

# **Making the home consume less - putting energy efficiency on the refurbishment agenda**

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**Research partners:**



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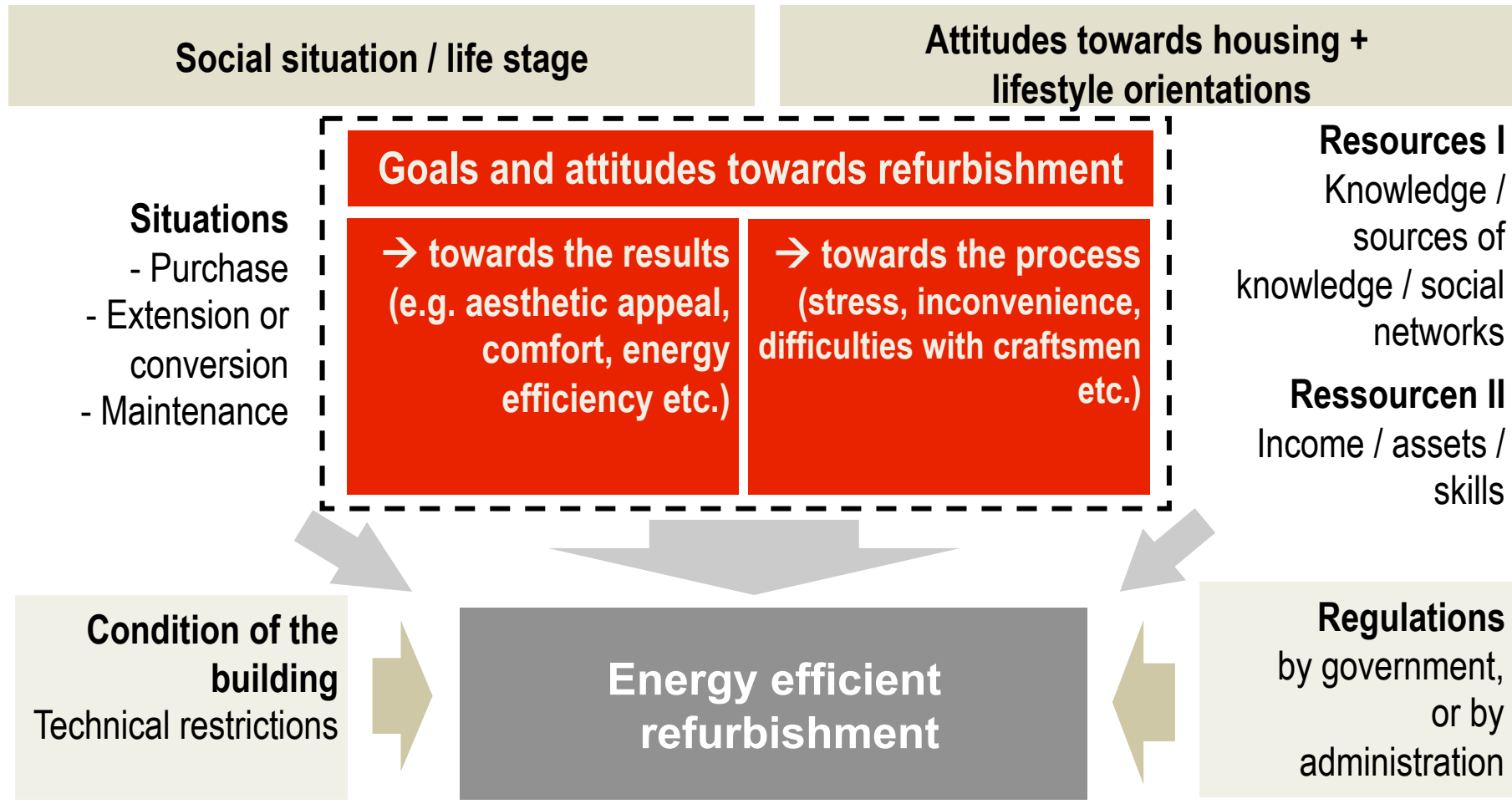


# Background and empirical design

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- Radical changes in energy efficiency of dwellings require a complex investment decision  
...being an outcome of a complex interplay of economic, social, psychological and technical factors
- Major barrier is not a missing access to capital, but rather a lack of motivation to invest in energy efficiency
- Which factors do influence the refurbishment decision of private home owners towards the use of energy efficient technologies?
- Empirical survey on the refurbishment decision of private home owners
  - 44 qualitative interviews
  - Conventional refurbishment (replacement of heating system etc.)
  - Energy efficient refurbishment: Applying more advanced energy efficient measures or technologies (insulation, innovative heating technology etc.)

# Modell of refurbishment decision



# Types of situations

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- Upkeep of a property in long-term use
    - Maintenance of a building
    - Frequently individual measures
    - Probably higher age groups
  - Conversion/extension of a building
    - Readiness to take more extensive measures
    - Legal regulations (e.g. building energy code)
    - Different age groups
  - Transfer of ownership
    - Adaptation of a “second-hand” building to the new owners’ needs
    - More comprehensive modernisation
    - Probably younger age groups
- ➔ Situations are shaped by social and technical conditions
- ➔ Uncertain biographical situation prevents extensive refurbishment

# Economic consideration

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- Refurbishment decision differs from conventional cost-benefit calculation
- Weighing up costs and benefits is shaped by personal needs and objective criteria
  - Improvement in use value is crucial
  - Coping with uncertainty
  - Life cycle costs are rarely taken fully into consideration
  - Main concern: liquidity and short-term costs
- Using simple rules
- Strong reluctance towards loans among some groups of home owners
  - ➔ Highly subjective viewpoint in judging financial scope and latitude
  - ➔ Attitudes and lifestyle orientations play a key role

