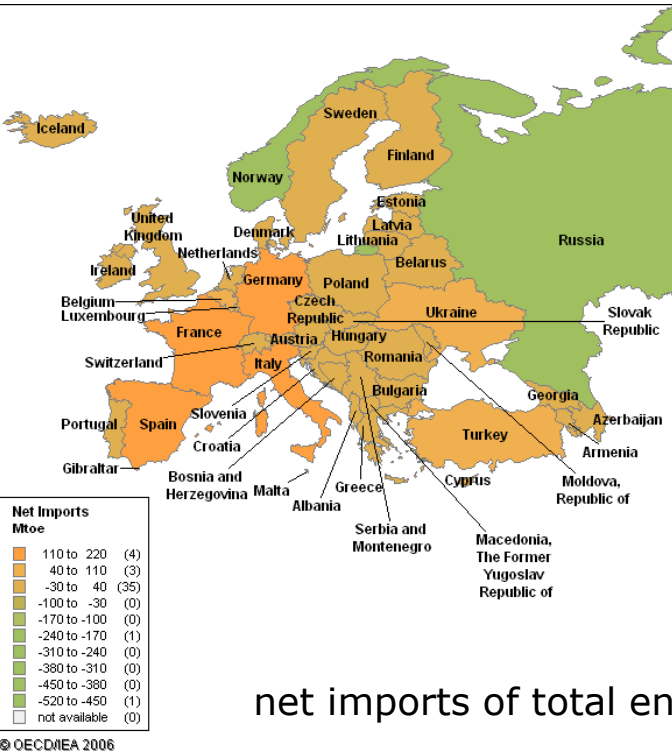


# **EU policies for energy efficiency of buildings**

Ivana Kildsgaard, 2010-11-24

# energy in Europe

Energy accounts for 80% of greenhouse gases emissions, causing climate change and global warming



net imports of total energy in Europe and former USSR

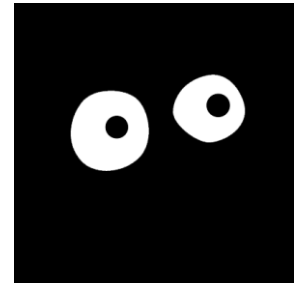
Today energy **dependency** in EU 25 is 50% and will reach 70% by 2030  
In the EU there is an overall **increase** in energy **consumption** by 1-2% per year

# Energy in Europe



building sector is responsible for 40% of energy consumption

# European "20/20/20" goals by 2020



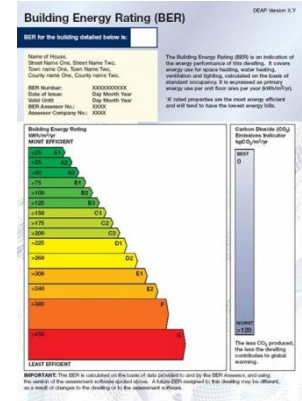
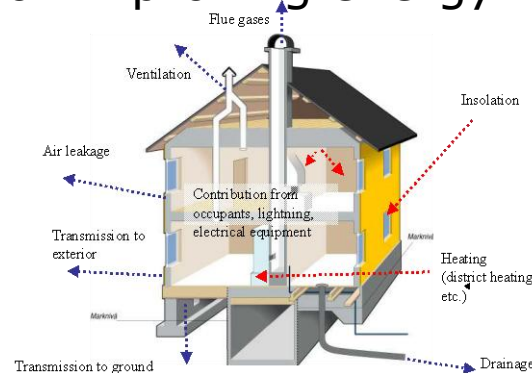
- **20% reduction of GHG** emissions by 2020 compared to 1990
  - 60% cut in GHG emissions by 2050 compared to 1990 (UK)
- **20%** share of **renewable energy** in final energy consumption by 2020
- **Action Plan for Energy Efficiency (EC 2006):**
  - 20% reduction** in EU **primary energy consumption** by 2020
- **10 %** share of biofuels in overall EU transport petrol and diesel consumption by 2020

