



- After the recast – EU policies for sustainable buildings

REHVA seminar

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# AGENDA

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- The recast **Directive on Energy Performance of Buildings** (EPBD), the main legislative tool at EU level
  - Other ongoing initiatives in the building area
  - Key ongoing follow- up work to the EPBD Directive:  
Development of **framework methodology for cost optimality**
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# The new EU Directive for energy efficiency in buildings (2010/31/EU)

# The EPBD recast

- Recast of original Directive 2002/91/EC  
2002/91/EC endorsed by Council in April and EP plenary on 19th May
- Publication in Official Journal June 2010
- Implementation by MS two years after entry into force (second half of 2012)
- Follow-up work:
  - cost-optimal comparative framework methodology
  - new mandate to CEN/CENELEC on the revision of the current set of standards
  - voluntary EU labelling scheme for the non-residential sector

## ● EPBD requirements

- Offers holistic approach towards more energy efficient buildings
- Member States to fix and implement:
  - A methodology to calculate and rate the energy performance
  - Minimum energy performance requirements for new and for existing buildings that undergo major renovation
  - Energy performance certificates
  - Regular inspections of heating and air-conditioning systems



# ● EPBD – Energy Performance Certificate

## Example for Member States' room for manoeuvre:

**Energieprestatie certificaat**

Energieprestatie uitsplitsbot  
Berekening conform NEN 2916:2

over energiezuinig  
A  
B  
C  
D  
E  
F  
G  
niet energiezuinig

$Q_{p,trans,sur}/Q_{p,trans,toelaatbaar}$

vervalende energieprestatieaanduiding

verwarming	$Q_{p,trans,warmte}$	41.142.822 MJ
verkoeling	$Q_{p,trans,koude}$	29.721.319 MJ
verwarming	$Q_{p,trans,warmte}$	1.094.720 MJ
verkoeling	$Q_{p,trans,koude}$	1.094.822 MJ
verwarming	$Q_{p,trans,warmte}$	1.173.372 MJ
verkoeling	$Q_{p,trans,koude}$	1.346.211 MJ
verwarming	$Q_{p,trans,warmte}$	28.343.349 MJ
verkoeling	$Q_{p,trans,koude}$	9 MJ
comp. VK	$Q_{p,trans,warmte}$	-11.181.424 MJ
toelaatbaar	$Q_{p,trans,warmte}$	11.289.828 MJ
toelaatbaar	$Q_{p,trans,warmte}$	34.097.849 MJ

**Gegevens van het gebouw:**  
Berlammont gebouwen te Brussel

Beschouwde gebruiksovervlakten:  
• Kantoorfunctie: 34.771,50 m<sup>2</sup>  
• Bijkantoorfunctie met alcohol: 6.120,00 m<sup>2</sup>  
• Bijkantoorfunctie overige: 24.191,10 m<sup>2</sup>  
• Gemeenschappelijke ruimten: 64.339,20 m<sup>2</sup>

De parkeergarage, archiefvrienden en het station zijn, in overeenstemming met NEN 2916:2001 en het Bouwbesluit, buiten beschouwing gelaten.

Aanbevelingen tot verbetering van de energieprestatie: niet van toepassing

**ENERGIEAUSWEIS** für Wohngebäude  
gemäß den §§ 16 ff. Energieeinsparverordnung (EnEV)

Berechneter Energiebedarf des Gebäudes

Energiebedarf  
CO<sub>2</sub>-Emissionen: 51,9 [g/m<sup>2</sup>·a]

Endenergiebedarf: 228,4 kWh/(m<sup>2</sup>·a)  
Primärenergiebedarf \*Gesamtergief: 227,6 kWh/(m<sup>2</sup>·a)

