

# Assessment of energy and sustainability aspects in architectural competitions



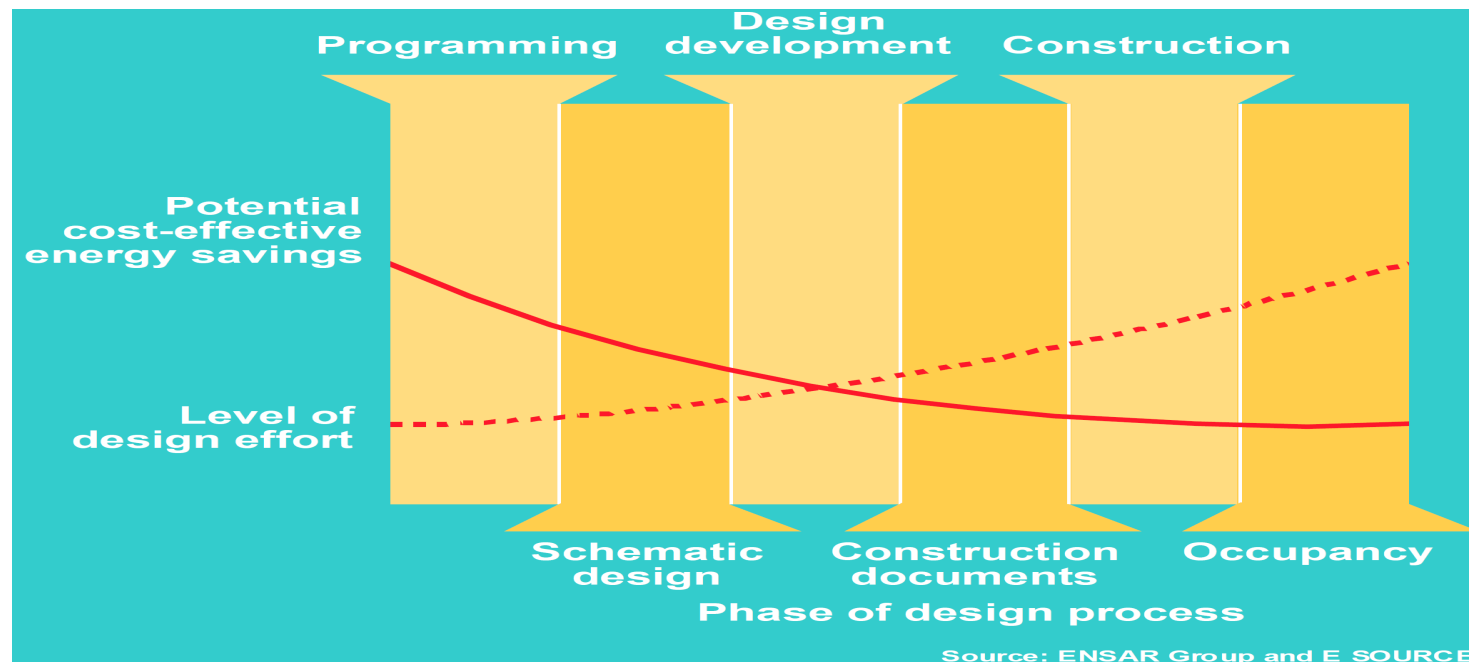
Heimo Staller IFZ – Interuniversity Research Center for Technology, Work and Culture, Graz  
ecee\_2011 Summer Study

# Introduction

- Presentation is based on results of two research projects
  - LoRe-LCA: Low Resource consumption buildings and construction by use of LCA in design and decision making
  - IEAA - Integration of energy relevant aspects in architecture competitions
- Aim
  - Analyse the current practice of architectural competitions concerning energy and LCA related issues
  - Development of strategies for a broader integration of sustainability and energy aspects in architectural competitions

# Background

- Most important phases for the implementation of sustainability aspects in the planning process:
    - Programming stage
    - Preliminary design stage
- } Architectural competitions



# Background

- Architectural competitions offer an excellent way to find the best solutions concerning
  - design, economy, functionality and ...
  - energy efficiency and sustainability
- European Commission:
  - “architectural competitions are a driving force for architectural quality, providing benefits in terms of financial aspects, quality, functionality and efficiency with relevance throughout the life cycle of buildings” [(COM 2007) 501]

