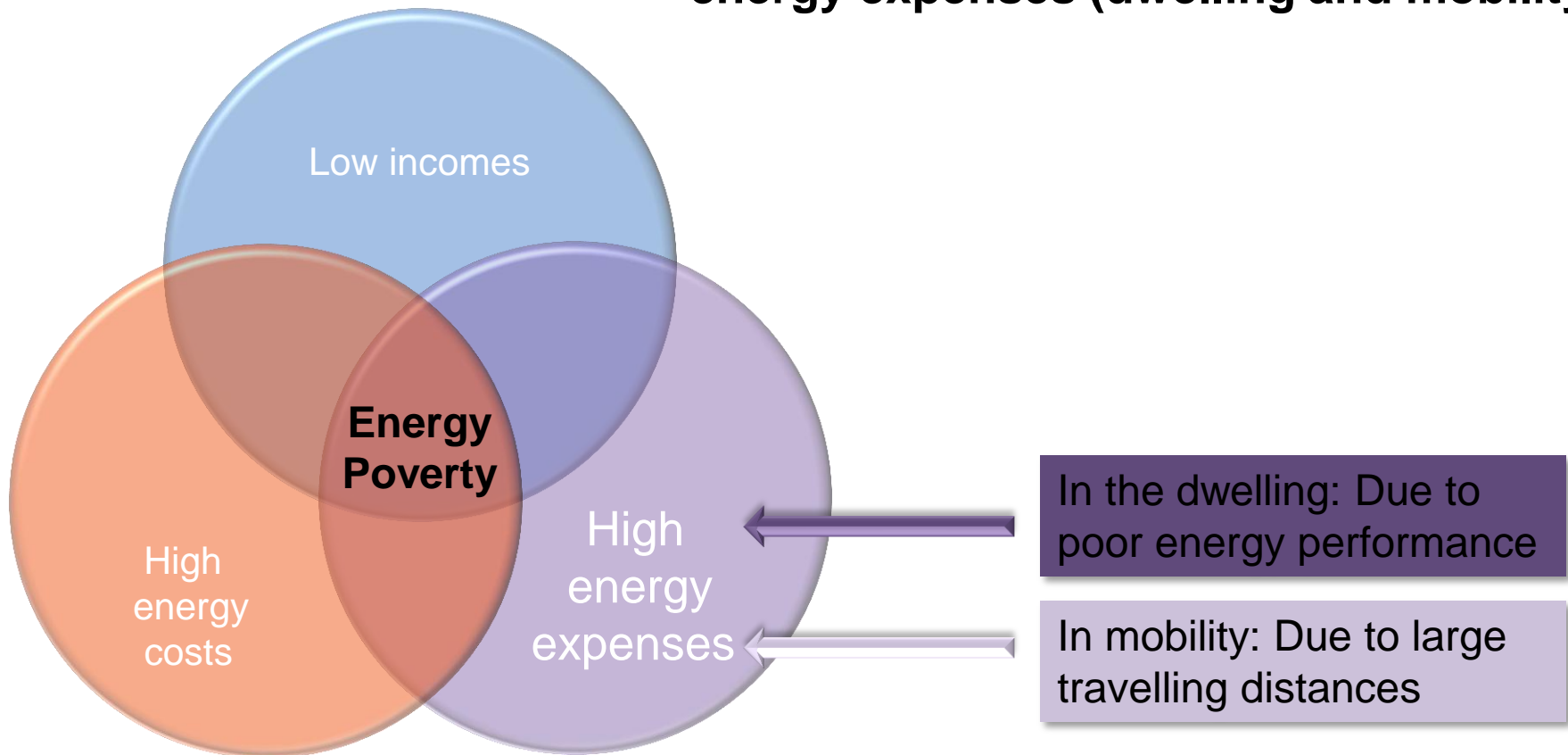


### The two components of energy poverty:

- Households spend too much of their income on energy
- Households restrict their consumption



