

**Trond Haavik**  
(MBA)



# Market and policy issues for the retrofit of non-residential buildings

Preliminary findings from Subtask B - IEA SHC Task 47

Frankfurt, 03.04.14

## AGENDA

1. Scope of work in Subtask B – Market & Policy Issues
2. Building stock analyses pointing out the potential?
3. Study of decision making processes
4. Summing up

## OBJECTIVES FOR SUBTASK B



- Identify segments with high potential for energy efficiency savings and which type of owners are most likely to go for such projects.
- Identify the most important barriers and driving forces in decision making processes
- Develop knowledge about which boundary conditions are important to overcome the barriers
- Increase the understanding of how improved NEB's increase the value of the building

# Building Stock Analyses

## Few complete analyses

- Europe: Europe's Buildings under the Microscope (2011) BPIE
- Denmark: Building stock analysis – Danish non-residential buildings, (2013) SBI
- Australia: Baseline Energy Consumption and Greenhouse Gas Emissions In Commercial Buildings in Australia, (2012), COAG
- Norway: Potential and barrier study in Norwegian non-residential buildings, (2011) Multiconsult for Enova.
- Italy: Building stock analysis of Italian schools, (2013) ENEA



# EUROPEAN BUILDING STOCK ANALYSIS

Distribution of m<sup>2</sup> gross floor space per building category in EU27+ Switzerland and Norway



**Wholesale & retail**  
28%

Detached shops, shopping centres, department stores, large and small retail, food and non food shops, bakeries, car sales and maintenance, hair dresser, laundry, service stations (in gas stations), fair and congress buildings and other wholesale and retail.



**Offices**  
23%

Offices in private companies and offices in all state, municipal and other administrative buildings, post-offices.



**Educational**  
17%

Primary and secondary schools, high schools and universities, research laboratories, professional training activities and others.



**Hotels & restaurants**  
11%

Hotels, restaurants, pubs and cafés, canteens or cafeterias in businesses, catering and others.



**Hospitals**  
7%

Public and private hospitals, medical care, homes for handicapped, day nursery and others.



**Sport facilities**  
4%

Sport halls, swimming pools, gyms etc.

**Other**  
11%

Warehousing, transportation and garage buildings, agricultural (farms, greenhouses) buildings, garden buildings.

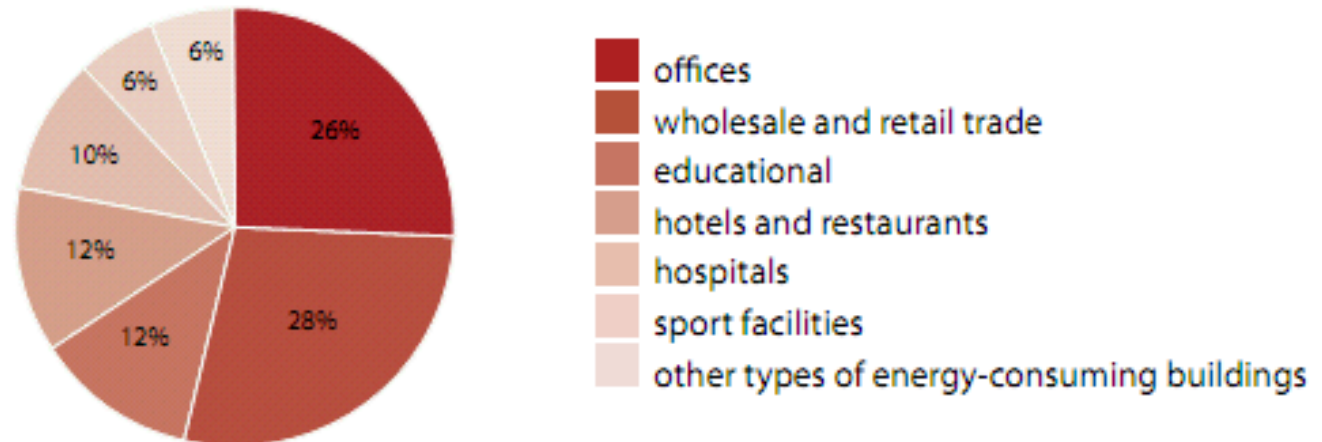
# IDENTIFYING POTENTIAL

The study confirms the first study, that the highest potential is within:

1. Shops
2. Offices
3. Educational

Hotels and restaurants here equal with educational.