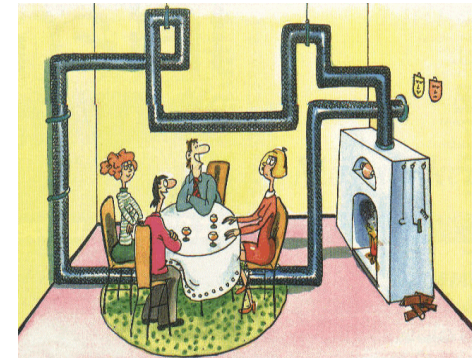


# Analysis of the current practice of architectural competitions in Austria

Analysis based on



Online survey among  
Austrian architects

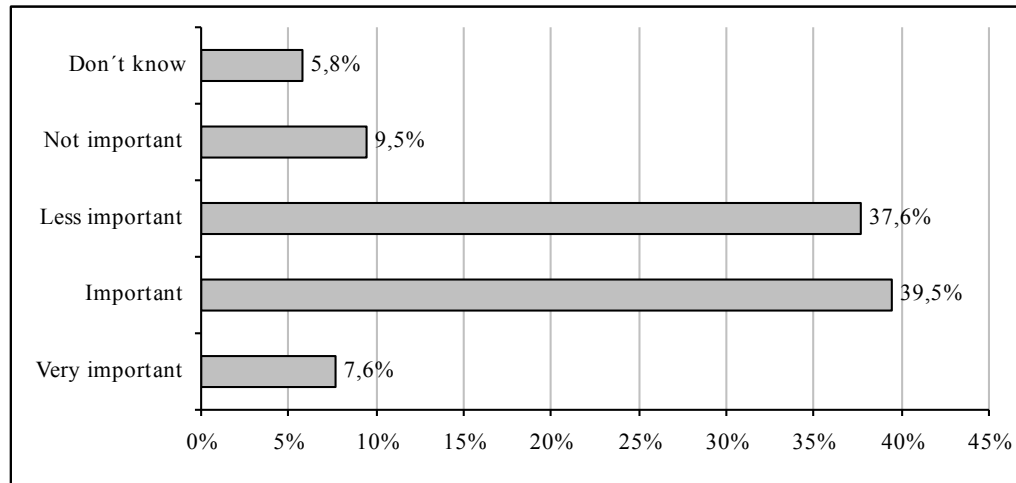


Workshops with  
stakeholders

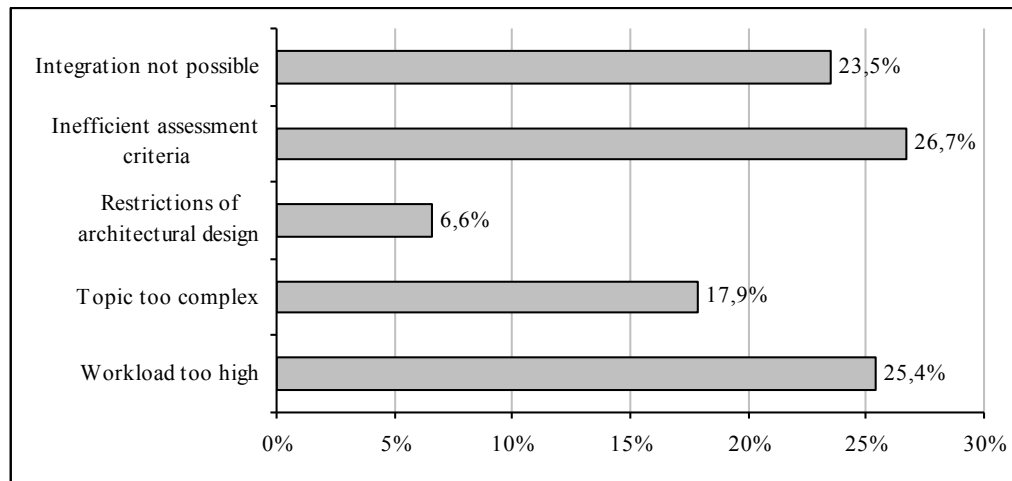


Study of 51 architectural  
competitions in Austria

# Online survey among Austrian architects



“What is the importance of energy in architectural competitions?”



“Which problems exist if energy aspects are integrated in architectural competitions?”

