

Clearinghouse
Support

Bridging RUE in Building
Projects and Financing

Intelligent Energy  Europe

Energy saving in buildings - Situation in Denmark

ClearSupport event
Gdansk
8'th July 2009

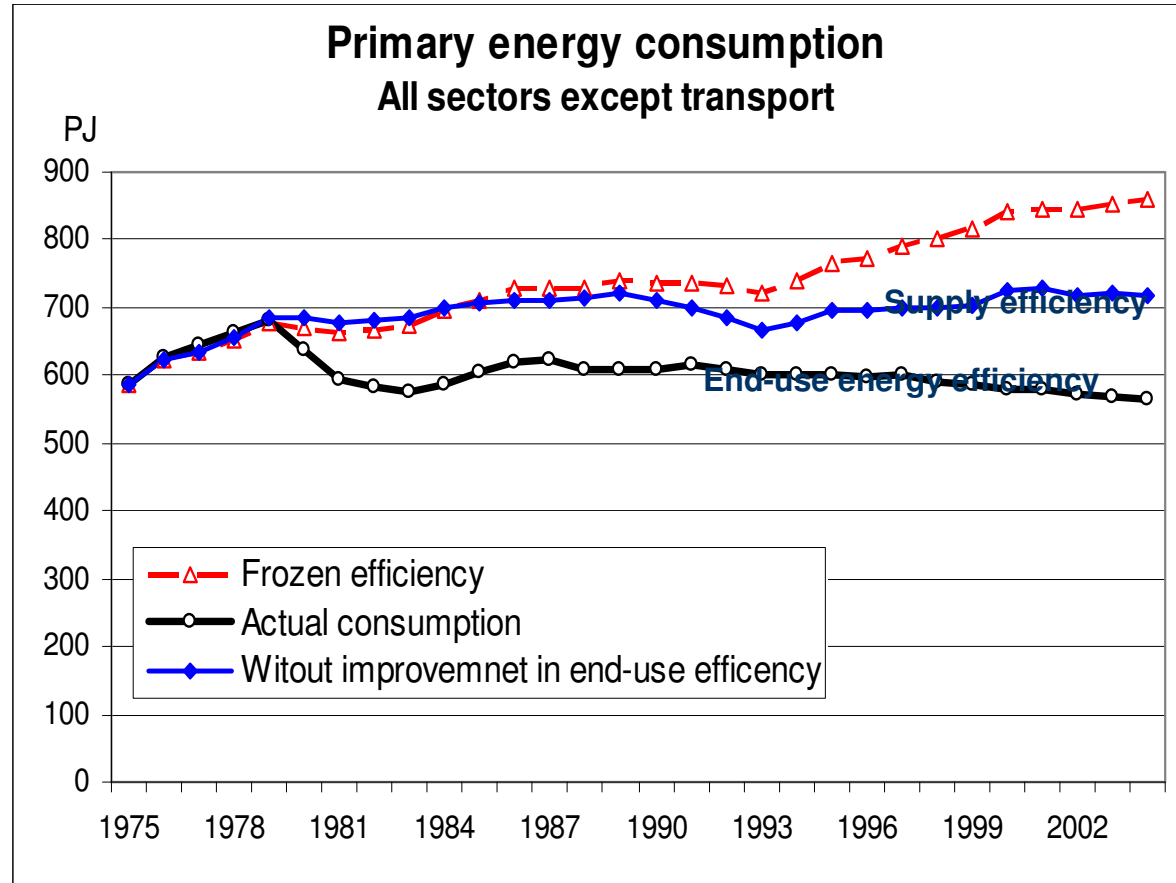
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End-use energy efficiency has delivered