## Buildings: largest cost effective saving potential

- UK: 0 carbon homes by 2016 (heating and lighting)
- Hungary: 0 emission buildings by 2020 (Climate Change Strategy)
- NL: energy neutral buildings by 2020
- France: energy positive buildings by 2020

# approaches and solutions energy and buildings

- Buildings as producers of energy –
  - implement technology for producing energy and increasing the share of renewable energy
    - solar cells (PV)
    - solar collectors
    - combined heat and power generators
    - wind turbines
  
- Buildings as consumers of energy
  - implement technologies for improving energy efficiency of buildings
    - heat recovery
    - improved insulation
    - no thermal bridges
    - district heating
    - green design



# The beginning...

Council Directive **93/76/EEC** of 13 September 1993 to **limit carbon dioxide emissions by improving energy efficiency (SAVE)**

indicated implementing actions in the fields:

- energy certification of buildings,
- the billing of heating, air-conditioning and hot water costs on the basis of
- actual consumption,
- third-party financing for energy efficiency investments in the public sector,
- thermal insulation of new buildings,
- regular inspection of boilers,
- energy audits of undertakings with high energy consumption



# What followed...

**policy instruments to help speed up energy efficiency and achievement of EU goals by 2020**

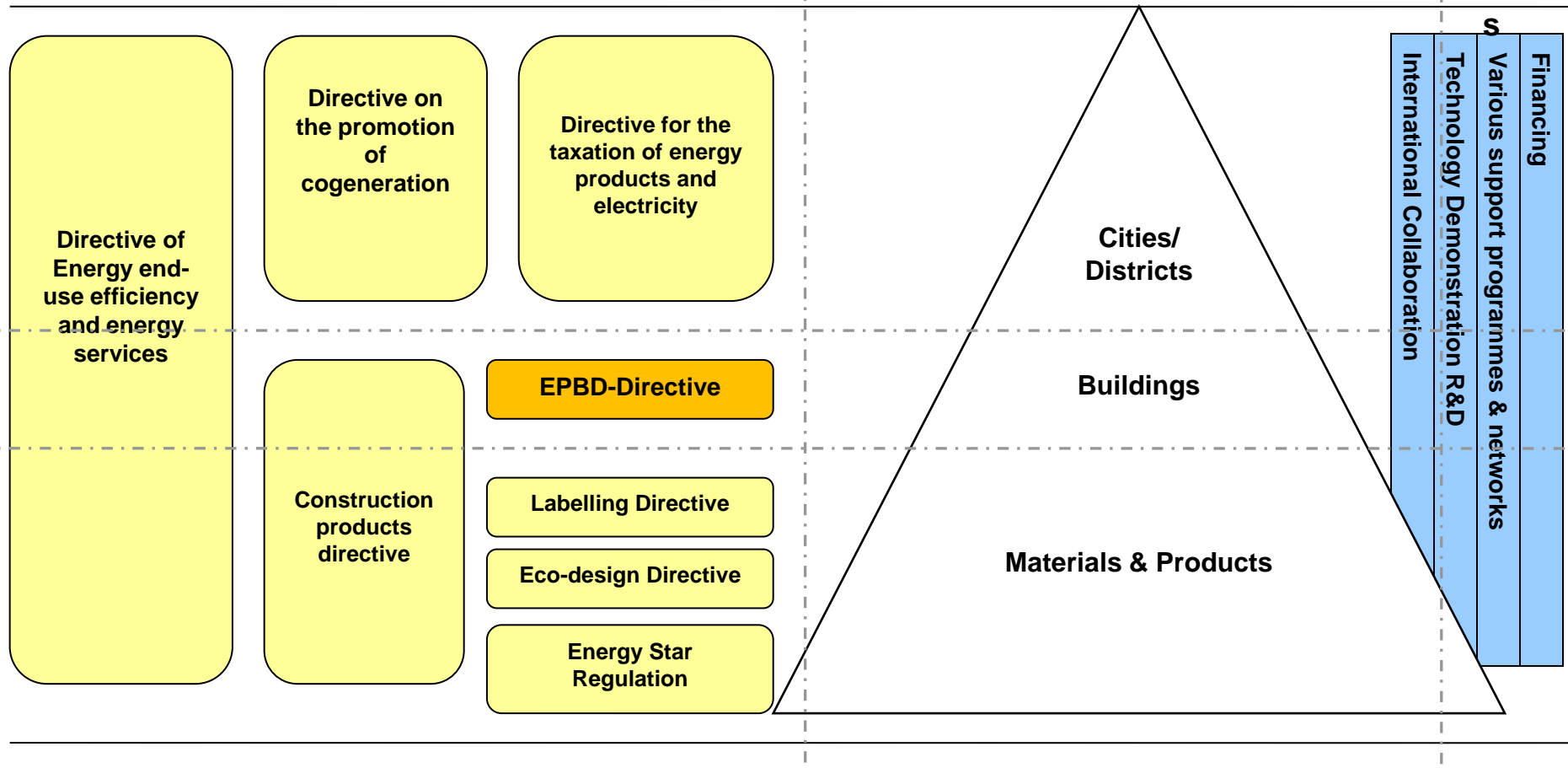
- **Directive on energy performance of buildings (EPBD) (2002/91/EC),**
- **Directive on the promotion of cogeneration (2004/8/EC),**
- **Directive on the taxation of energy products and electricity (2003/96/EC),**
- **Directives on efficiency requirements for boilers, refrigerators and ballasts for fluorescent lighting,**
- **Directives on the labelling of electric ovens, air conditioners, refrigerators and other appliances**
- **Directive on eco-design requirements for energy-using products (2005/32/EC and recast 2009/125/EC),**
- **Directive on energy end-use efficiency and energy services (2006/32/EC),**
- **Regulation on Energy Star labelling for office equipment (2422/2001/EC).**

