



Twinning « Improvement of the Energy Efficiency in Turkey »

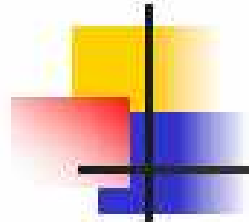
The Energy Performance of Buildings Directive (EPBD): The Energy Performance Certificate

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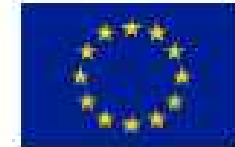


Introduction

- In 2003 the European Parliament accepted Directive 2002/91/EC on the Energy Performance of Buildings (EPBD), aimed at greenhouse gas emissions reduction and compliance in energy requirements between the Member States.



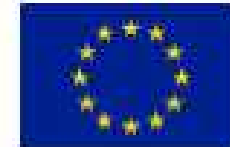
EPBD: Energy Performance of Buildings Directive



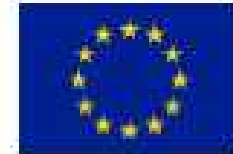
- The Directive is set to promote the improvement of energy performance of buildings in Europe
- Energy savings potential: at least 30% by 2010.



EPBD: Energy Performance of Buildings Directive

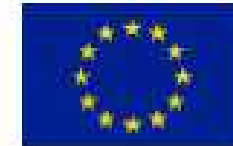


- EPBD 2002/91/EC:
 - Methodology for Energy performance in Buildings
 - Setting requirement for new buildings
 - Setting requirement for existing buildings
 - Energy certification of buildings
 - Inspection of boilers
 - Inspection of air-conditioning systems
 - Independent experts



EPBD: Energy Performance of Buildings Directive

- Energy certification schemes for all buildings: Why?
 - To facilitate the transfer of clear and reliable information on the energy performance of buildings
 - To make energy efficiency more attractive



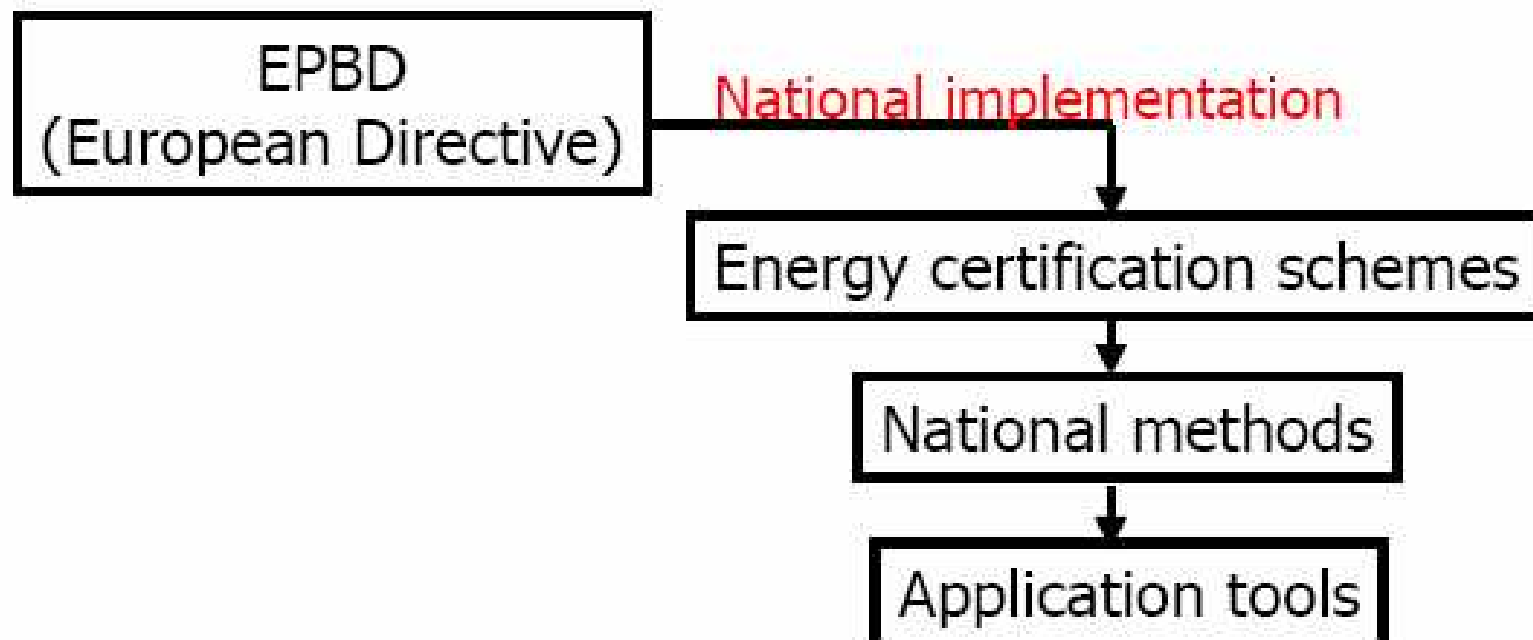
EPBD: Energy Performance of Buildings Directive