**The focus of our study: a more comprehensive understanding of energy expenses (dwelling and mobility)**



# The double energy burden

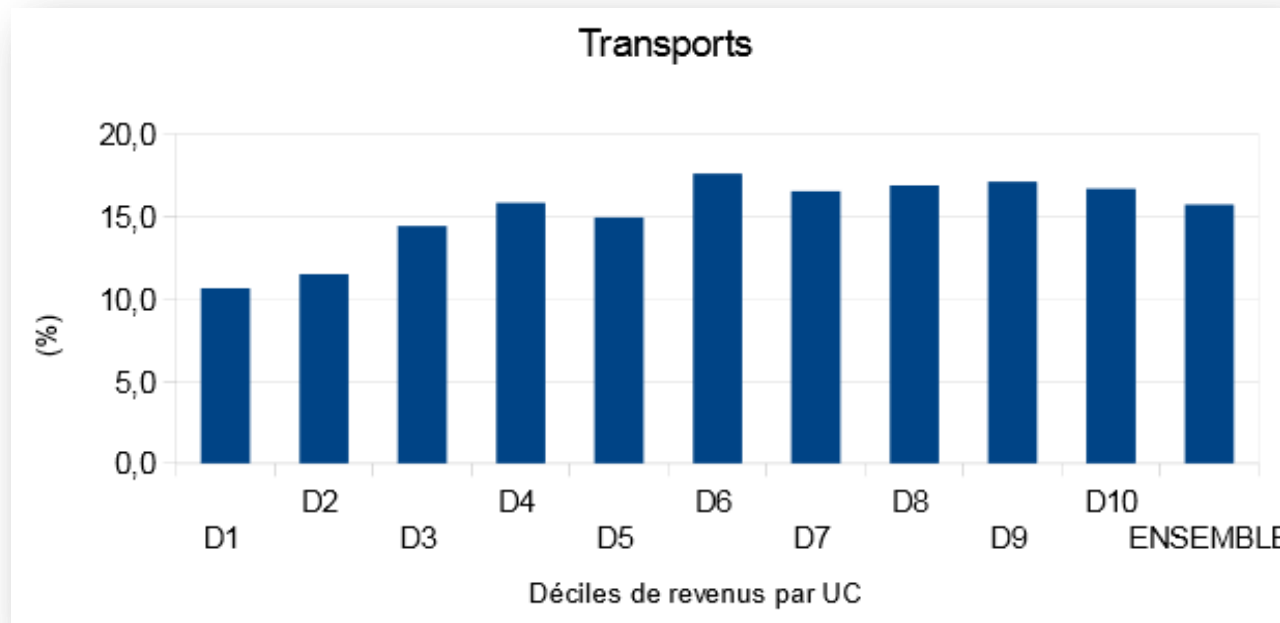


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Transport is the second most important budget for households, about 15%

Increase of the home-work trip distances

INSEE, 2004



Vanco, 2013



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# Method



## Measurement of energy poverty: Different approaches

The most prevalent: objective approaches based on socio-economic and housing data

- > 10% indicator (fixed threshold)
- > Low-Income-High-Costs indicator (relative thresholds)





## Low-Income-High-Costs indicator (Hills 2012):

Indicator based on two thresholds, relative to the rest of the population:

- **Energy costs threshold** (national median)
- **Income threshold** (60% of national median + household's energy expenses)