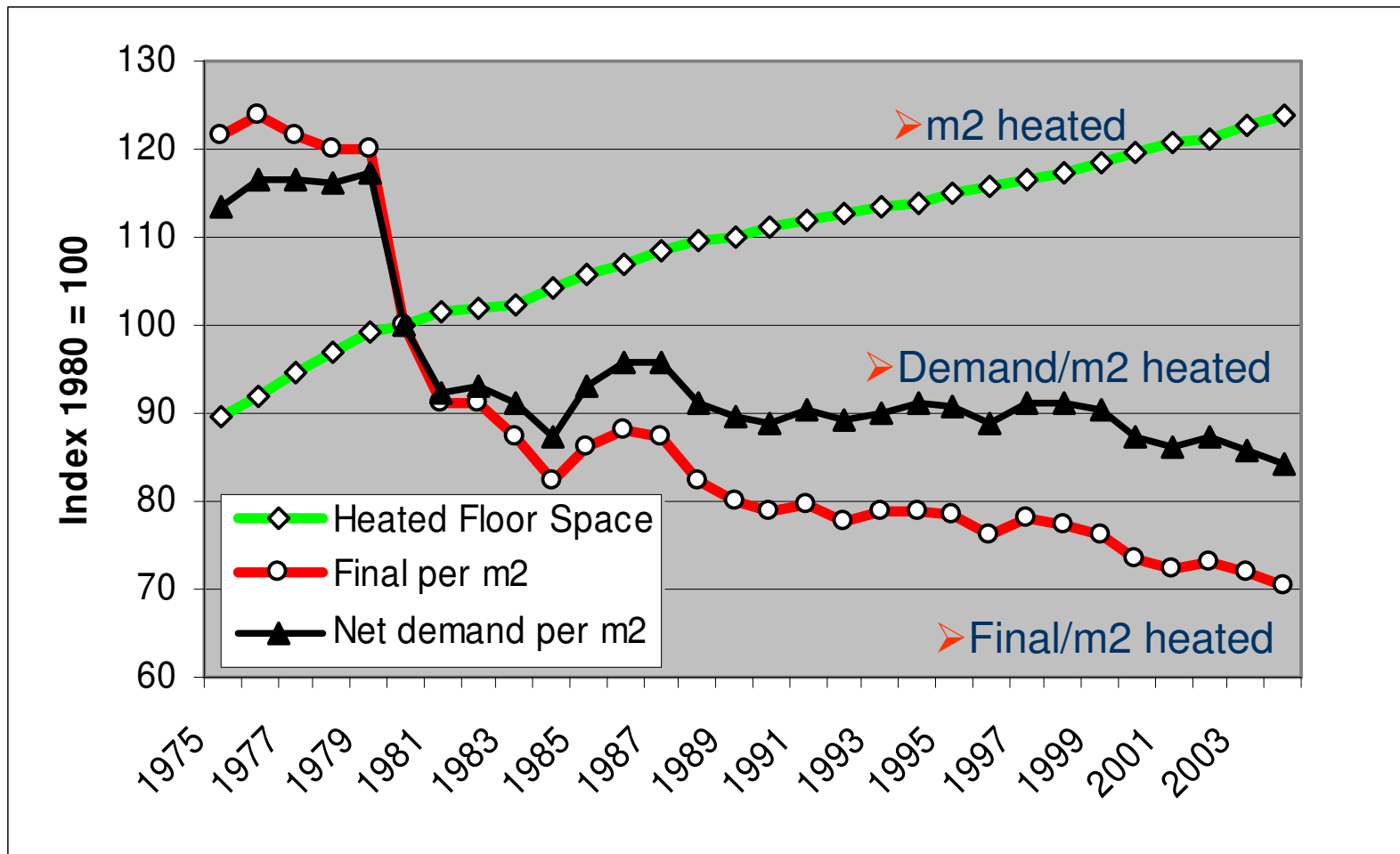


More than half of the total energy efficiency improvement originates from end-use efficiency

Energy Efficiency Measures in Denmark

- Taxation:**
- Energy taxes in households and in the public sector
 - CO₂ taxes on energy used in all sectors
- Buildings:**
- Building codes
 - Energy labelling of buildings.
- Appliances:**
- Energy labelling of appliances (EU and GEEA).
 - Minimum efficiency standards.
- Industry:**
- Agreements about energy efficiency in industries (CO₂ package)
- General:**
- The Electricity Saving Trust.
 - The energy-saving activities carried out by the grid companies (electricity, natural gas, district heating)
 - Energy Saving Act
 - Different subsidy schemes

