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Where is the saving potential, and how can it be released?

Short introduction of where I come from

Sydney, 05.04.13

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. Conclusions so far

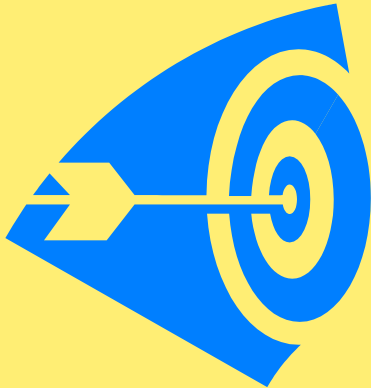
CHALLENGES/ISSUES



- How to increase the rate of retrofitted buildings and ambition level in renovation?
- Different owners – different challenges?
- Strong cost focus in decision making processes
- Non energy benefits may be unclear and less important when deciding solutions.
- Conservative building industry
- Advanced renovation in all countries is at a very early stage



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

EUROPEAN BUILDING STOCK ANALYSIS

Distribution of m² 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.

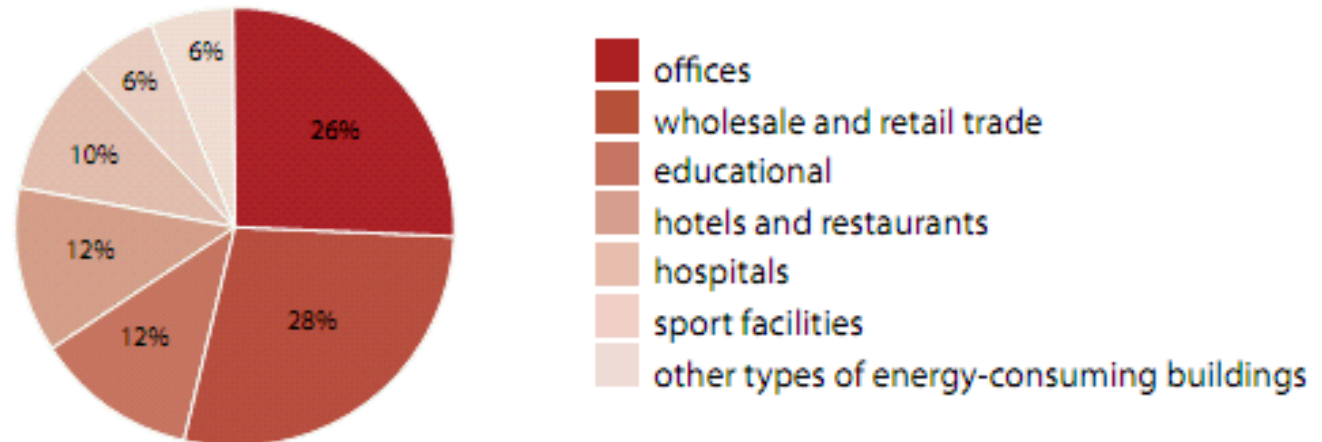
IDENTIFYING POTENTIAL

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



1. INTRODUCTION

PROJECT SUMMARY

- Office building incl in-house big data central and print shop
- Year of construction :1982
- No major energy renovations in the past
- Renovation to be completed by October 2013

SPECIAL FEATURES

ARCHITECT

- Original: FS Platou
- Renovation: LPO Arkitekter

Consultant

- Energetica
- Hembra
- Uni Consult (hired by the tenant)

Project management

- Optimo Prosjekt AS

OWNER

- Entra Eiendom AS

Norwegian Tax Administration Building

The decision making process



IEA – SHC Task 47

Renovation of Non-Residential Buildings towards Sustainable Standards

2. CONTEXT AND BACKGROUND

BACKGROUND

- Located in Oslo
- About 850 employees
- Existing lease contract expired
- Public tender resulted in
- The tenant had to move to temporary premises during the renovation.
- NTA to rent 2/3 of the premises

OBJECTIVES OF THE RENOVATION

- Measured before: 190 kWh/m²/year
- First planned: 126 kWh/m² year
- Final plan: 67 kWh/m² year
- Total cost: NOK 400 Mill (€54 m)
- Estimated to be 10% higher than building code
- Financial grant from Enova
18,5MNOK/€2,5m

SUMMARY OF THE RENOVATION

- Landlord offers temporary premises - 2 years
- Data central remains during renovation
- New sections between existing 5 blocks increase space from 31.000 to 35.000 m²
- Space efficient layout reduces m²/employee
- Use of recycled aluminum for the façade
- Prefabricated wall elements



Photo: Entra and LPO

3. MAIN ACTORS

TENANT

- Norwegian Tax Administration
- Activity include its own data central and big print shop
- Offices throughout Norway

LANDLORD

- Entra Eiendom AS (state owned)
- Total revenues € 120 mill/year

MAIN CONTRACTOR

- AF Byggfornyelse

PROJECT MANAGEMENT

- Optimo Prosjekt AS
- Total revenues € 10 mill/year
- Previously subsidiary of Entra

OTHER ACTORS....