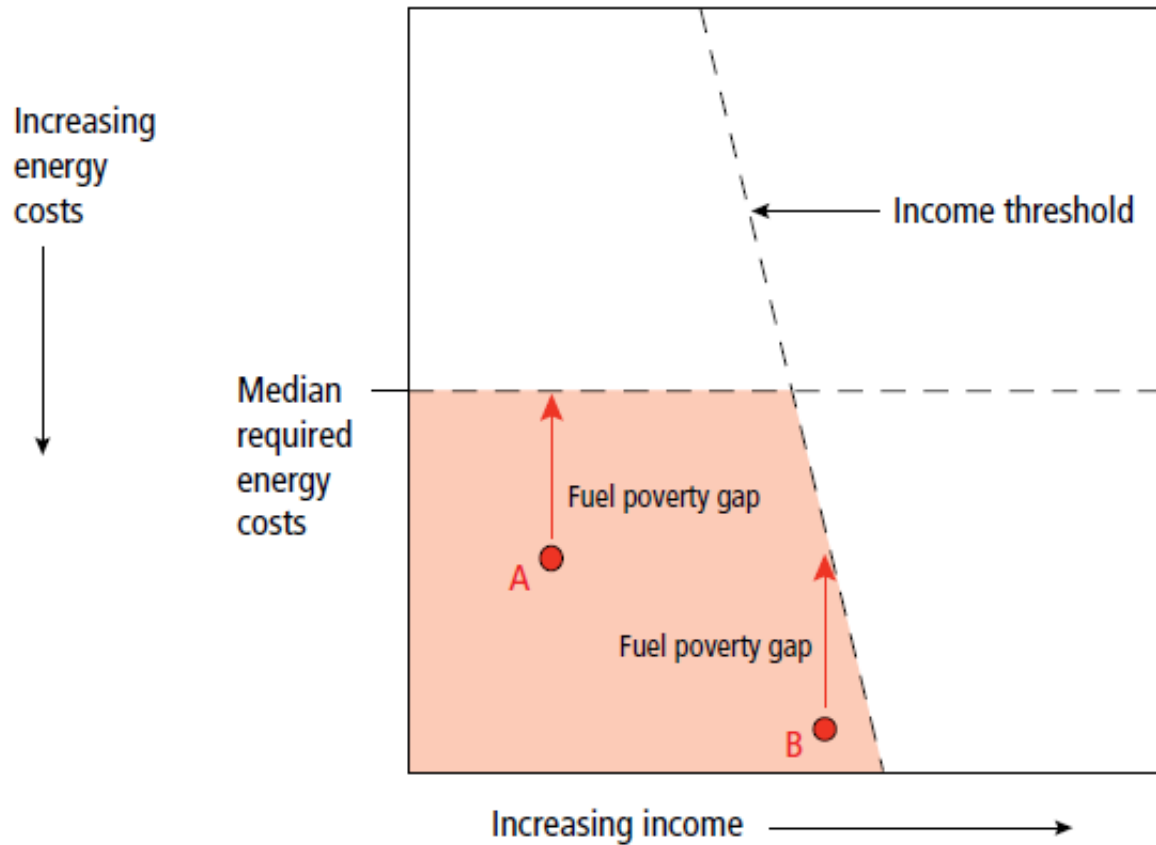


Figure 1: Low-Income-High-Costs indicator, Source: Hills 2012



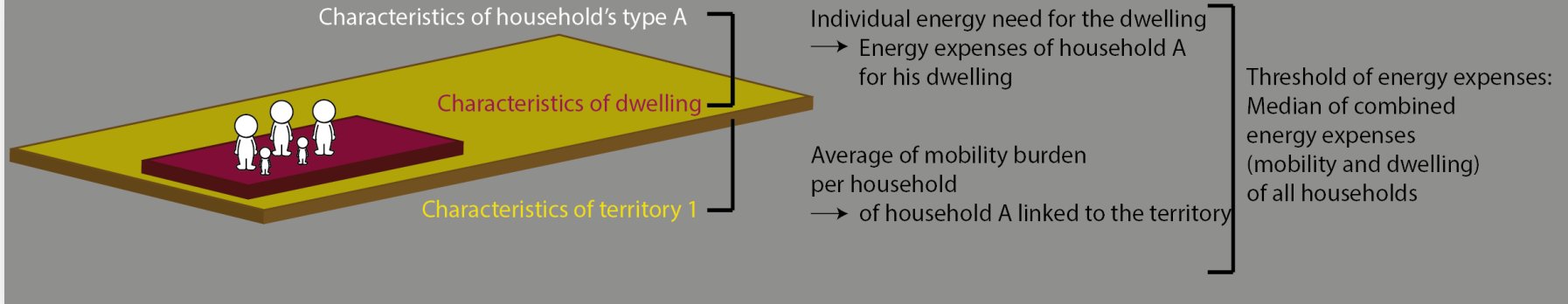
## Low-Income-High-Costs indicator:

Other characteristics:

- Indicator does not only allow to measure **the extent of energy poverty** (how many households are concerned) but also **its depth** (how severely are they concerned)
- **Income and expenses** are **equivalized** for household size and composition
- Housing costs (rent, reimbursement of loans) are taken into account