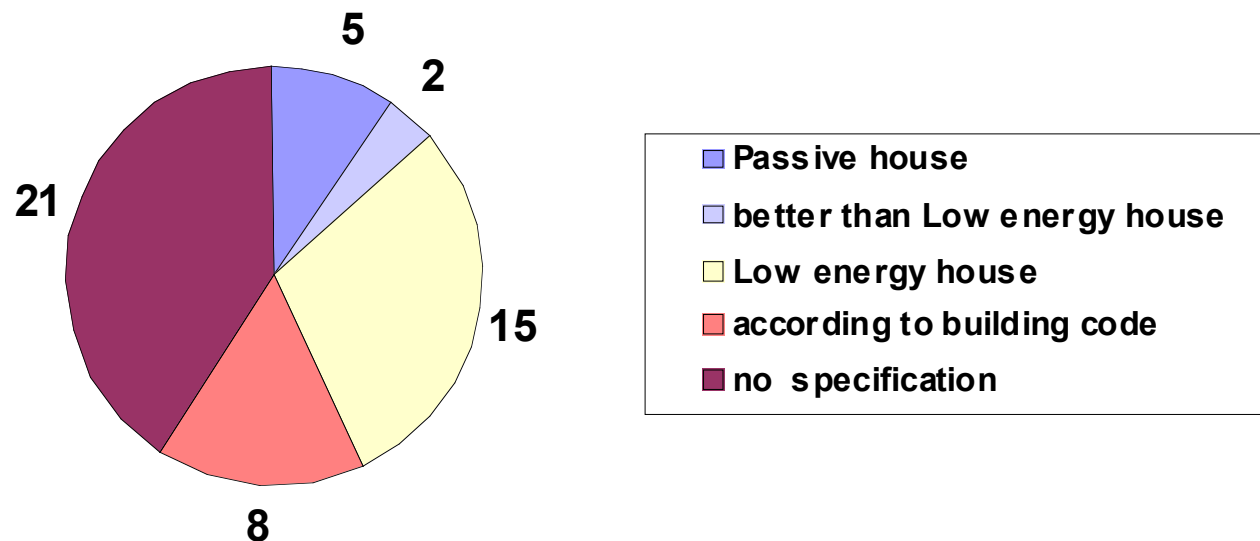
# Study of 51 architectural competitions

- Focus on how environmental aspects are integrated
- 51 architectural competitions in Austria
  - Projects between 2006 – 2008
  - Selection: Projects showing ambitions concerning sustainability
  - Study based on
    - Tendering document
    - Jury panel protocols
    - Plans, expert reports and project descriptions

# Study of 51 architectural competitions

## *Envisaged environmental aims and energy standard*

- Virtually all competitions contained a passage stating that the building is meant to be sustainable
- Main focus on energy aspects