# Motivational background

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- Energy-efficient refurbishment
- Wide-spread desire to consume less energy
- Numerous motives
  - Climate protection, environment and sustainability only effective with the already “convinced”
  - Desire for independence from fossil energy sources
  - Fascination for innovative technology
- Frequently: energy efficiency as additional benefit
- Conventional refurbishment
  - Main motivation: functionality, optics and strong cost element
  - Not aware of the problem (“already do a lot”)
  - Energy efficiency not on the maintenance agenda

# Conclusions

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- Refurbishment decision is an outcome of weighing up personal needs and objective criteria
- Technical requirements are socially embedded and contextualized by
  - type of situation
  - refurbishment goals and motivational background
- Sociodemography and income situation only play a minor role regarding the quality of refurbishment
  - (How) Do life stages matter?
- Energy advice is helpful...
  - ...but should not be restricted to the benefits on an economic level
  - How to address those who are not already aware of energy efficiency as a key issue?
- Limited impact of monetary incentives

**Thank you for your kind attention!**

<http://www.enef-haus.de>

<http://www.iso.de>

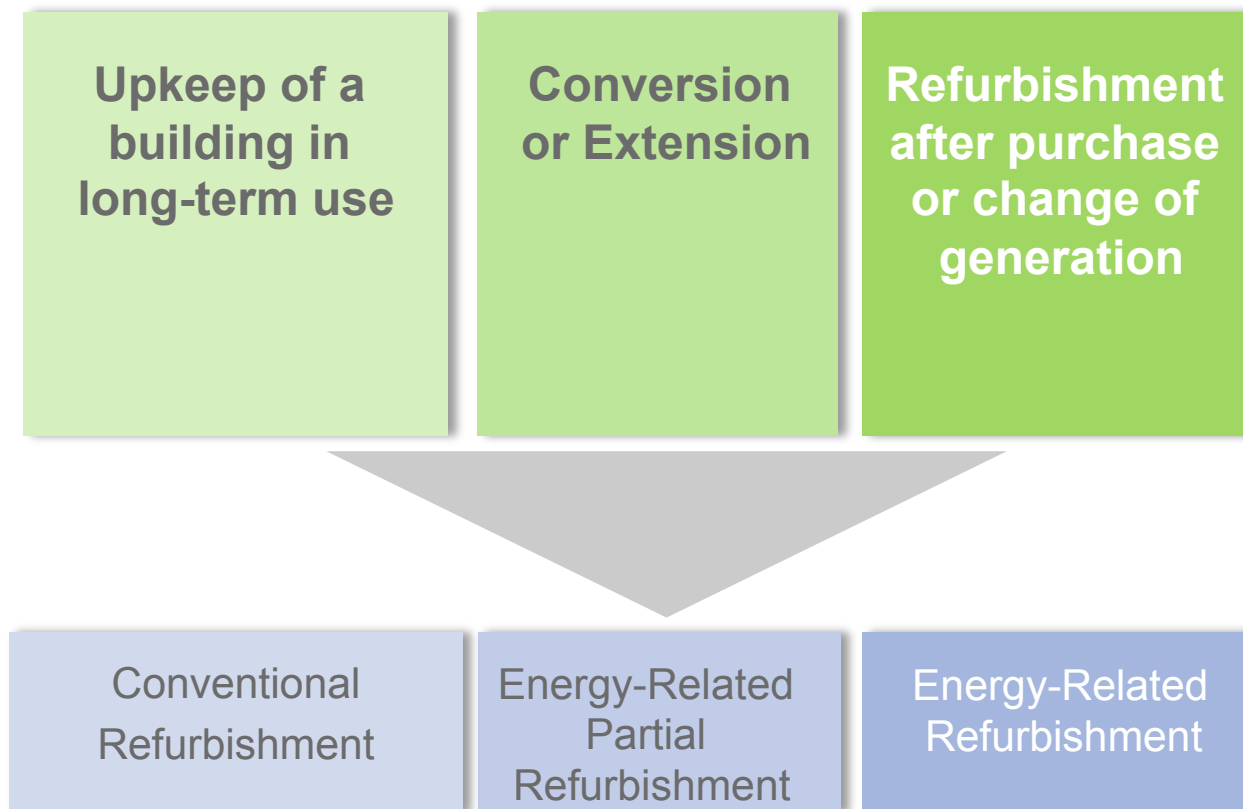
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# Background to the problem

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- Energy consumption for heating fell by 2.4% from 1995 to 2006
    - Marked improvement in energy efficiency
    - Improved buildings and heating systems
    - Change in user behaviour (lowering of room temperature)
  - Dramatic rise in residential energy costs
    - € 1,556 per household/year (2007)
  - Major savings potential of the 14.5 million single and double occupancy houses
    - Energy-related modernisation can reduce energy requirements by up to 80%
  - Low rate of refurbishment
    - Only about 1-2% undergo energy-related refurbishment each year
  - Inadequate refurbishment efficiency
    - Only a third of the savings potential is realised during refurbishment
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# Starting Points and Refurbishment Methods



# Starting Point and Stage of Life

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- Private home-owners are relatively old
  - Ratio of home-owners in Germany: 43 %
  - Highest ratio in the 60+ age group (55%)
- Different age structure of modernisers
  - Biggest group is the over 60-year-olds
  - Also above average: 50-60-year-olds and 30-40-year-olds (Technomar 2005)
- Narrow time window for economical energy-related refurbishment
  - dependent on age of building (maintenance cycle)
  - ... and biographical situation/future perspective of home-owners

# Motives and Motivational Alliances: Energy-Related Refurbishment



# Barriers and Obstacles