Nachweis der Einhaltung des § 3 oder § 9 Abs. 1 EnEV<sup>7)</sup>

Primärenergiebedarf	Gebäude-Wert:	227,6 kWh/(m <sup>2</sup> ·a)	Energetische Qualität der Gebäudehülle	Gebäude-Wert HC:	1,30 W/m <sup>2</sup>
	EnEV-Anforderungswert:	113,4 kWh/(m <sup>2</sup> ·a)		EnEV-Anforderungswert HC:	0,65 W/m <sup>2</sup>

Endenergiebedarf

Energieträger	Menge bei Endenergiebedarf bei wärmeübergabe (kWh/m <sup>2</sup> ·a)	Wärmeverlust	Gesamt in kWh/m <sup>2</sup> ·a
Erdgas H	151,2	10,6	
Strom	0,0	0,0	12,3
Holz-Pellets	40,1	0,2	

Sonstige Angaben

Energetisch alternative Energieversorgungssysteme:  
 nach § 12 EnEV-Wert (bedingungslos geprüft)  
Alternative Energieversorgungssysteme werden gemäß für:  
 Heizung  Warmwasser  Lüftung  
Lüftungssystem:  
Die Lüftung erfolgt durch:  
 Fensterlüftung  Schieb Lüftung  
 Lüftungseinheit ohne Wärmerückgewinnung  
 Lüftungseinheit mit Wärmerückgewinnung

Vergleichswerte Endenergiebedarf

**Erläuterungen zum Berechnungsverfahren**

Das verwendete Berechnungsverfahren ist das in die Energieeinsparverordnung vorgeschriebene, insbesondere wegen standardisierter Auswertungsverfahren der angegebenen Werte keine Auswirkungen auf die tatsächlichen Energieverbräuche. Die angegebenen Werte sind spezifische Werte nach der EnEV pro Quadratmeter Gebäudemasse (kWh/m<sup>2</sup>·a).

<sup>7)</sup> Einzelige Angabe:  nur in der EnEV-Berechnung und der Wärmeerzeugung berücksichtigt  gilt eine Wärmeabfuhr  1) Einbaufenster, 2) 1) Einbaufenster, 3) 1) Einbaufenster

**Energieausweis für Nicht-Wohngebäude**  
gemäß den §§ 16 ff. Energieeinsparverordnung (EnEV)

Labels

Spezifischer Heizwärmebedarf (H) und spezifischer Brennstoffverbrauch (B)

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Spezifischer Heizwärmebedarf (H) und spezifischer Brennstoffverbrauch (B)



# ● Energy Performance of Buildings Directive – recast (1)

- a) Directive covers now all buildings irrespective of size
- b) All new build “nearly zero energy buildings” as of end of 2020 (public sector: end of 2018). Remaining energy need mainly covered by RES
- c) Minimum energy performance requirements for all existing buildings that undergo any energy relevant renovation (for major renovations at buildings level, but also at system level for replacement, retrofitting and substitution of parts of the building envelope)
- d) Level of minimum energy performance requirements for new buildings (until 2020) and renovations: Benchmarking to achieve cost-optimal levels



# ● Energy Performance of Buildings Directive – recast (2)

- e) **Display of Energy Performance Certificates in public buildings**  
(decrease of threshold to 500 m<sup>2</sup> and 250 m<sup>2</sup> after 5 years)
- e) **Strengthening the role and the quality of energy performance certificates – i.a. by quality checks and obligatory use of the performance indicator in all advertisements for sale or rent**
- f) **Strengthening the role and the quality of HVAC inspections**
- g) **Stimulating financing mechanisms for energy efficiency investments in the building sector**
- h) **Exemplary role of public authorities**





# Support with implementation

- (1) **Intelligent Energy Europe Programme (SAVE)**
- (2) European Commission's information service
  - “**BUILD-UP Initiative**“ ([www.buildup.eu](http://www.buildup.eu))
- (3) Holistic set of European Standards on energy performance of buildings and their components (**CEN standards**)



Also ongoing....

