

IEA-REA Workshop on Buildings Energy Efficiency Policies
February 17st, 2012

Buildings Energy Efficiency Policies **Codes, Labels and Incentive Schemes**

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**International
Energy Agency**

Buildings energy efficiency policies

■ Regulatory instruments

- Buildings energy codes including minimum energy performance requirements (standard) aiming to zero energy buildings

■ Information instruments

- Labels and certificates

■ Incentive schemes

- Fiscal instruments
- Financial measures
- Market-based instruments
- Direct instruments

Building energy codes

- **Building energy codes are the major tool to reduce energy demand in the buildings sector**
- **Building energy codes regulate the design and construction of buildings to foster the effective use and conservation of energy over the lifetime of the building**
- **Buildings energy codes apply for both new and existing buildings**
- **Building energy codes need to be enforced to deliver energy savings**

Building energy codes types

- **Prescriptive – fixed (seventies)**
 - Simplest, least costly compliance, most restrictive
- **Prescriptive – with tradeoffs (eighties)**
 - Simple to follow, more flexibility, more complexity
- **Performance based –Design (nineties)**
 - Design an “equivalent” building that meets code, then show your building is equal or better
 - Very flexible, but costly in terms of design
 - Constraints in terms of operational issues
 - Requires accurate, useable energy simulation tools
- **Performance based – Measured outcomes (current)**
 - How to account for actual energy use, occupancy
 - What if performance does not meet goals?
 - More pressures on tools to accommodate “reality”

Are building energy codes in the EU aligned with EPBD recast requirements?

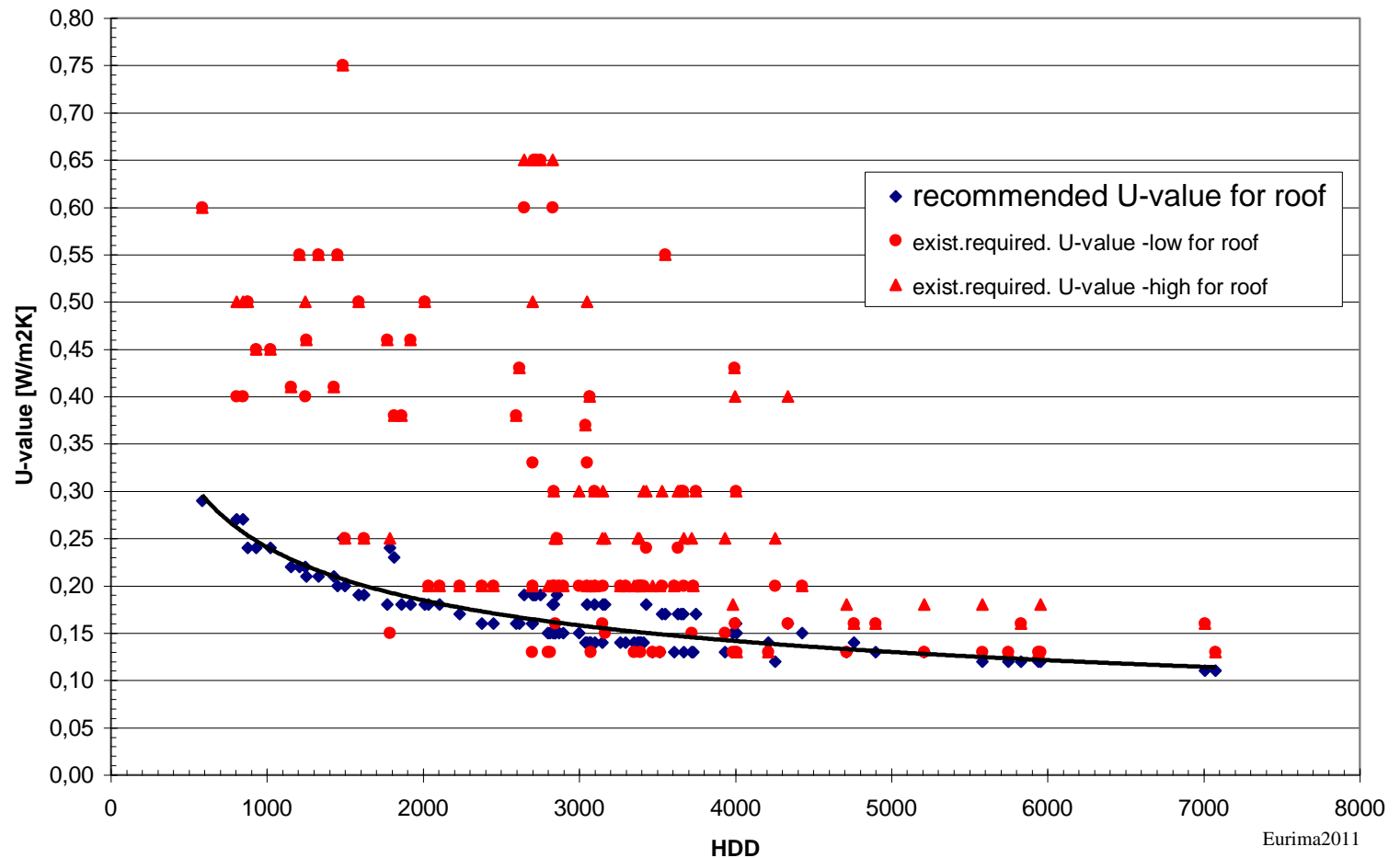
- **Building energy codes are implemented on a mandatory basis in all Member States**
- **Building energy codes are either prescriptive or based on design performance in most Member States (not aligned with EPBD recast)**
- **Building energy codes are based on measured performance and outcomes only in France, Ireland and Denmark (as requested by EPBD since 2002)**
- **All Member States have to update their building energy codes to be based on measured performance and outcomes**
- **Member States need to work on the enforcement of their building energy codes**