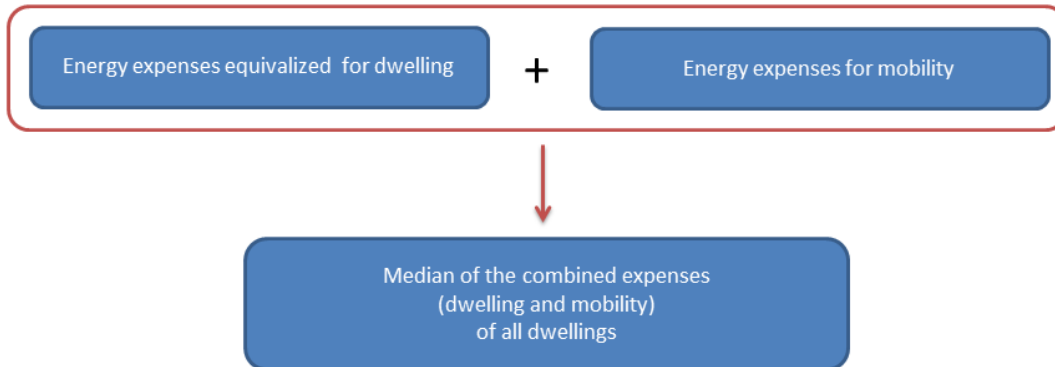


## Detailed calculation



Source: EIFER

## Threshold of energy expenses



Source: EIFER

**The difficulty is to combine data on transport and housing**



# Results



Housing  
LIHC

Transport  
LIHC

Housing +  
transport  
LIHC

9%

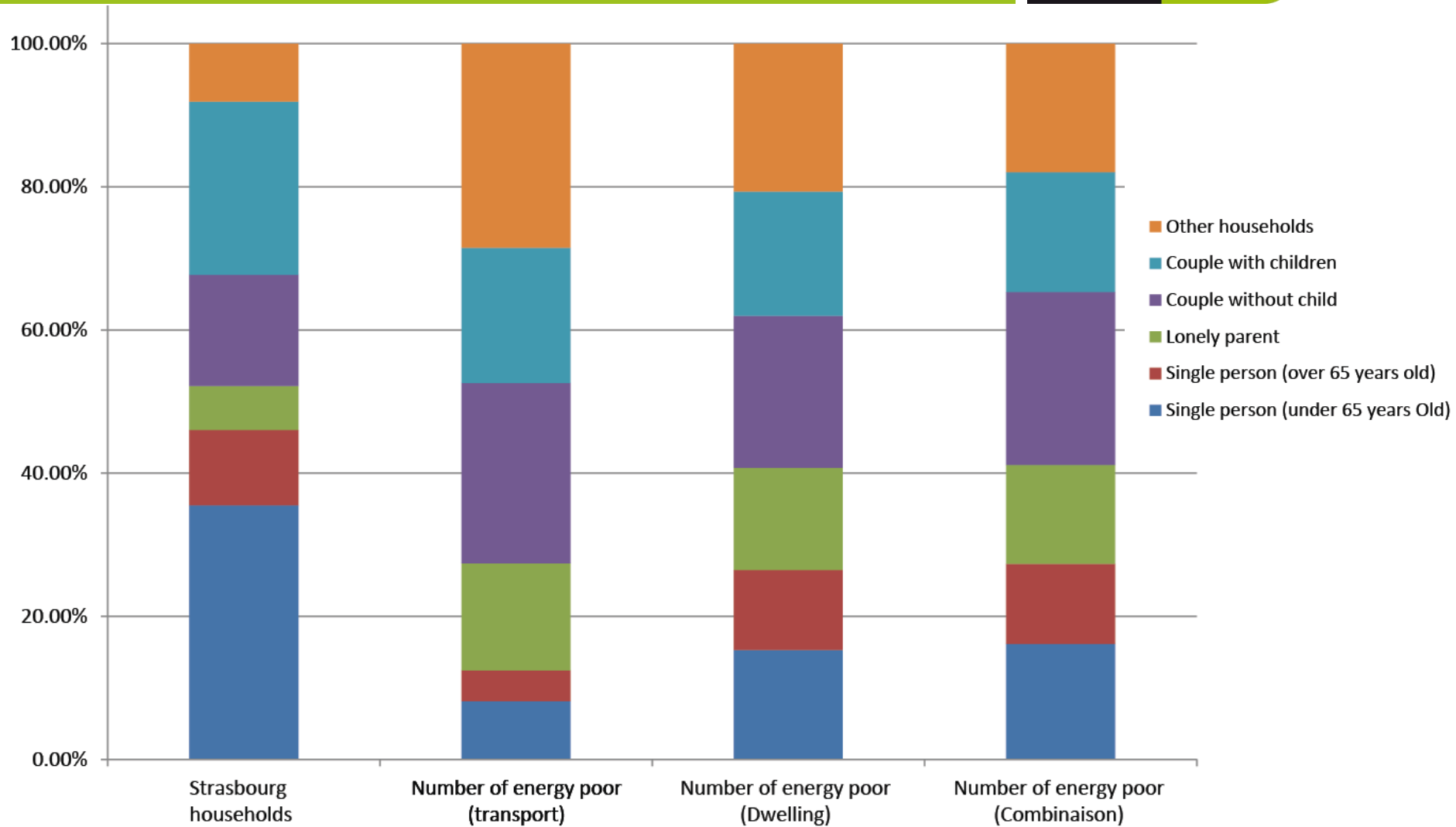
6%

18%

# Results (II)

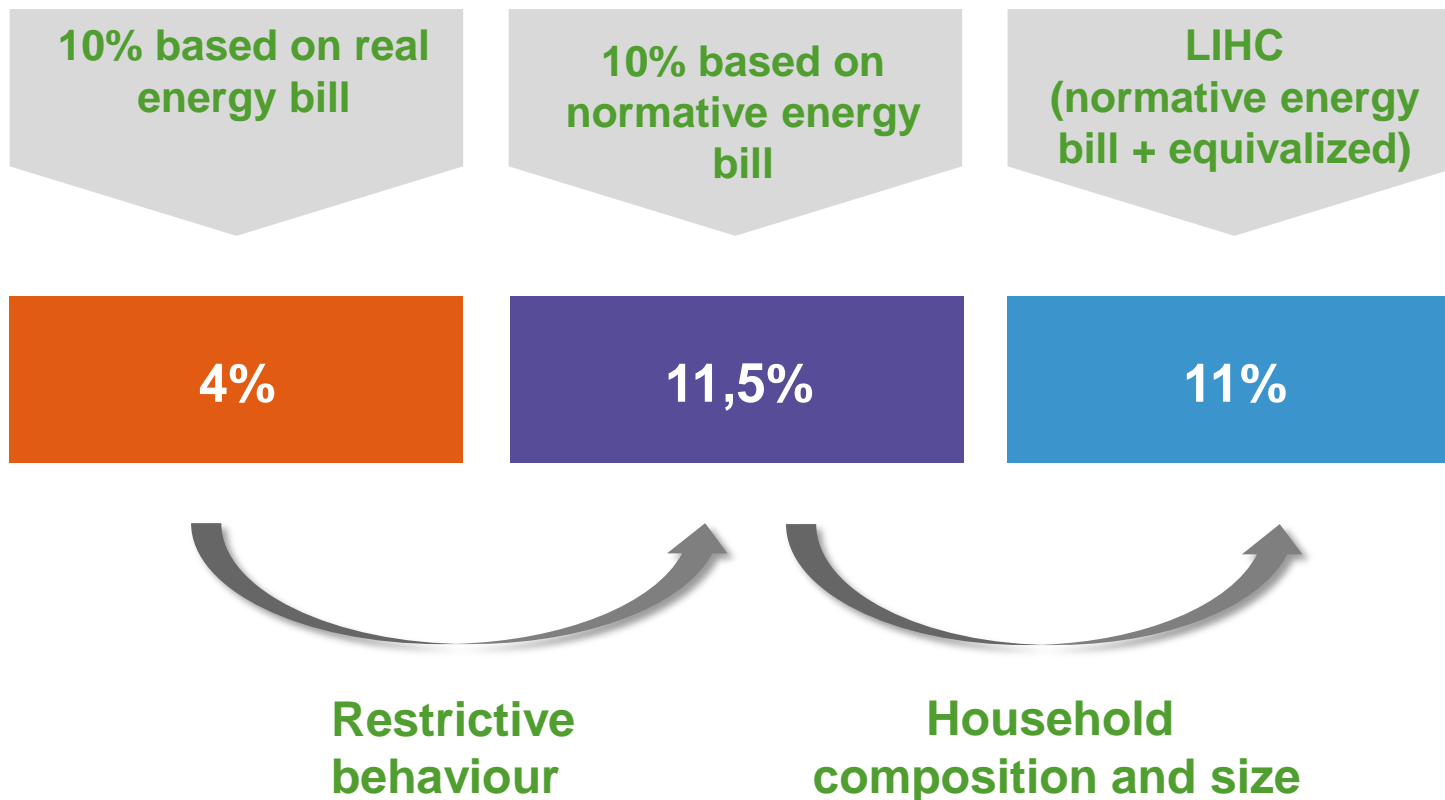


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## Sensitivity analysis for housing







# Recommendations



- **Interdependencies** between the two aspects → Urban planning should take the two aspects into account conjointly
- Examples of **policies** in one of the two domains, which can be integrated into a common framework.

## Housing:

- **Refurbishment** at the neighbourhood level
- **Klimabonus**: for households receiving **unemployment** benefits, city administration accepts higher rents if the households provide a proof that the dwelling responds to certain energy efficiency requirements

## Mobility:

- **Efficient settlement planning**: dense infrastructures, mix of uses, urban settlement planning along public transport lines, intermodal connection points etc.
- **Carsharing** and carpooling



# Discussion



- Case study yields a first indication of two-fold energy poverty at the local level
- Results not representative for the current situation (data from 2008-2009)
- Next steps:
  - > refine the method in order to obtain more **fine-grained results concerning transport costs.**
  - > To assess **energy need for transport?**



# Thank you...

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