Task 37 - Advanced Housing Renovation with Solar and Conservation

13:00  Welcome and introduction – Why Housing Renovation?  Fritjof Salvesen, KanEnergi AS, Norway, Operating Agent task 37
13:20  From demonstration projects to volume market; Are Rødsjø, The Norwegian State Housing Bank, Norway, leader subtask A
13:50  Lessons learned from 61 demonstration projects; Robert Hastings, Architecture, Energy & Environment GmbH, Switzerland, leader subtask B
14:20  Advances in Housing Renovation; Hans-Martin Henning, on behalf of Sebastian Herkel, Fraunhofer Institute for Solar Energy, Germany, leader subtask C
14:50  Coffee break
15:20  Renovation in cold climates, Fritjof Salvesen, KanEnergi AS
15:30  Sustainable Renovation, Sophie Trachte, Université Catholique de Louvain Belgium, leader subtask D
16:00  Comments, discussions and follow up after task 37
16:30  End of seminar
Why Housing Renovation

Fritjof Salvesen
Operating Agent IEA SHC Task 37
KanEnergi AS
Norway
Global temperature is increasing – why bother?
The IPCC (Intergovernmental Panel on Climate Change) conclusion: global emissions must be reduced by 50% - 85% by 2050 if global warming is to be confined to between 2-2.4°C.

The G8 leaders agreed at the Heiligendamm Summit in 2007 to seriously consider a global 50% CO₂ reduction target.

Energy stands for 69% of all CO₂ emissions and about 60% of all greenhouse gas emissions is related to energy supply and use.

Building sector used 38% of global final energy consumption in 2005 and 57% of all electricity

Building sector is dominated by residential and service sectors, accounting for 88% of energy consumption
Energy Technology Perspective 2008

- Request by G8 for “Alternative Scenario and Strategies” Gleneagles summit 2005

The report describes 3 scenarios:

- **Baseline** (Business as usual)
- **ACT Map** (emission 2050 at 2005 level)
- **Blue Map** (50% emission reduction in 2050)

- How to get there
Based on optimistic assumptions about the progress of key technologies, BLUE Map scenario requires deployment of all technologies involving costs up to 200 USD/ton of CO₂ when fully commercialized.

If the progress of these technologies fails to reach expectations, costs may rise to as much as USD 500 per ton.

What does these cost levels mean?

CO₂ taxes impact on electricity costs from coal fired power plant:

- 200 USD/ton => 18 US cent/kWh
- 500 USD/ton => 45 US cent/kWh
Energy efficiency is important in the Blue Map scenario.

![Figure ES.2](Image) Comparison of the *World Energy Outlook 2007 450 ppm case* and the BLUE Map scenario, 2005-2050

- CCS industry and transformation (9%)
- CCS power generation (10%)
- Nuclear (6%)
- Renewables (21%)
- Power generation efficiency and fuel switching (7%)
- End use fuel switching (11%)
- End use electricity efficiency (12%)
- End use fuel efficiency (24%)

Baseline emissions 62 Gt
BLUE Map emissions 14 Gt

WEO 2007 450 ppm case
ETP 2008 analysis
Building sector in BLUE Map scenario

- CO₂ emissions are reduced by 43% below Baseline in 2050 (11, t Gt)
- In BLUE Map scenario the electricity generation is largely decarbonised in 2050
- Accounting for decarbonised electricity use in buildings, emissions from buildings are 85% lower than Baseline
- This results in buildings sector CO₂ emissions in 2050 being 65% lower than their level in 2005
The BLUE Map scenario

- Widespread conversion of buildings to very low energy consumption, and even "zero" energy buildings are part of the scenario.

Among key roadmaps:

- Energy efficiency in buildings and appliances
- Heat pumps
- Solar space and water heating
IEA Energy Technology Perspective 2008:

- More than half of the existing building stock will still be standing in 2050
- Buildings are much more frequently renovated than replaced
- More than 50% of the building stock in many OECD countries built before 1970
- 200,000,000 residential dwellings in OECD countries will have to be renovated to new energy standards in the BLUE scenario

IEA task 37 has shown:

- It is possible for a dramatic decrease in energy demand in existing houses
- Twelve task 37 demo-projects on the web show reductions from 62 - 95% for space heating and DHW, average 75%.
How can IEA influence

- IEA Implementing Agreements (Programs) provide the framework to advance the most efficient use of energy possible.
- Partnering with industry and non-member countries, the IEA Technology Collaboration is a global network.

*Figure A.1  ▶ Global energy technology network*
Solar Heating and Cooling Program (SHC)

18 participating countries and 43 projects (tasks) since 1977

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European Union
Task 37 “Advanced Housing Renovation with Solar and Conservation”.

- Participating countries: Austria, Canada, Belgium, Denmark, Finland, Germany, Italy, New Zealand, Norway, the Netherlands, Sweden, Switzerland

- More than 45 participating experts


- Task website: www.iea-shc.org/task37
Task 37 Objectives:

- Develop solid knowledge base how to renovate housing to a very high energy standard while providing superior comfort and sustainability.

- Develop strategies which support market penetration of such renovations explicitly directed towards market segments with high renovation potentials.

- Market implementation strategies and technical R&D to be equal priority areas.
Task 37: Advanced Housing Renovation with Solar and Conservation

SHC-Task 37 Structure:

Subtask A (Norway): Marketing and Communication Strategies

Subtask B (Switzerland): Advanced Projects Analysis

Subtask C (Germany): Analysis and Concepts

Subtask D (Belgium): Environmental Impact Assessment
Thank you for your attention

www.iea-shc.org/task37

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