# EU Supporting Actions

Policy guidelines (Legislative/voluntary)

System levels in the buildings context

Support measure





# Directives directly related to energy efficiency in buildings

- **Directive on energy performance of buildings (EPBD) (2002/91/EC),**
- **Directive on efficiency requirements for new hot-water boilers fired with liquid or gaseous fuels (1992/42/EEC)**
- **Directive on the promotion of cogeneration based on a useful heat demand in the internal energy market (2004/8/EC) and amending Directive 92/42/EEC**
- **Directive on energy end-use efficiency and energy services (2006/32/EC) and repealing Council Directive 93/76/EEC**

# Directive 2002/91/EC on the energy performance of buildings (EPBD)

*"The objective of this Directive is to promote the **improvement of the energy performance of buildings** within the Community, taking into account outdoor climatic and local conditions, as well as indoor climate"*

The four main components set out in the Directive relate to:

- **calculation methodology;**
- **minimum energy performance requirements;**
- **energy performance certificate;**
- **inspections of boilers and air-conditioning.**

***deadline for implementation by Member States  
4 January 2006***

# Energy performance certificate

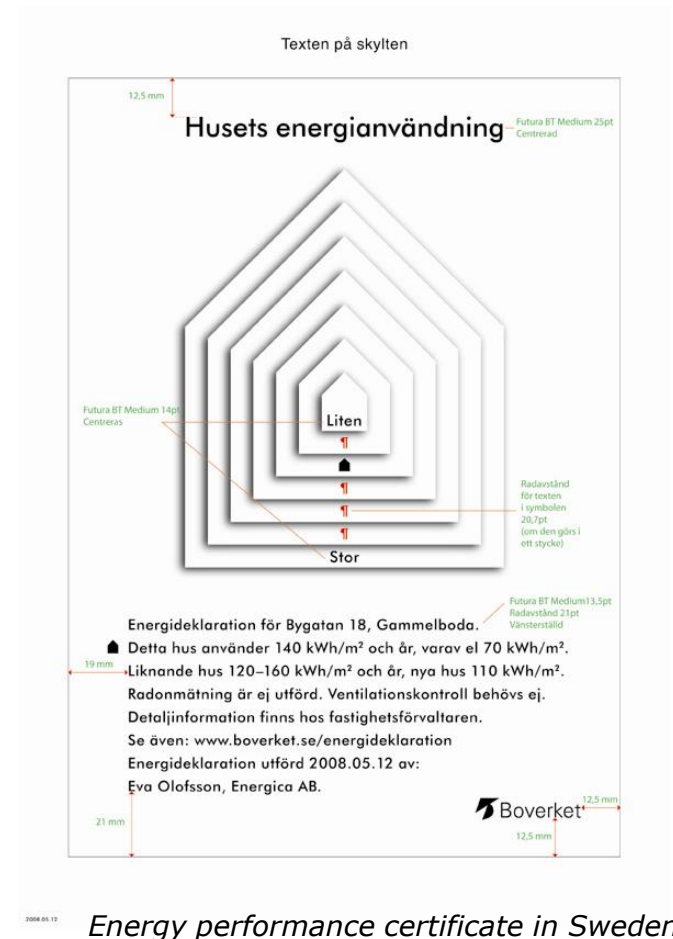
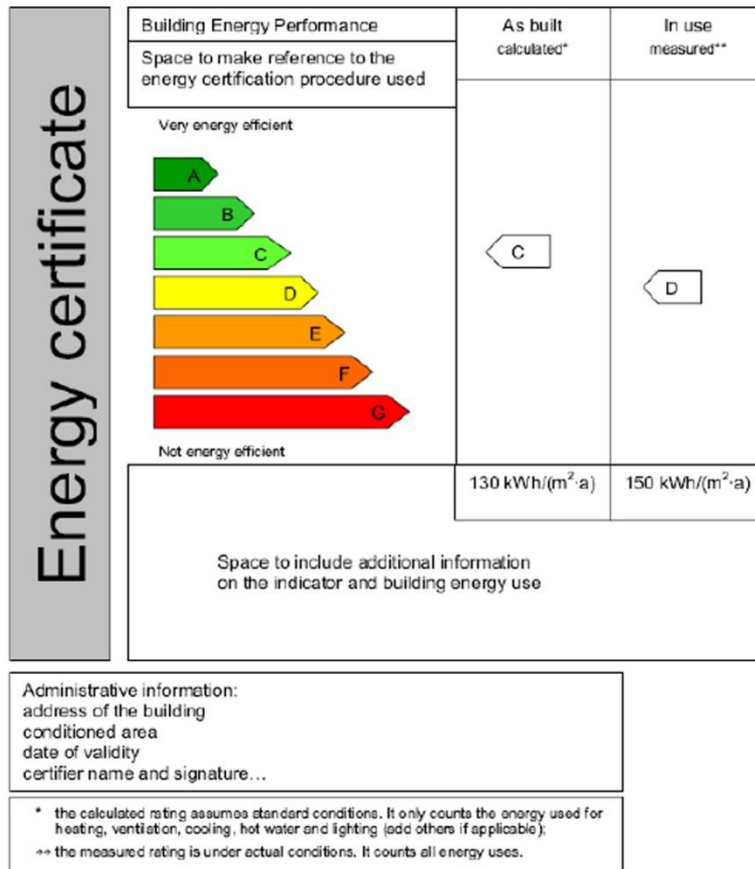


Fig.3: Example of certificate with indicators and classification (from EN 15217:2007)

# Recast of the Energy Performance of Buildings Directive (2010/31/EU)

Major provisions:

- As of 31 December 2020 **new buildings** in the EU will have to consume '**nearly zero**' energy and the energy will be 'to a very large extent' from **renewable sources** (31 December 2018 for public buildings).
- **No specific target** has been set **for the renovation** of existing buildings but Member States are advised to take measures for stimulation of low energy refurbishments. 1000m<sup>2</sup> threshold for major renovation was removed.
- **Minimum requirements** for **components** are introduced for renovations and replacements
- More **rigorous procedure** for issuing energy performance **certificates**
- Introduction of **penalties** for non-compliance

***deadline for implementation by Member States  
mid 2012***

Thank you for your attention