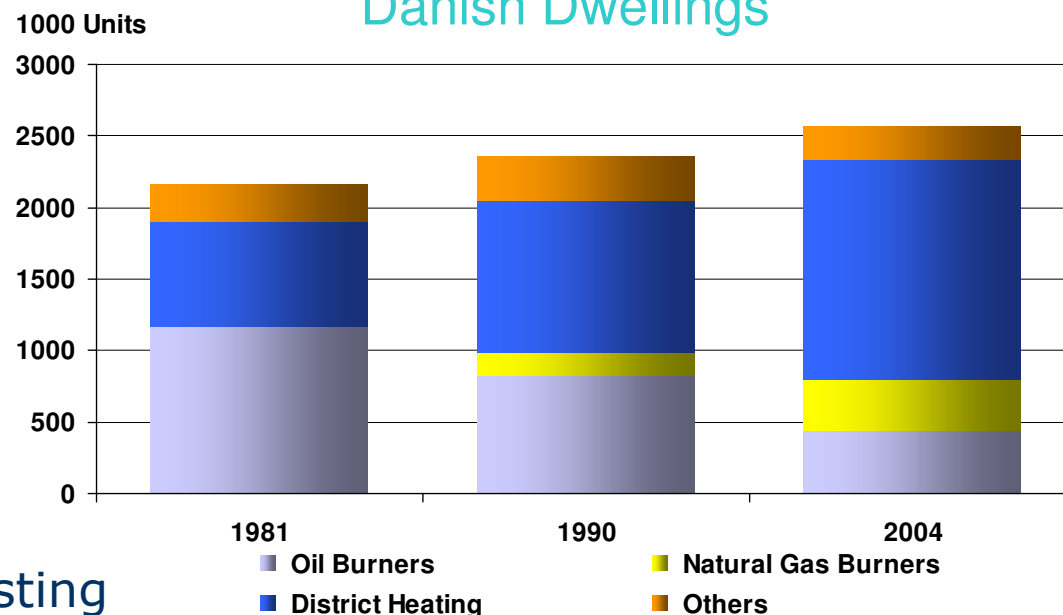
Significant savings in space heating



Measures used

- Change of heating systems
 - More district heating and natural gas – heat planning
- Economic incentives
 - Energy Prices
 - Subsidies
- Building codes for new buildings
 - Has been tightened several times
- Energy labelling of existing buildings
- Information and campaigns

Heating supply in Danish Dwellings



Danish Energy Efficiency Action Plan

- ❑ Energy-conservation action plan was launched in September 2005
- ❑ Acknowledging that despite good achievements there is still a long way to !
- ❑ The energy saving goals were strengthened by policy agreement of Feb. 2008 and is to be further strengthened due to the energy & climate goals

Basic principles:

- ❑ Cost-efficiency
- ❑ Market-based approach
- ❑ Focus on realisation of profitable savings

Danish EE Action Plan

Objectives and targets

Energy Conservation Action Plan of September 2005

- ❑ The goal is that total final energy consumption (excluding transport) shall be reduced until 2013
- ❑ Actual savings target is 1,7 % per year
 - Concrete energy savings, which can be documented, annually (2006-2013)

Basic principles:

- ❑ Cost-efficiency
- ❑ Market-based approach
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Energy savings in buildings

New buildings:

- ❑ Building Code:
 - Reduction 25-30 % from 2006
 - Labelling to secure compliance
- ❑ Update in 2010 and 2015