- Energy certification schemes for all buildings: How?
 - Energy certificates for buildings should be available when they are constructed, sold or rented.
 - The certificates should:
 - Not be more than 10 years old
 - Be accompanied with advice on how to improve the energy performance
 - Carried out by independent and qualified experts.



2. Energy Certification schemes

The Energy Certification schemes include national methods and tools to implement the energy performance in buildings





Energy schemes

- The different schemes are based on ranking, labelling, rating and energy audit methods
- The differences are:
 - Cost, precision
 - Information quality
 - Standard or reference values
 - Energy indicators



Existing energy certification schemes in Europe

<i>Country</i>	<i>Name (start)</i>
Belgium	EAP (2005), Energiecharter (2004), PHP (2003)
Denmark	EM (1997), ELO (1997)
Germany	EBA (2002)
UK	SAP (1993)
Netherlands	EPA-W (2000), EPA-U (2005), EPC (1995)
France	DPE (2006): Diagnostic de Performance Energétique
Spain	CALANER (2006)



Other energy schemes

<i>Country</i>	<i>Name (start)</i>
USA	Energygauge (1998), E-Star (1999)
Australia	FirtsRate
Canada	RNCan, EnerGuide (1990)



The cost of the Energy certificate

- In the Netherlands, Energy labelling is carried out through the Energy Performance Advice scheme (EPA), targeted to encourage energy saving in retrofits. The evaluation costs 150-200 euros.
- In the Danish energy label system, closest to the certificate, costs account for 400 euros per labelled house.

The new German Standard: DIN V 18599

Part 1: General
- Definitions
- Balance method
- Zoning
- Primary energy factors
- Influences to the environment

