Danish approach to energy efficiency regulation of products

Bjarke Hansen, Advisor, Engineer
Danish Energy Agency

Product policies and energy efficiency
Danish Climate Policy
Energy efficiency is a key factor

- Energy efficiency plays a central role in Danish energy policy
- Energy efficiency of products:
  - Is cost effective
  - Reduces consumers energy costs
  - Increases security of energy supply
  - Enhances competitiveness of industry

Energy efficient products
International cooperation a key to results

DK Product policy
- Low priority to national regulation
- International cooperation
- EU-legislation
  - MEPS - minimum energy performance standards
  - Energy labelling
- Ambitious energy requirements on EU level
- Denmark participates actively in EU studies, development of regulations, and negotiations
- Industrial and NGO involvement
Policy measures and market impact

Ban of the less efficient products
- Ecodesign - EU minimum energy performance standards (MEPS)

Promotion of the most efficient products
- EU energy labelling
- Energy Star
- Energy efficient procurement (national)

EU Ecodesign and labeling

- Basic: Minimum Energy Performance Standards (MEPS)
- EuP – A highly inertial process
- Horizontal vs. vertical measures
- Evolution from direct to indirect energy consumption (EuP -> ErP)
- Evolution from appliances to products
- Evolution from energy to resources? Review is going on
- Labeling directive under revision
Tools for pushing and pulling energy efficient products

- Ecodesign, incl. Info & benchmark
- Energy labelling

Manufacturer, importer, retailer installer → Market

Green Public Procurement

Consumer

Top Ten

Impact of product regulation
Cases: Selected energy efficient products

- **Refrigerator (Energy label D)**
- **Refrigerator (Energy label A)**
- **Circulator (Energy label D)**
- **Circulator (Energy label A)**

**Impact of ecodesign and energy labelling by 2020 in Denmark**

- Savings 2030 GWh/yr
- Consumption 2030 GWh/yr

By 2020: Savings amount to 5% of gross energy consumption (DK)

Danish Energy Agency 2013
Impact of ecodesign and labelling

Denmark 2020

Savings from implemented measures so far:

- 372 TWh/yr by 2020
  Approx 13% of electricity consumption
Policies for buildings

Reducing energy demand from buildings

Maximum allowed energy demand per m² heated floor space and per year in a new, 150 m² Danish home.  

Average of existing buildings

80% reduction
Policies for existing buildings

- Minimum standards for renovation and retrofits
- Knowledge Centre and Energy Advisors
- Information and awareness campaigns
- Savings obligation scheme for energy utilities
- Savings obligations for public buildings
- Energy performance certificates
- “Improve your home”-advisors

Ecodesign and DK building code

Ecodesign implemented in building code, primarily in chapter 8, Installations eg.

- Chapter 8.2 – Circulators shall conform to EU regulation 641/2009/EU
- Chapter 8.3 – Ventilations units shall conform to Ecodesign regulation 1253/2014/EU
- Chapter 8.5.1.4 – Boilers for room heating shall conform to Ecodesign regulation 813/2013/EU
- Chapter 8.6.4 – Heat pumps for room heating shall conform to ecodesign regulation 813/2013/EU og 206/2012/EU.
Information of energy consumers about energy efficiency

- A vital part of Danish promotion of energy efficient products
- Commitment and cooperation with consumer and trade organizations
- Remember multiple benefits from EE; e.g.
- Use the full supply chain
- Press loves consumer information
Information of public and business energy consumers

Guidance and tools for product selection and consumer behavior

- Professional refrigeration
- Circulators
- Electric motors
- Fans and ventilation
- Heat pumps
- Servers

Also here: Remember multiple benefits from EE; e.g.

Financial initiatives - Development and discounts

Support of energy efficient products e.g.

- compact fluorescent lamps – energy saving lamp
- 100 € discount if you change your old energy consuming freezer to a new energy efficient product

DK do not do this any more

DK do via EUDP support development of energy efficient product technologies
E.g. Bottle cooler
Financial initiatives
– Obligations on utility companies

Standard products supported via utility companies obligations
• Insulation
• Efficient heating; from oil to gas or heat pump
• Efficient lighting systems; change from halogen lamps to LED in schools or offices, or from old fluorescent lamps to new efficient LED lamps in offices

Product endorsements
- A tool to create consumer awareness of Energy Efficiency

History of product endorsement:
• Recommended by...
• Go'Energi / Elsparfonden
Less relevant due to energy labelling

Present product endorsement:
• Heat pump list

Benefits:
• Increased trust and confidence in EE products
• Increased awareness of EE
• Help consumers to understand the language of EE
• Committing supply chain
Implementation and market surveillance

Market surveillance

- Essential to consumers trust
- Essential to ensure level playing field
- Inform about market surveillance results
- Make it simple; EE regulations based on self declaration => documentation!
Market surveillance
Efficient enforcement

Energy labelling:
• Correct use of the energy labelling in shops etc.
• Correct energy classification

Ecodesign
• CE-declaration
• Technical documentation
• Compliance with minimum energy efficiency requirements

Document inspection consists of ..