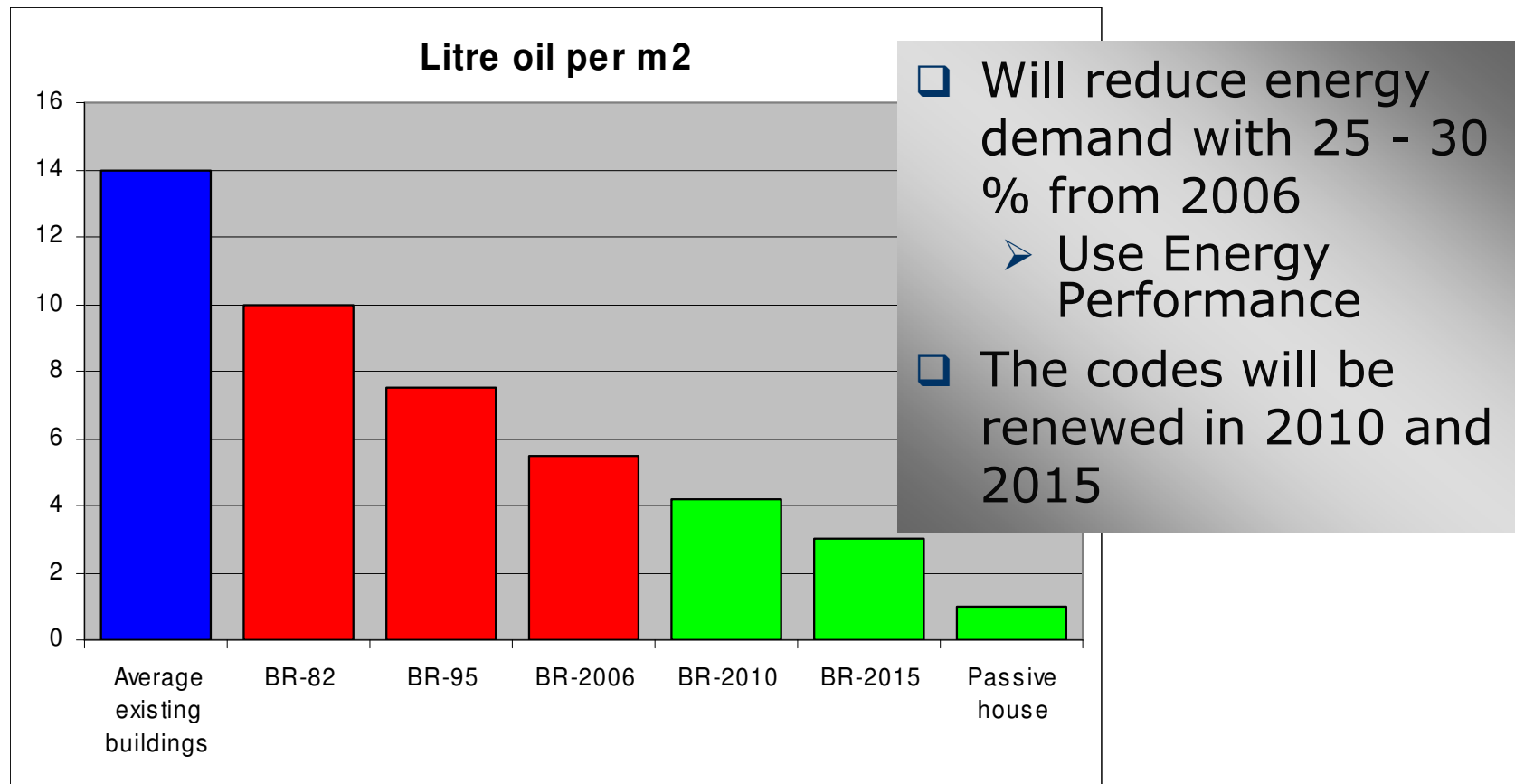


Existing buildings:

- ❑ Requirements are set in relation to:
 - Major renovations – all buildings
 - Replacements of roofs, windows in a facade, boilers, change in heat supply, etc.
- ❑ Mandatory energy labelling/certification schemes
- ❑ Help to implementation
 - Utilities – White certificates
 - Make it easy, simple and secure for the consumer



New building code



Incentives to build better buildings. Low energy classes are defined: **1=> 50 %** , **2=> 75 %**

Energy Certification (labelling)

New certification scheme in Denmark from 2006:

- ❑ One-Family Houses:
 - At sale and renting (Valid for 5 years)
- ❑ Multifamily Houses:
 - At sale and renting of building & flats
 - Whole building incl. typical flats
 - Regular every 5 years > 1000 m²
- ❑ Trade & Services and Public buildings
 - Regular every 5 years
 - Trade and service only > 1.000 m²
 - By sale or renting < 1.000 m²



The Public Sector

- ❑ Shall take an **exemplary role**
- ❑ Implement energy efficient procurement
 - Move the whole market as a big buyer
- ❑ **Obligation to realise savings** with reasonable pay-back time (up to 5 years)
 - Energy services companies can play a role
- ❑ Make the energy consumption public
 - Electricity consumption on the Internet

- ❑ **Regulation for all Government institutions is implemented**
 - Next step is the municipalities

Recent initiative: Centre for Energy Savings in Buildings

Objective:

ensuring that actors within the building sector get access to more knowledge about energy solutions in buildings

and thus increase the realization of energy savings in buildings.