Part 2: Net energy for Room heating and cooling

Part 3: Net energy demand for Air-conditioning

Part 4: Final energy for Lighting

Part 5: Final energy for Heating

Part 6: Final energy for Ventilation systems of

Part 7: Final energy for Air-conditioning + Cooling

Part 8: Final energy for Domestic hot water

Part 9: Final energy for Multifunctional generators

Part 10: Boundary conditions

Part 11: Examples

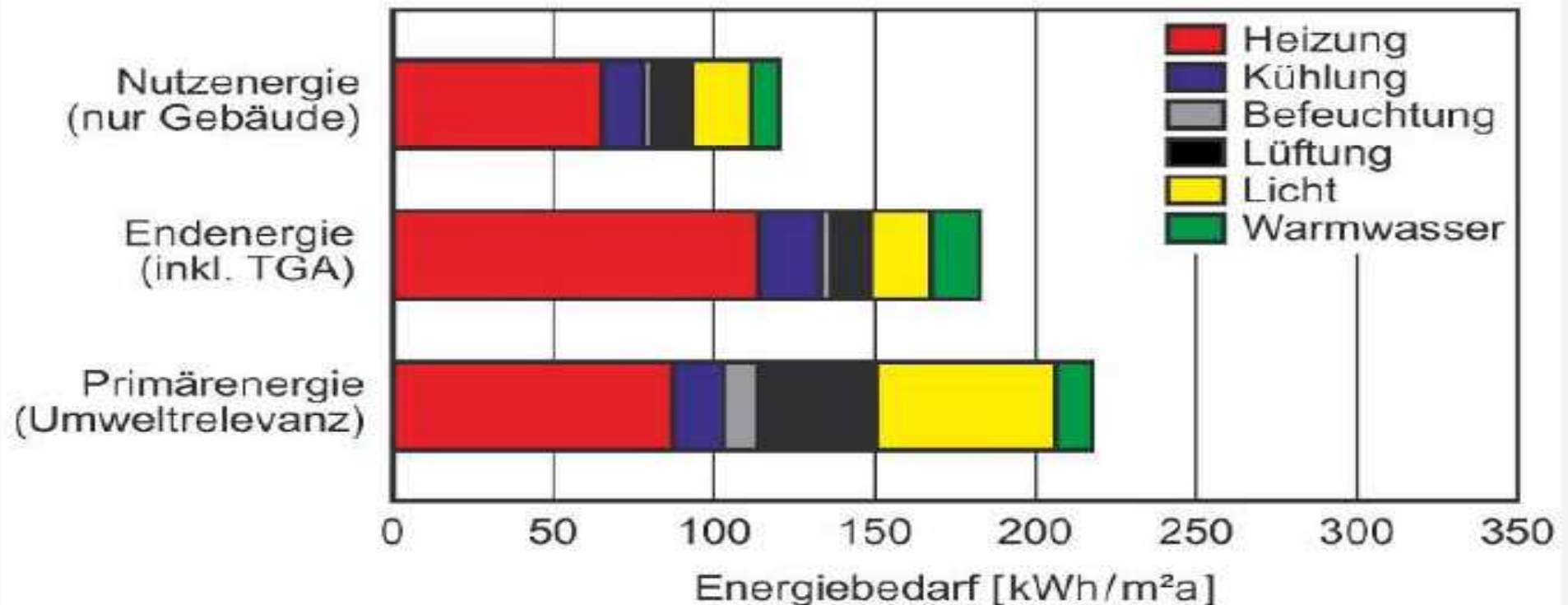
Part 12: Energy certification procedure



Example of certification according to DIN V 18599

Detailed Analysis: Net energy, final energy, primary
Detailanalyse

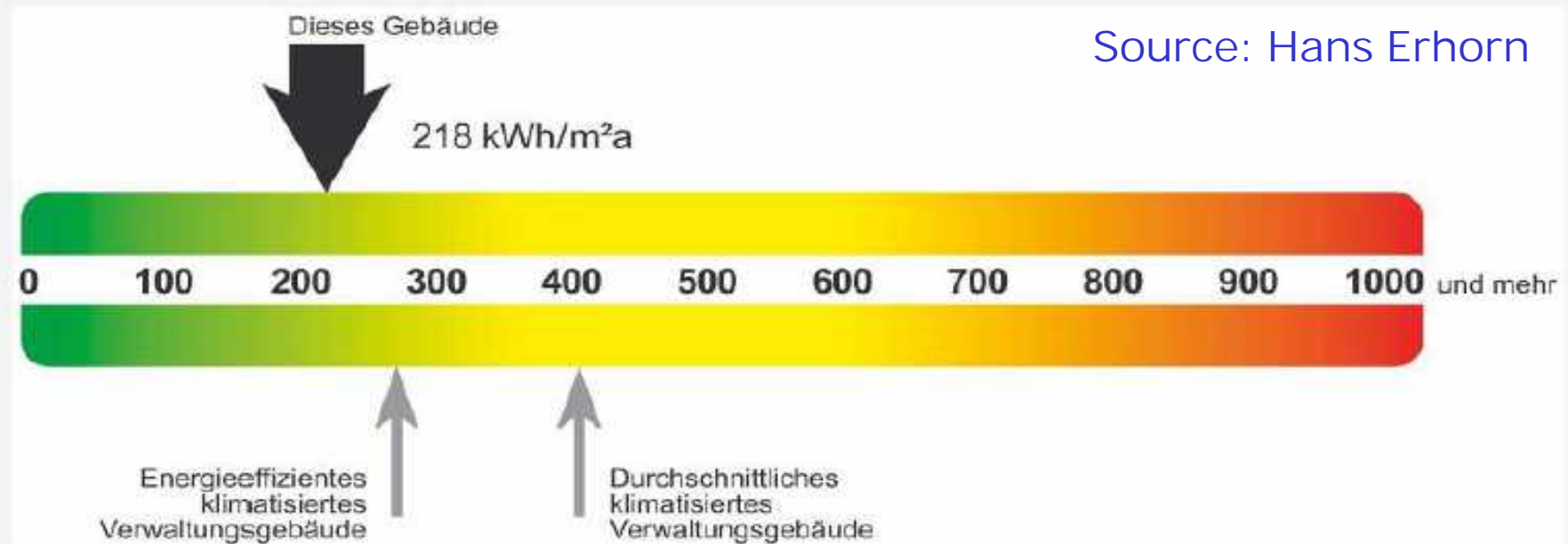
Source: Hans Erhorn



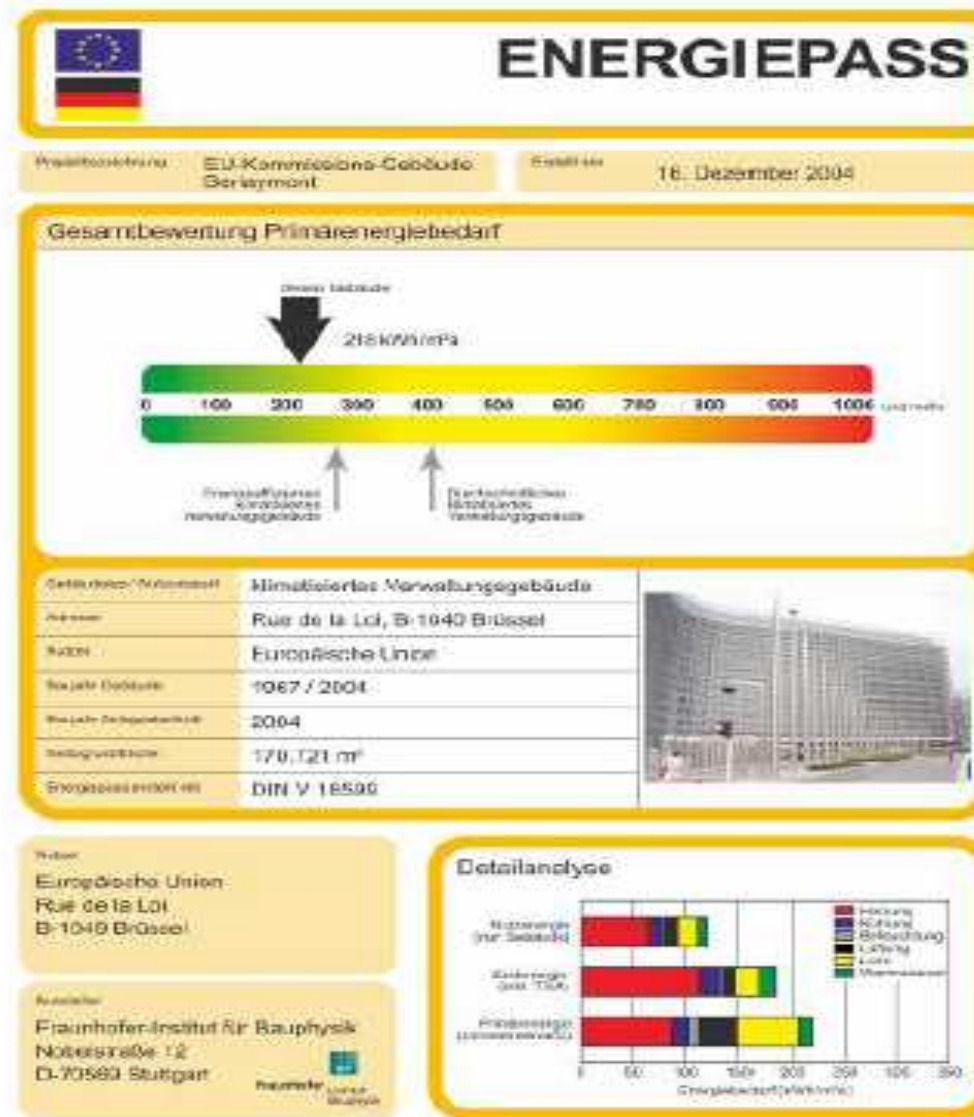
Example of certification according to DIN V 18599