- Architects and advisors (among others)
- LPO Arkitekter (and two others)
- Uni Consult (hired by tenant)
- Energetica
- Technical cocontractor: YIT
- Interior contractor: Optimo Prosjekt AS

Relevant experiences

No previous experience

Relevant experience

*Experience on prefab solution.
Sub contractor with
experience with PH*

*No previous experience in PH
but with upgrade to Label B*

Green focus

*Label B buildings
Member of Green State Project
BREEAM*

*Be the leader in sustainability
in the building sector.
Member of FutureBuilt and
Green building Council*

*Mission:
We clean up from the past and
build for the future
No special strategy for energy*

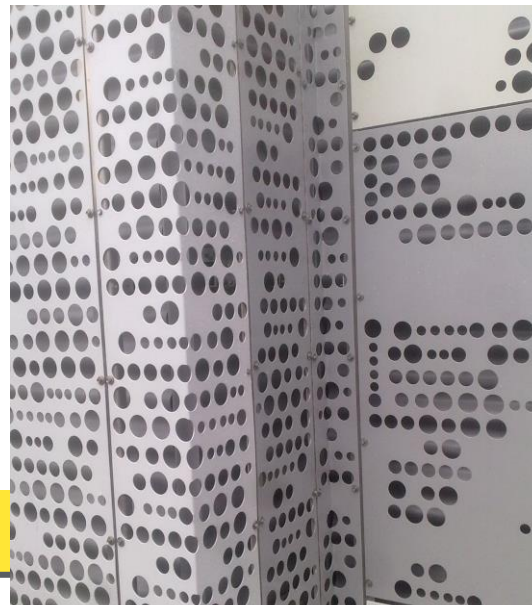
No special statements



4. DECISION MAKING PROCESS

Main decisions

- Expiration of existing contract
- Tenant initiated a tender process for Label B building -received 17 offers.
- Entra had to come up with “big news”
- Invited 3 architects to present ideas.
- Also subcontractors were involved
- Major conclusions put into the offer:
 - Fill in new space between existing blocks
 - Use of recycled aluminium
 - Temporary relocation (2 years)
 - Data central could remain
- The tenant chose Entra’s offer
- After signing the contract Entra launched the idea to increase ambitions to Label A/PH
- First declined due to expected poorer indoor comfort
- Later accepted but no rent-increase
- Subsidies 5% of total cost – 50% of additional cost.



Timeline for the decision making process



5. DECISIONS ILLUSTRATED

Label A

Not considered
Lack of **knowledge**



TEK10

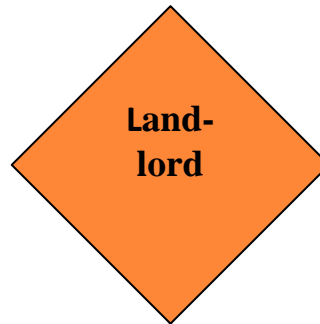
Policy of tenant: better than building code



Label B - **Advisors** recommended B

Label B

Was the real alternative



NZEB

Not considered
Lack of **knowledge**?



Label A - New **strategy** (sustainability & **Innovation**)

Advisors recommended label A

Tenants **top management** approved

6. LESSONS LEARNED

IMPORTANT DRIVERS



- Focus on energy efficiency from the start
- Landlord's pain of the possibility of losing such a big customer
- Entra's new strategy to become the industry leader
- The energy consultant advocated strongly that it was possible.
- The project leader hired by NTA believed also in the idea.
- One of the key persons at NTA was very enthusiastic about the idea and was an internal promoter of increased ambitions.
- Enova's grant was the final argument for concluding the proposed alternative.
- The top management in both NTA and Entra saw that the project would support their respective organizations' social responsibility and thereby strengthen their image.

6. LESSONS LEARNED

IMPORTANT BARRIERS



- The need of relocation to temporarily offices. Especially for the data central.
- Lack of knowledge by the tenant in combination with imprecise information about the consequences of increasing the energy standard of the building.
- NTA could not accept an increased rent. As a public body they focused on efficient use of the tax payers' money. It would also be a deviation from the tender.
- Tight time schedule made it difficult to consider the consequences of the new proposal.

6. LESSONS LEARNED

MAIN CONCLUSIONS



The final result of this renovation project will be looked at as visionary and innovative. This is mainly a consequence of:

- Companies challenged by competition lead to innovation.
- The increased public focus on sustainability has influenced this indirectly through the involved persons
- Company policies which expressed ambitions regarding energy and sustainability supported by top management.
- Individual persons combining their skills and enthusiasm to convince others to increase the ambition level.
- Technical advisors have been very important.
- BREEAM is a useful tool to promote sustainability.
- Involved actors realised it was a learning process

Some concerns:

- Still scepticism about indoor air quality in PH.
- Tenant is not sure if the same ambition will be applied for next project
- Paradox: Public actors should take the lead – tendering processes and tight budgets mean strong cost focus

CONCLUSIONS SO FAR

FROM SUBTASK B



- Main focus is directed towards schools and offices
- Also big unrealised potential in commercial buildings
- Public actors dominating the cases studied so far

- Still very few demonstration projects with very high ambition level
- Decision making processes are seldom rational!
- More learning to come