Share of total energy use per building type



# Decision making processes

## Learning from demo projects

- 9 projects studied in 6 countries
- Key actors interviewed
- Same template for questionnaire
- Cross analysis



## Schools/kindergarten



## Office buildings





## GOOD INNOVATION PROJECTS NEED FIVE DISCIPLINES TO SUCCEED



*Carlson & Wilmot (Innovation: The Five Disciplines For Creating What Customers Want, 2007)*

- 1) There must be a clear **need** as a customer value
- 2) You need a **value proposition**  
(needs+approach+benefits+competition)
- 3) passionate and **committed people**
- 4) Innovation **teams**, i.e. collective intelligence
- 5) Organizational alignment, i.e. **supported by top management** and strategies

## HOW WERE THE 5 DISCIPLINES COVERED IN THE DEMO PROJECTS?



- √ Holistic understanding of the tenant's and owner's needs – which incl more than energy efficiency
- √ Added value solutions which fulfilled the needs
- √ One or more enthusiastic persons who are committed to the process
- √ Multi disciplinary teams (also involving owner/tenant)
- √ Supported by the top management and fitted well with companies' strategies

## LESSONS LEARNED

### IMPORTANT DRIVERS



- **Drivers for initiating renovation**
  - Request by tenant / focus on long term client retention/ end of lease contract (4)
  - Poor indoor comfort /unattractive façade (2)
  - Need of colocation of organization
- **Human and organizational drivers for increasing ambition level**
  - Responsibility of their practices on climate change / company policy / image (9)
  - Enthusiastic persons (3)
  - The experience and support of the architect/technical advisor/ facilitators (5)
  - Involvement of top management (4)
  - The will to learn and to be a frontrunner (2)
  - Involvement of occupants (2)
- **Economical drivers for increasing the ambition level**
  - Energy costs (5)
  - Achieving grants gave prestige and better economy for the project (5)
  - Increase the value of a building.

## LESSONS LEARNED

### IMPORTANT DRIVERS (2)



- **Process drivers for increasing the ambition level**
  - Strong focus on monitoring during the process as mean to increase ambition level
  - The building was empty, which was an opportunity to make a thorough renovation
  - Informal and open decision making processes built on trust between the main actors.
  - The project itself became prestigious and resulted in strong commitment from all hired actors.
  - The process was optimized and planned integrally (2)
  - Mainly local or regional manufacturers and contractors were involved which were highly flexible.
- **Other external drivers**
  - The holistic and open approach of BREEAM
  - Focus on energy savings in the media and other places was also a driver.

## LESSONS LEARNED

### IMPORTANT BARRIERS



- **Economical barriers**
  - Limited financial resources
  - Tenant not accepting increased rent
  - Public tenders
- **Time constraints**
  - The tight time schedule made it difficult to consider the consequences of changes
- **Technical constraints**
  - Complexity
  - Historic protection
- **Lack of experience/competence & limited availability of technical solutions**
  - Insufficient technical experience+ skepticism
  - The lack of widely spread solutions
  - Lack of knowledge on the tenant's part + imprecise information
  - No previous experience with BREEAM
  - Lack of example to be replicated

## LESSONS LEARNED

### IMPORTANT BARRIERS (2)



- **Need of relocation**
  - The need to relocate to temporary offices was a big disadvantage.
  - The relocation of the children during the renovation of the façade of the building was a problem.
- **Lack of convincing arguments**
  - "Convincing the city council was the largest barrier"
- **Unforeseen challenges during renovation**
  - During the renovation of the facade asbestos was found
  - Unforeseeable problems relating to previous damages
  - Delays affecting product supply in the summer season
  - A harsh winter delayed the building process by several months
- **Construction work disturbing tenants**
  - Renovation work disturbing tenants
  - Occupancy. Lack of attention and low level of concentration of pupils. Evacuation to nearby facilities would have been better.
  - Adapting the execution phase to the school functionality
  - Separating the building site from the kindergarten activities

## REEMAINING QUESTIONS TO BE ANSWERED

### *BY SUBTASK B*



### **Building segments**

- Main focus is directed towards schools and offices
- What about unrealised potential in other building segments?

### **Decision making processes**

- Still very few demonstration projects with very high ambition level – how to move into a growing market?
- Interesting drivers and barriers are identified – but how to deal with these?
- How can authorities contribute to a faster change in this market?



**Thank you for your attention!**

**Trond Haavik**  
**[trond@segel.no](mailto:trond@segel.no)**

**[www.segel.no](http://www.segel.no)**