Certification leaflet

Assessment: Primary energy demand



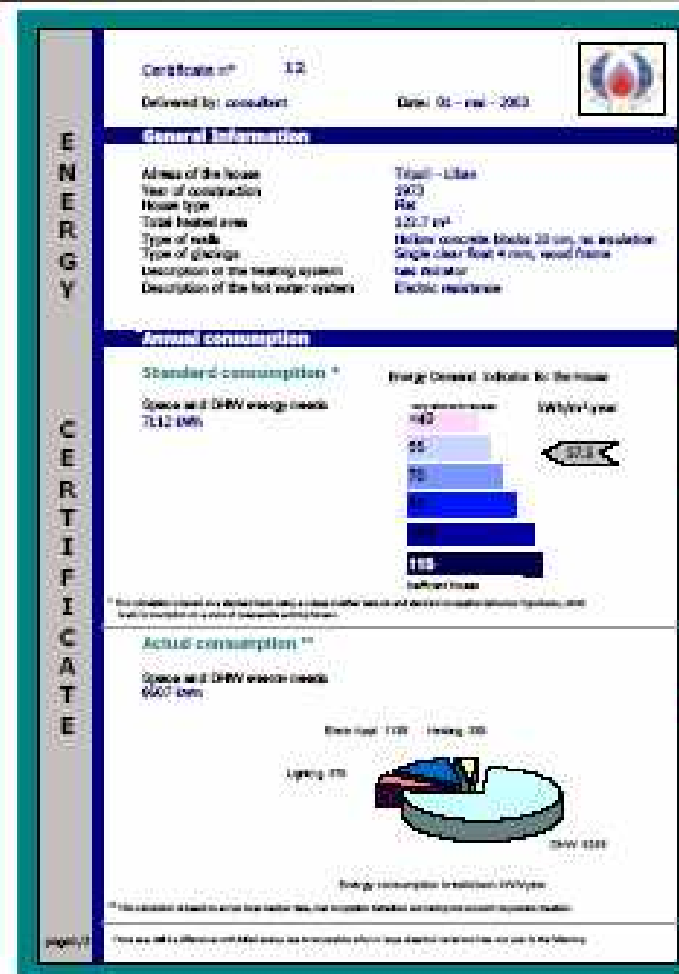
Certification leaflet



Source:
Hans Erhorn



Energy certificate



General information

Annual consumption
 kWh/m² (standard and actual)

Energy performance in
 comparison to target figures

Break of the energy bill among
 the various uses of energy



Energy certificate

ENERGY PLAN

Certificate n° 112

Delivered to / command: _____ Date: 01 / 01 / 2007

Summary of calculation assumptions

	Standard	Actual
Climate	Temperated	Temperated
Setpoint temperature	20 °C	20.6 °C
Use change rate	2 h x 100/h	2 h x 100/h
Peak power	21 kWh/m²	21.66 kWh/m²
Initial gain	2 kWh/m²	2 kWh/m²
Length of the heating season	91 days	91 days

Energy Conservation Options

Heating system

Proposed solution: _____
 Estimated savings: _____

Hot water

Proposed solution: Insulate the DHW tank, reduce the heating temperature of the circuit water (60°C to 55°C).
 Estimated savings: _____

Cooling system

Proposed solution: Replace refrigerant by a more efficient one (D-D to HFC).
 Estimated savings: _____

Lighting

Proposed solution: Replace energy inefficient lamps by fluorescent lamps.
 Estimated savings: 120 kWh/m² per year (30 kWh/m² per lamp).

General comments:

There is no formal control rules implemented within year
 into the program (provided by the user).
 What the calculation the program initiated on all contributing systems in the building.
 The program used system for heating and DHW and cooling and lighting.

Conditions of calculation


Possible energy saving measures with calculated savings and costs

General comments



Three implementation scenarios

- The energy certificate in current policy is likely to support energy efficiency trends in the existing housing but is not likely to add savings to business-as-usual.
- New fiscal incentives to support the energy certificate.
- Enforcement of the energy certificate combined with fiscal incentives.



It motivates high reduction of carbon emission in existing housing



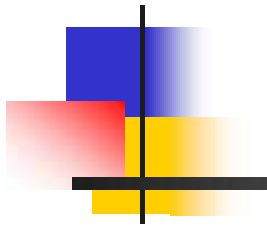
Future development of the EPBD

- The Directive is likely to alter in the future in order to motivate continuous development in the existing housing stock. Further development of the EPBD will be linked to post-Kyoto climate strategies, development of the other European Directives and more general policies for sustainable building at European and national levels determining a mandatory or voluntary policy approach.



Conclusion

- The energy certification presents a great challenge for the transformation of building sector towards energy efficiency and the use of renewable energy resources.



Thank you

Questions ?