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

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Background and empirical design

- 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.)

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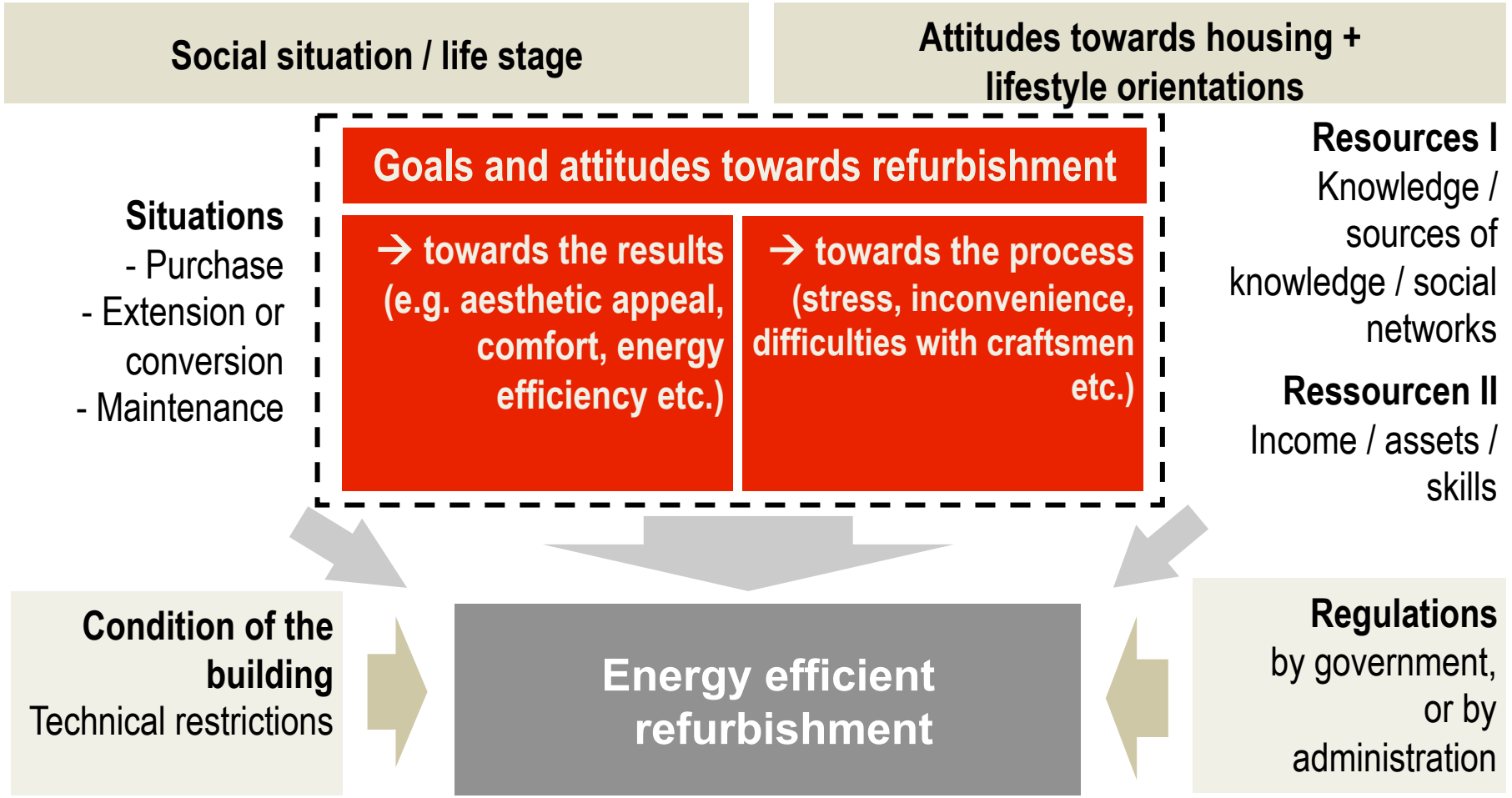
Modell of refurbishment decision



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Types of situations

- 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

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Economic consideration

- 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

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Motivational background

- 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

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Conclusions

- 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

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Thank you for your kind attention!

