Energy Performance Certification of buildings and Energy labelling of appliances

Kiev, Ukraine, 18-19 January 2011

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Energy Performance Certificates affects each part

**Owner**
- Cost-effective proposals for action.
- The building's potential for reduced operating costs.
- Conscious tenants.
- Benchmarking of the building as energy-and environmentally friendly.

**Tenant/Customer**
- Increased knowledge of the building were you live or work in.
- New knowledge to be considered when renting or buying a building.
- Comparison of the energy performance of a building with other buildings.
- Ability to influence property owners to become more energy efficient.

**Government/EU**
- Enhance the achievement of sustainable society.
- Lower energy use with same or better comfort.
- Lower greenhouse gas and other emissions.
- Enhances the renewable sources and security of supply.
Before the implementation

- 2002-2004 many studies on how the implementation should be made
  issues such as:
  - who should be the responsible authority Boverket or Energy Agency.
  - How to harmonise the EPC with national schemes for voluntary
    environmental certification, radon & control of ventilation
  - Which reference values should be used and what energy is to be
    covered? *Energy Agency started and carried out 3 major projects to
    improve the national energy statistics.*
  - How to secure the quality of certificates? *Accreditation*
  - Need for supervising, *this became a municipal responsibility*
  - Need of information!!! *Joint information campaigns by Boverket,
    Swedish Energy Agency and Swedish EPA*
Implementation in Swedish regulations in 2006

- Sharpen energy requirements in building codes for new buildings
- Sharpen energy requirements for renovations of buildings
- New regulation for energy performance certificate EPC (in Sweden also called for buildings energy declarations)
Implementation in Swedish regulations

► New buildings
  - has to make the certificate at least 2 years after it’s ready

► Public buildings over 1000 m²
  - has to make the certificate at least at 1 January 2009

► Buildings as are rented out (whole or part of)
  - has to make the certificate at least at 1 January 2009

► Buildings as are sold
  - if the building doesn’t have a certificate it must have one at least before it’s sold. There are a number of exceptions.
Implementation areas of responsibility 2006-2009

- Boverket has the major responsibility for the whole system.
- Swedish Energy Agency, Swedish EPA and Boverket has mutual projects to inform the public.
- Swedac (the Swedish accreditation authority) accredits companies.
- The municipality supervise the system.
- The building owner is responsible for having a certificate.
- The accredited company is responsible for the correctness (quality) of the certificate.
- The energy expert (as has to be employed by a accredited company) is responsible for making the certificate and send it to Boverket.
- Boverket is responsible for register of the certificate.
Energy certificates consist of

- **Energy performance** (energy use per m²) divided at heat, hot water, cooling and electricity
- Values for *reference*
- Proposals for **energy efficient measures** and remedies with regard to cost efficiency, indoor environment, care of the building and et cetera.
- **Ventilation data on Compulsory Control of the Function of the Ventilation**
- **Radon**, data of measurement values
Implementation so far (end of 2010)

- 300 000 certificates registered
  ≈ 50% of buildings
- 359 companies accredited
- 1335 certified energy experts

Possible changes 2013-2015 due to changes in EPBD e.g.
- classification of buildings A-G
- take off requirement of accreditation for single family houses.
- Public buildings need EPC even when small 250 m²
Energy use in kWh/m² as certified and if measures are taken

- Single family houses
- Multi family buildings
- Public buildings offices etc

<table>
<thead>
<tr>
<th>Zone</th>
<th>Single family houses</th>
<th>Multi family buildings</th>
<th>Public buildings offices etc</th>
</tr>
</thead>
<tbody>
<tr>
<td>zon 1</td>
<td>140</td>
<td>160</td>
<td>180</td>
</tr>
<tr>
<td>zon 2</td>
<td>130</td>
<td>150</td>
<td>170</td>
</tr>
<tr>
<td>zon 3</td>
<td>120</td>
<td>140</td>
<td>160</td>
</tr>
</tbody>
</table>

Grundkarta: S1 S2 S3

ENERGY COOPERATION BETWEEN THE EU, THE LITTORAL STATES OF THE BLACK & CASPIAN SEAS AND THEIR NEIGHBOURING COUNTRIES
The proposed measures per category-
Specific measures on control

- Measures on building
- Measures on installations
  - Central indoor temperature sensor
  - Balancing radiators
  - Lowering the temperature
  - Weather forecast control
  - Adjusting Ventilation
  - Other
The proposed measures per category:
Specific measures on installations

- Measures on building
- Measures on control
- Water saving
- Replacing radiator valve
- Change to geothermal HP
- Changing to a different heat pump
- Switching to other heat source than heat pump
- Thermal Insulation
The proposed measures per category-
Specific measures on building

- Measures on control
- Measures on installations
  - Insulation of attic
  - Window replacement
  - Insulation of outside wall
  - Other insulation
  - Other

54
21
25
8
10
2
1
1
Swedish experience

Total energy savings if the measures are done

<table>
<thead>
<tr>
<th>Category</th>
<th>Total Energy TWh</th>
<th>Reduced Energy TWh</th>
<th>Potential %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single family house</td>
<td>1,9</td>
<td>0,4</td>
<td>20%</td>
</tr>
<tr>
<td>Multi family house</td>
<td>15,2</td>
<td>2,1</td>
<td>14%</td>
</tr>
<tr>
<td>Public building</td>
<td>7,1</td>
<td>1,7</td>
<td>23%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>24,2</strong></td>
<td><strong>4,2</strong></td>
<td><strong>17%</strong></td>
</tr>
</tbody>
</table>
Experiences of the implementation

- Access to and confidence in the energy experts are good. But for consultant companies it is expensive to keep up with the organisation.
- Limited reference information as background and maybe therefore simplified energy saving proposals.
- Tenants do not understand or do not pay attention to the information in certificates.
- Information on the profitable actions is not new however many owners intend to implement after receiving the EPC.
The Swedish certificate

Husets energianvändning

Detta hus

Liten

Stor

Energideklaration för Bygatan 18, Gammelboda.
Detta hus använder 142 kWh/m² och är, varav el 70 kWh/m².
Liknande hus 123–150 kWh/m² och är, nya hus 110 kWh/m².
Radonmätning är utförd, Ventilationskontroll är utförd.
Detailinformation finns hos fastighetsförvaltaren.
Se även: www.boverket.se/energideklaration
Energideklaration utförd 2007-09-17 av:
Eva Olofsson, Energica AB
Thank you!

More information is available on:

The European portal for energy efficiency in buildings
www.buildup.eu

www.epbd-ca.org

Swedish National Board of Housing, Building and Planning
www.boverket.se