Benefits:

- 1) Energy savings
- 2) Improvement of the buildings
- 3) Jobs

Established due to energy policy agreement of 2008. Hosted at Danish Technological Institute



Facing the barriers

There is lots of knowledge about

- potential, energy efficient technical solutions, retrofitting, barriers, tools

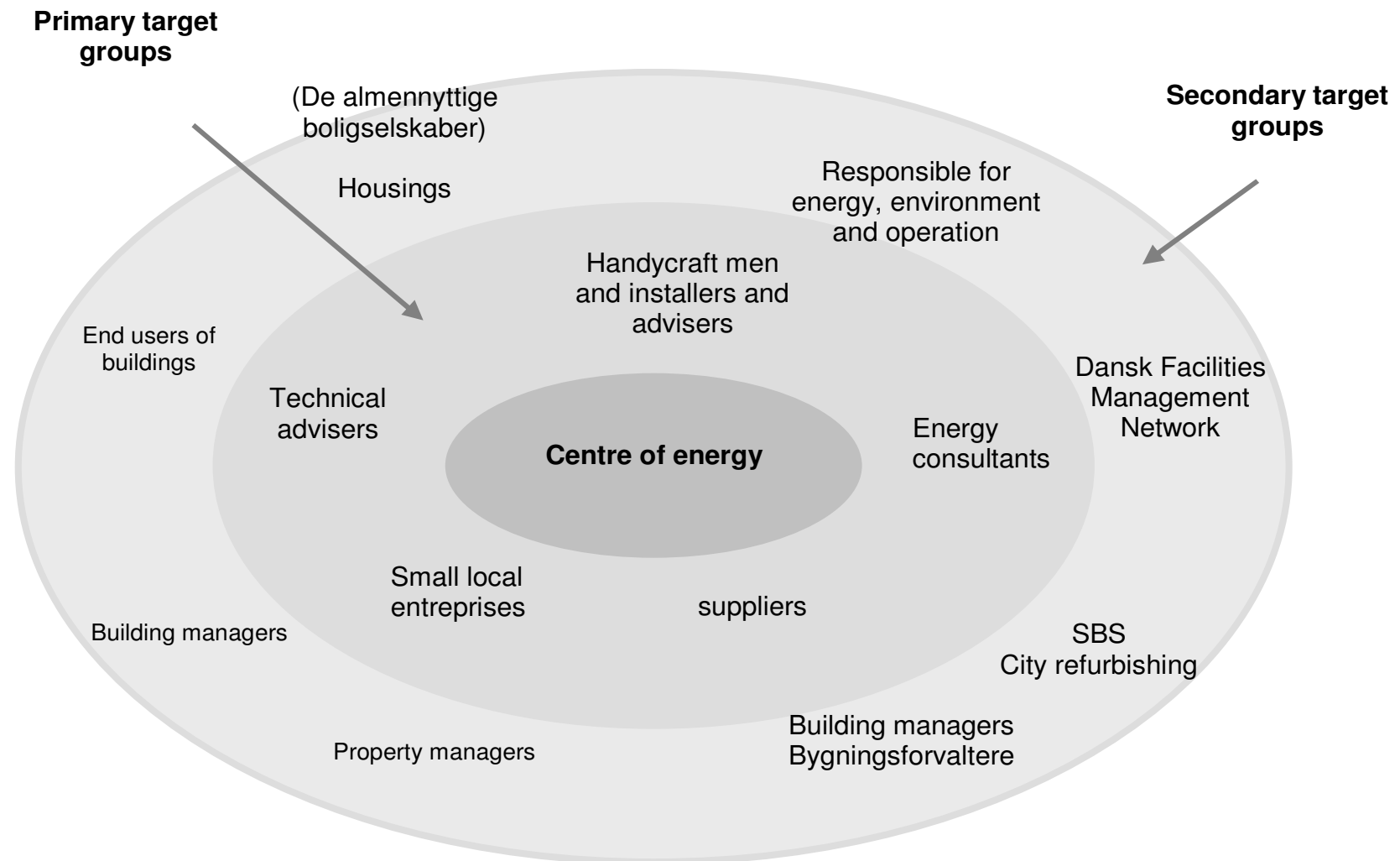
But the actors in the building sector don't use it !

- No incentives for the developers (bygherrer)
- Missing –easy to use – knowledge and initiatives which ensures that the bulding sector can offer solutions which fulfills the endusers demand of quality, economy and a simpel proces

It has to be safe, cheap and easy to implement the energy savings



The target group of the centre



Collection of know how

- ❑ Energy saving potentials
- ❑ Building proces
- ❑ Retrofitting/refurbishing
- ❑ Barriers and instruments
- ❑ Finance
- ❑ Legislation



Provision of services

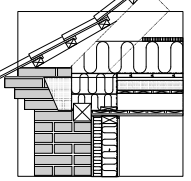
Tools for simplifying the advisory & implementation part of the energy saving activity.