Cost-optimum methodology to set energy requirements

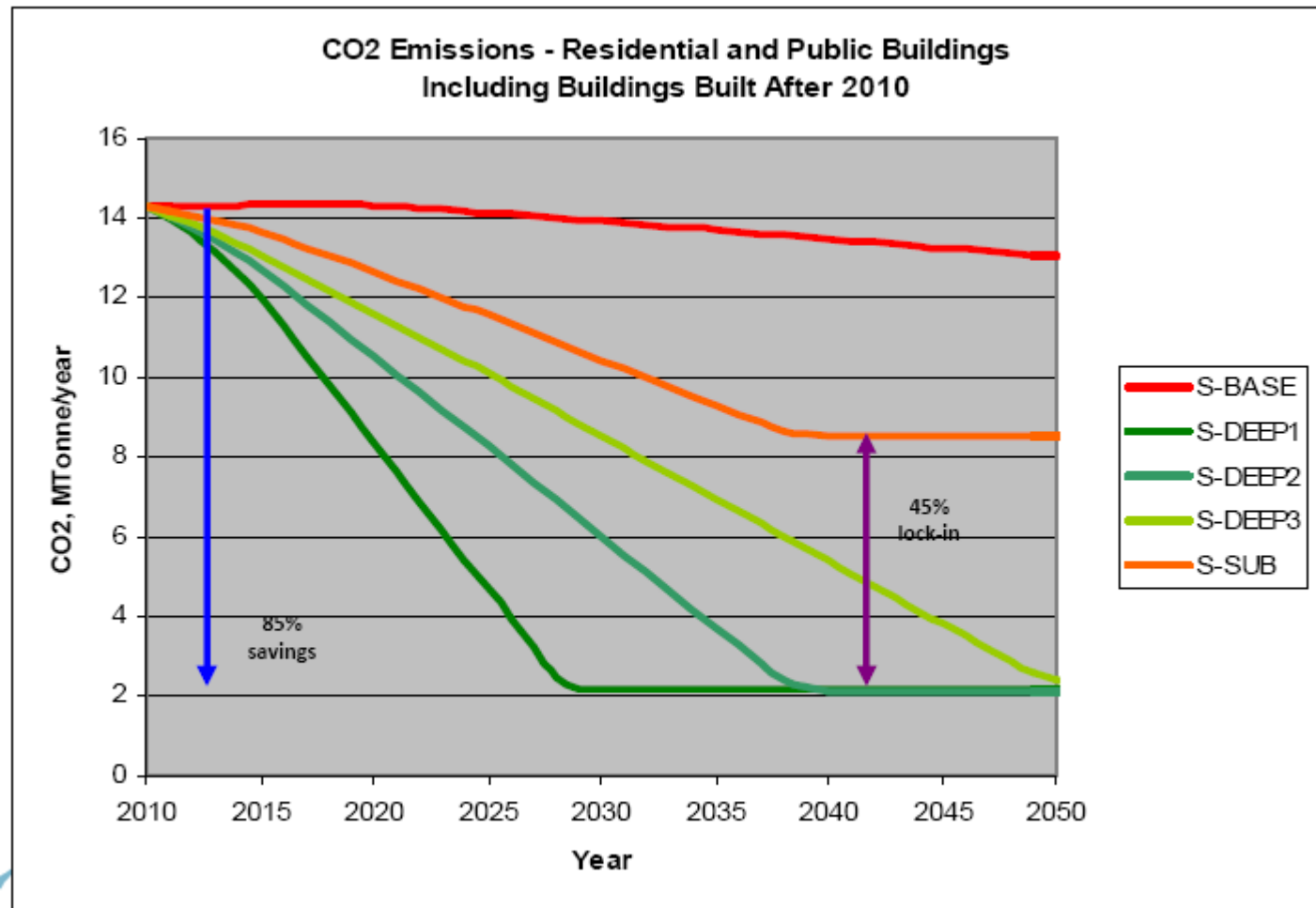
- Most Member States have weaker building energy codes than can be justified by cost of energy and corresponding cost of investment for saving this energy
- To ensure similar and comparable but not harmonized levels of energy performance in Member States (taking into account national climate conditions, building culture, local costs & local energy prices)
- To save large amounts of energy, CO₂ and unnecessary costs
- To allow inclusion of full service life of long term investments (efficient building envelope)