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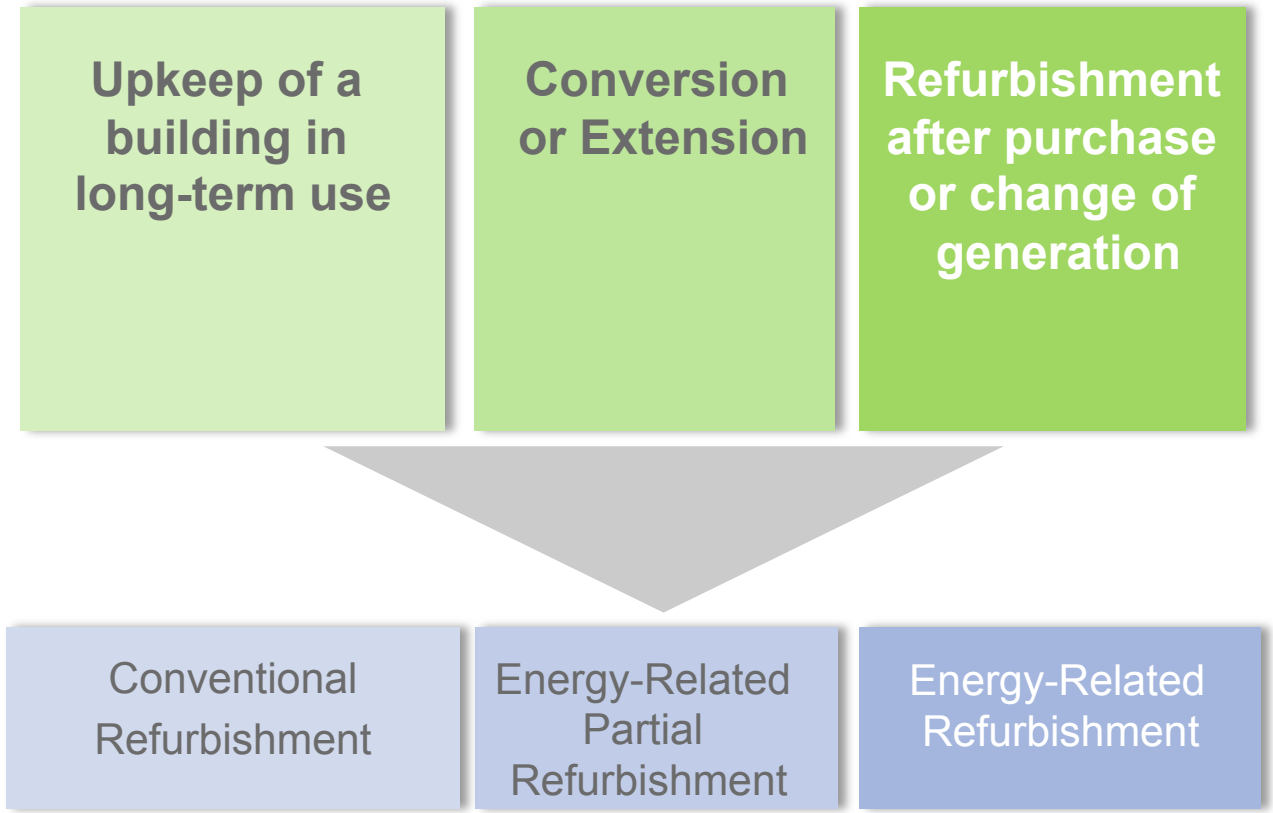
Background to the problem

- 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

Starting Points and Refurbishment Methods



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Starting Point and Stage of Life

- 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

maintenance,
remedy building deficiencies

independence of fossil fuels

extend living area

use innovative technology

maintain/increase value of the property

climate protection

optics/aesthetics/ beautification

pioneering role/ prestige

observe legal regulations

energy saving

cost savings

improve living quality / climate

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Barriers and Obstacles

financial restrictions

official restrictions

building restrictions

anticipated inconveniences

other aesthetic preferences

biography and stage of life

information overload versus information deficit

fear of wrong decisions

"advisers" in social environment

prejudices & clichés

mistrust & antipathies

excessive burden & helplessness