Development of standard and package-solutions targetted at the advisory group and handycraftmen (excecuting the energy solutions)



Udvendig → Indvendig → Indvendig isolering → Luftrum → Isoleret tagparti → Isoleret på oversiden af bjælkelag

Isolering på oversiden af bjælkelag



Lange tagflader fremmer de gulvbrædder, indlud og indludsbrædder, så du kan skabe sammenhæng mellem loftisolering og isoleringen af ydervæggene nederunder.

Du skal skabe og tætte dampspærren mod bjælkesiderne. Mod loftet klammer du dampspærren fast lige over det sted, hvor skæftet for den indvendige efterisolering er klammet mod loftet.

Derefter placerer du isoleringsmaterialet efter producentens anvisning.

Se også **Isolering ved indbygning af vinduer**

- Vindspærre
- Gulvbrædder
- Indludsbrædder
- Gulvbrædder med efterisolering af ældre etagegulve
- Luftrum

Skab sammenhæng
Isoleringen på loftet skal hænge sammen med isoleringen af ydervæggene. Også selvom der fx kun er et tyndt lag indvendig efterisolering. Ellers kommer der en **luftlekkage**, der hvor isoleringen ikke hænger sammen.

I ældre huse er der ofte et vandret hulrum i etageadskillelsen. Dette hulrum skal du afbryde og isolere ved ydervæggen. Ellers vil luften i hulrummet blive afkølet af den kolde ydervæg.

Undgå at blokere ventilationen
Ofte er tagrummet ventileret gennem tagudløbet. Du skal undgå at blokere denne ventilation. Det gør du ved at sætte plader op mellem spærrene. Du kan også bruge hård isolering, som du skærer til i den rigtige vinkel.

Luftspalten mellem isolering og spærhoveders overside skal være mindst 20 mm. Hvis der er undertag af bænevare eller træfliserplade, skal luftspalten være mindst 50 mm.

Manglende ventilation kan give fugt og råd i tagrummet.

Gør samlinger i dampspærren lufttætte
Du skal samle dampspærren med lufttætte overlap.

Du skal også sørge for tætte samlinger mellem dampspærren og de bygningsdele, den stader op til, fx bjælker og ydervægge.

Se nogle konkrete løsninger: **Lufttætte samlinger**

En dampspærre skal altid være lufttæt. Ellers kan fugtig luft trænge gennem utæthederne i dampspærren og ud i isoleringen, hvor luften bliver afkølet og fugten kondenserer.

En utæt dampspærre giver træk og dårligere varmeholdelse end en tæt dampspærre.

Er dampspærre nødvendig?
Det er bedst at bruge en dampspærre. Den hindrer fugtig luft i at trænge ud i isoleringen. Du kan dog godt undvære dampspærre, når du efterisolerer mod et uopvarmet tagparti en ældre etagebolig. Men så skal tagrummet være godt ventileret, loftets overside i beboelsesrum nedenunder skal være tæt (fx ikke pudset loft uden reuser), og samlinger mellem vægge og loft i beboelsesrum skal også være tætte. Blev kloget: **Tag og dampspærre**

Another new initiative: Retrofitting fund scheme

*The scheme has been available for
building owners in the Spring 2009*

Objective

- ❑ Boosting economy and creating jobs
(response on financial crisis)
- ❑ Secondary to generate energy savings

Buildings owners can apply for:

- ❑ 40% grant, max 15.000 DKK (2,000 Euro)
- ❑ Incl. energy saving materials up to 10.000 DKK
- ❑ Not energy consumption (e.g.no grants for energy consuming measures like spa-bath)

Retrofitting fund scheme (cont'd)

- ❑ Open for applications for one month (Spring 09)
- ❑ Around 100,000 building owners get access to grants. So far 90,000 applications have been dealt with (by 19'th June 09)
- ❑ The renovation fund scheme will provide a boost of at least 6 mia DKK (0.8 billion Euro) for the building sector
- ❑ It is assessed that 64% of the measures concern energy savings

More information



www.ens.dk

Thank you for your attention !

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