Current U values for roofs in the EU

Peak price - roof



How cost-optimum methodology will avoid shallow renovations?



Eurima2011

Energy requirements in Building Energy codes

Example for the Danish Building Energy Code

- **Total energy consumption requirements**
 - 2012: 52.5 kWh/m²/yr
 - 2015: 30 kWh/m².yr
- **Air tightness**
 - 1.5 l/s.m² at 50 Pa
- **Requirements on building component**
 - Solar gains > 33 kWh/m².yr for windows and glazed areas
- **Requirements on building equipment**
 - HVAC (Heating, Ventilation and Air Conditioners)
 - Lighting

Energy performance Certificate (EPC)

- **Energy Performance Certificates (labels) provide a way of rating individual buildings (both residential and non-residential ones) on how energy efficient (or inefficient) they are in relation to the amount of energy needed to provide users with expected degrees of comfort and functionality.**
- **Energy Performance Certificates need to be enforced.**

What is the implementation status of EPCs?

	Implementation responsibilities	Assessment method	EPCs issued since
AT	National & regional	Calculated rating	January 2008, January 2009 (public buildings)
BE	Regional	Calculated and measured rating (public buildings)	Flanders Region: November 2008 (sale), January 2009 (rent), January 2009 (public buildings). Non-residential expected in 2011
CZ	National	Calculated rating	January 2009 (new buildings and existing renovated buildings)
DK	National	Calculated rating	2006
FR	National	Calculated and measured rating	November 2006 (sale rez and non-rez), July 2007 (rent), July 2007 (new buildings), January 2008 (public buildings)
DE	National	Calculated and measured rating	2002 (new buildings), July 2008 (existing buildings)
HU	National	Calculated and measured rating	January 2009 (new and public buildings), January 2012 (existing buildings)
IE	National	Calculated rating	January 2007 (new rez buildings), July 2008 (new non-rez and public buildings), January 2009 (existing buildings)
NL	National	Calculated rating	January 2008 (sale and rent), January 2009 (public buildings, and social housing)
PL	National	Calculated rating	January 2009 (new buildings, renovations, existing buildings for sale/rent and public buildings)
PT	National	Calculated rating	July 2001 (new rez and non-rez buildings >1000 m2), July 2008 (new buildings), January 2009 (existing and public buildings)
ES	National & regional	Calculated rating	2007 (new buildings), after 2010 (existing buildings)

Source BPIE 2011

How many buildings/apartments are labeled?