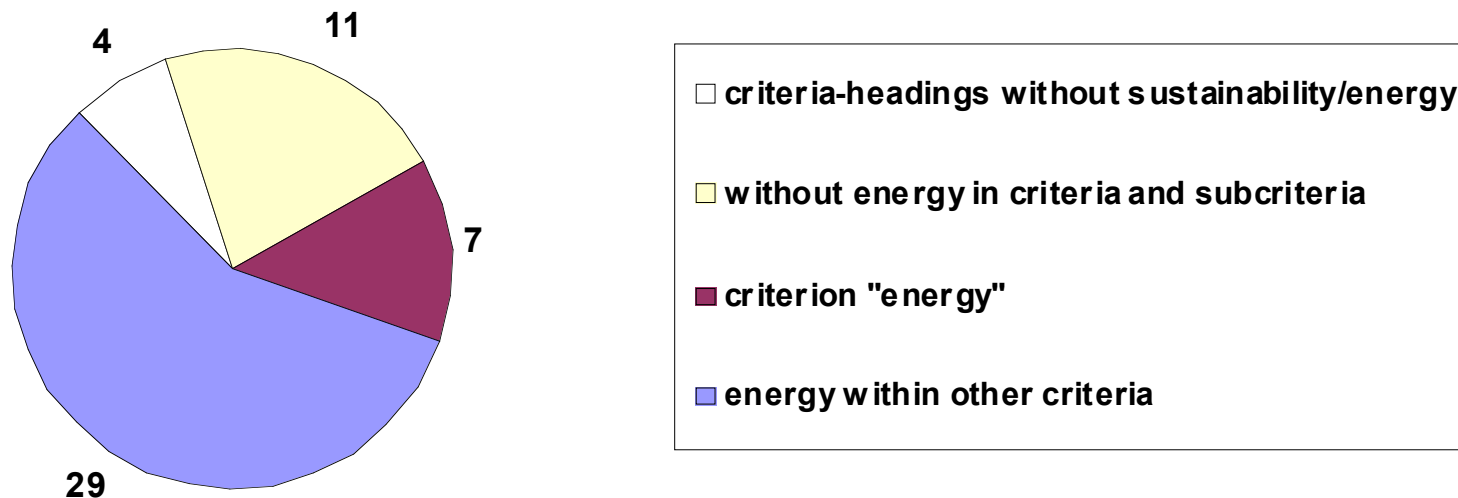


Specification of the energy standard that should be reached

# Study of 51 architectural competitions

## *Assessment criteria and weighting*

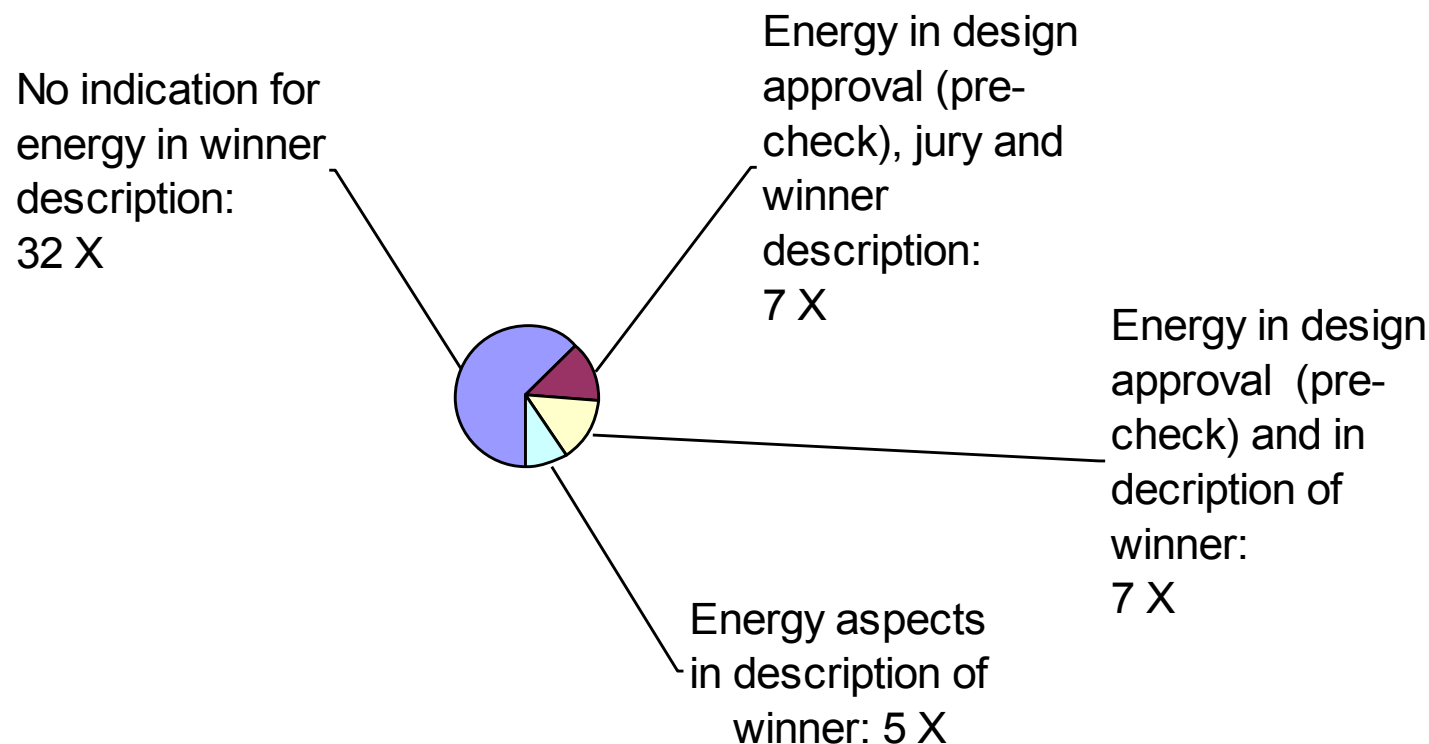
- 47 competitions with sustainability/energy criteria
- Energy is very often a sub-criteria of costs



Role of energy and energy-related aspects in the assessment criteria of the analysed competitions

# Study of 51 architectural competitions

## *Design approval and jury*



Consideration of energy in the description of winner project with/without energy experts involved in design approval / jury



# Conclusions

- Energy and sustainability in architectural competitions is seen as important topic by architects and clients, but...
- So far suitable strategies and instruments for successful implementation are missing
- Sustainability turns out to be a vague vision of the client without measurable targets and clear specifications in the tendering documents
- For participants the lack of transparent assessment criteria means ambiguity concerning their performances
- Jury decisions are very much characterized by acquired or claimed experiences or maybe by a sense of relevant characteristics or even by “instinct”

# Strategies for implementation

- On technical level
  - Assessment tools adapted to needs of architectural competitions (preliminary design stage)
  - First steps: Assessment of “energy-related design aspects” like energy demand for heating and cooling
- On organisational level
  - Clear definitions of energetic and environmental targets by the client
  - Clear and transparent weighting criteria for the participating architects and the jury
  - Preferably quantitative, rateable criteria
  - Involvement of energy and sustainability experts in competitions having a strong focus on environmental aspects
- Improvement of awareness
  - Education
  - Skill enhancement
  - Dissemination activities



# Thank you for your attention!

- LoRe-LCA: Low Resource consumption buildings and construction by use of LCA in design and decision making  
<http://www.sintef.no/Projectweb/LoRe-LCA/>



- IEAA - Integration of energy relevant aspects in architecture competitions  
<http://www.ifz.tugraz.at/ieaa>



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