<table>
<thead>
<tr>
<th>Energy labelling</th>
<th>Common for Energy labelling and Ecodesign</th>
<th>Ecodesign regulations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data sheets (product fiche)</td>
<td>Technical documentation</td>
<td>CE declarations</td>
</tr>
</tbody>
</table>
Cost comparison

<table>
<thead>
<tr>
<th>Products</th>
<th>Costs for inspection of technical documentation as a percentage of the costs for laboratory testing</th>
<th>Remarks on test costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumer electronics (TV, standby, external power supply)</td>
<td>25 – 30 %</td>
<td>Relatively low test costs.</td>
</tr>
<tr>
<td>Household washing machines and dishwasher</td>
<td>&lt; 10 %</td>
<td>High test costs</td>
</tr>
<tr>
<td>Household refrigerators and freezers and motors</td>
<td>10 – 20 %</td>
<td>Medium test costs</td>
</tr>
<tr>
<td>Household driers and ovens</td>
<td>20 – 25 %</td>
<td>Medium test costs</td>
</tr>
<tr>
<td>Heat pumps</td>
<td>&lt; 10 %</td>
<td>High test costs</td>
</tr>
</tbody>
</table>

Costs per inspection of technical documentation compared to the costs per laboratory testing.

- Lab. test costs vary considerably from 700 € up to 20,000 € + administrative costs
- Costs for inspection technical documentation typically vary from 400 € to 600 €

Market surveillance activities 2011 -2013

<table>
<thead>
<tr>
<th>Product</th>
<th>Document inspections</th>
<th>Laboratory tests</th>
<th>Document inspections and tests</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2011</td>
<td>2012</td>
<td>2013</td>
</tr>
<tr>
<td>TV</td>
<td>40</td>
<td>20</td>
<td>-</td>
</tr>
<tr>
<td>Standby and off</td>
<td>30</td>
<td>18</td>
<td>15</td>
</tr>
<tr>
<td>External power supplies</td>
<td>30</td>
<td>-</td>
<td>12</td>
</tr>
<tr>
<td>Electric motors</td>
<td>37</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Heat pumps</td>
<td>58</td>
<td>20</td>
<td>18</td>
</tr>
<tr>
<td>Household fans</td>
<td>-</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>Refrigerators/ freezers</td>
<td>40</td>
<td>25</td>
<td>14</td>
</tr>
<tr>
<td>Washing machines</td>
<td>10</td>
<td>-</td>
<td>10</td>
</tr>
<tr>
<td>Dishwashers</td>
<td>40</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Batteries</td>
<td>-</td>
<td>10</td>
<td>-</td>
</tr>
<tr>
<td>Luminaires</td>
<td>-</td>
<td>15</td>
<td>-</td>
</tr>
<tr>
<td>Tumble dryers</td>
<td>-</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Circulators</td>
<td>-</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Water pumps</td>
<td>-</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Fans driven by motors</td>
<td>-</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>265</strong></td>
<td><strong>109</strong></td>
<td><strong>117</strong></td>
</tr>
</tbody>
</table>

Number of document inspections and laboratory tests in the period 2011 to 2013
Results of document inspections

<table>
<thead>
<tr>
<th>Product</th>
<th>Percentage of products complying 2011</th>
<th>Percentage of products complying 2012</th>
<th>Percentage of products complying 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standby and off</td>
<td>96 %</td>
<td>83 %</td>
<td>93 %</td>
</tr>
<tr>
<td>External power supplies</td>
<td>85 %</td>
<td>-</td>
<td>42 %</td>
</tr>
<tr>
<td>Televisions</td>
<td>98 %</td>
<td>100 %</td>
<td>-</td>
</tr>
<tr>
<td>Electric motors</td>
<td>93 %</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Heat pumps</td>
<td>41 %</td>
<td>57 %</td>
<td>65 %</td>
</tr>
<tr>
<td>Refrigerators/freezers</td>
<td>88 %</td>
<td>68 %</td>
<td>71 %</td>
</tr>
<tr>
<td>Washing machines</td>
<td>80 %</td>
<td>-</td>
<td>30 %</td>
</tr>
<tr>
<td>Dishwashers</td>
<td>35 %</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Tumble driers</td>
<td>-</td>
<td>-</td>
<td>33 %</td>
</tr>
<tr>
<td>Circulators</td>
<td>-</td>
<td>-</td>
<td>100 %</td>
</tr>
<tr>
<td>Household lamps</td>
<td>-</td>
<td>-</td>
<td>77 %</td>
</tr>
<tr>
<td>Water pumps</td>
<td>-</td>
<td>-</td>
<td>0 %</td>
</tr>
<tr>
<td>Luminaires</td>
<td>-</td>
<td>100 %</td>
<td>-</td>
</tr>
<tr>
<td>Ballasts</td>
<td>-</td>
<td>100 %</td>
<td>-</td>
</tr>
</tbody>
</table>

Level of compliance of inspected products.

Guidance – also a part of Danish market surveillance

- Guidance of manufacturers is prioritized in our market surveillance
- Proceeding with legal action is very resourceful – and the outcome is somewhat uncertain
- Less than 5% of cases where non-compliance is established are assigned for enforcement action to the DEA
Summary

Policy: national and international

Information of suppliers and dealers

Energy efficient products

Information of consumers

Enforcement

Thank you for your attention!

Questions?

Read more at
www.ens.dk
www.ens.dk/energikrav
Sparenergi.dk

Contact: bjh@ens.dk