	Nr. of EPCs (*1000)	Estimation % of existing buildings which have EPC	Average energy performance rating
BE (Flanders)	141,3	4,10%	No specific information available
CZ	25-30 each year (= number of new buildings constructed each year, EPCs since January 2009 obligated)	1,50%	No specific information available
DK	45-50 each year	50%	Label class D (detached houses)
FR	No specific information available	90 % of social housing, 14 % of private houses	Label class C: 18% Label class D: 31% Label class E: 22%
DE	No specific information available	No specific information available	Single family home: 235 kWh/m2a Multi family home: 211 kWh/m2a
IE	75	No specific information available	New buildings: label class B2-B3 Existing buildings: label class D1-D2
NL	1287 (of which 83% rental homes)	18%	Label class ABC: 35% Label class CD: 50% Label class EFG: 39%
PL	80-100	0,75%	New buildings: 140 kWh/m2a
PT	100	No specific information available	Label class A+ A: 4% Label class B- B: 36% Label class C: 33% Label class D: 14% Label class EFG: 13%

Source BPIE 2011

What is included in EPCs?

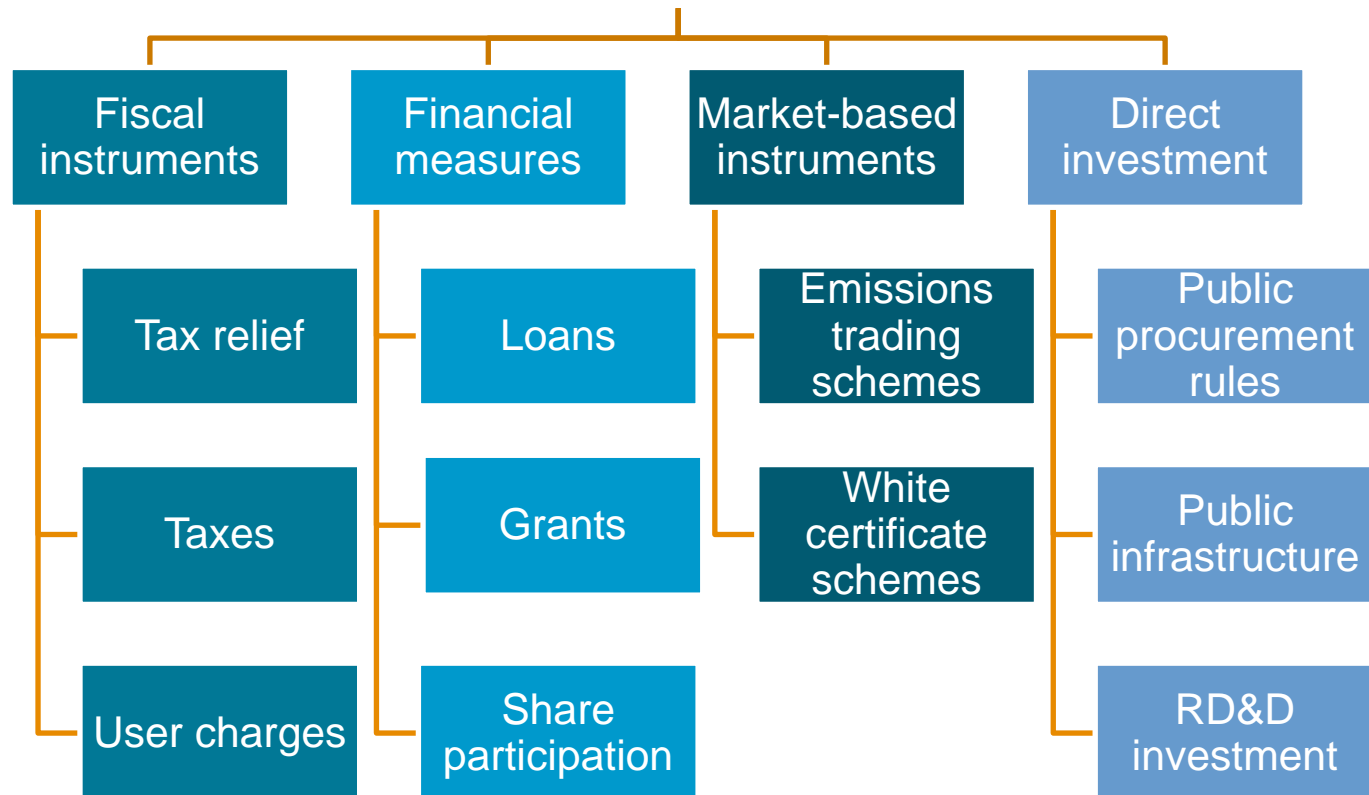
	AT	BE	CZ	DK	FR	DE	HU	IE	NL	PL	PT	ES
Label classes	A++ A+		A	A	Res Non-res		A+	A1A2A3	A++ A+ A		A+ A	A
	A	sliding scale	B	B	A A	sliding scale	A	B1B2B3	B	sliding scale	B, B-	B
	B		C	C	B B		B	C1C2C3	C		C	C
	C		D	D	C C		C	D1D2	D		D	D
	D		E	E	D D		D	E1E2	E		E	E
	E		F	F	E E		E	F	F		F	F
	F		G	G	F F		F	G	G		G	G
	G				G H I		G					
Energy units	kWh/m2a	kWh/m2a GJ/year		kWh/m2a	kWh/m2a	kWh/m2a	kWh/m2a	kWh/m2a	Energy index	kWh/m2a	kWh/m2a	kWh/m2a
Label present situation	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Label after taking measures indicated	No	No	Yes	Yes	No, but new indicator is calculated for each recommendation (calculated rating)	No	No specific information	No specific information	No	No specific information	Yes	No specific information
Recommendations	No	Yes	Yes	Yes	Yes	Yes	No specific information	No	Yes	Yes	Yes	No specific information

Source BPiE 2011

Incentive schemes

- Incentive schemes are complementary policies to regulatory and information instruments used to help increase interest in energy efficiency investments.
- Incentive schemes provide market signals in the form of a modification of relative prices (e.g. taxation or tax relief on certain products) and/or a financial transfer to cover upfront capital costs. They can motivate households to pursue investments they would not have conducted without financial support.

Type of national incentive schemes



Do national incentive schemes have a real impact on buildings energy efficiency?

- **Most national supporting measures don't target stringent energy requirements**
- **Most national supporting measures are short term policy instruments targeting replacement of HVAC products or in some countries windows**
- **When buildings envelopes are targeted;**
 - **energy requirements are unclear,**
 - **not directly related to building code or energy label requirements,**
 - **Or building codes don't give a clear indication**
 - **Apply mostly for new buildings with low market share**

Main messages

- **Buildings Energy Codes should be mandatory for all building types**
- **Minimum energy performance requirements should be set at their cost-optimum level**
- **Buildings Energy Performance Certificates should be mandatory for all building types**
- **Buildings Energy Codes and buildings Energy Performance Certificates should be enforced at national and local level**
- **Incentives should be used for trainings and raising awareness among buildings stakeholders about energy efficiency**

To learn more about Buildings Energy Efficiency Policies:

- **Building energy codes**

http://www.iea.org/g8/2008/Building_Codes.pdf

- **Building Energy Performance Certificate**

http://www.iea.org/papers/pathways/buildings_certification.pdf

http://dl.dropbox.com/u/4399528/BPIE/BPIE_EPC_report_2010.pdf

- **Cost-optimum methodology**

http://ec.europa.eu/energy/efficiency/buildings/doc/meeting_document_16_march_final.pdf

Thank you for your attention

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