# Also ongoing

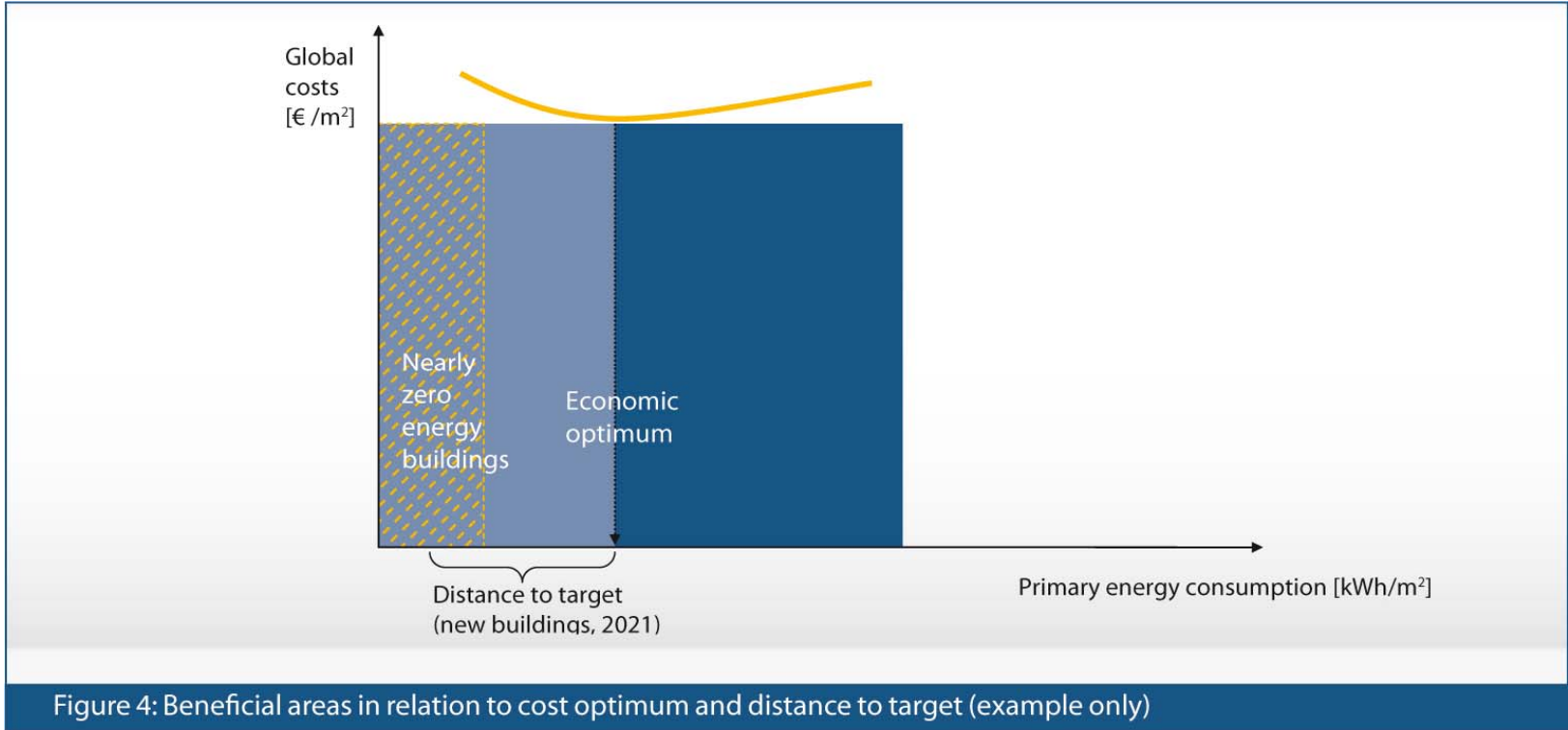
- EU-Commission is checking transposition of Art 7-9 **2002/91/EC in den MS**
- **SBN Sustainable Building Network** (G8 IPPEC) – EU as active member, in particular on work on nearly zero energy buildings. Also co-operations with China, US, Russia on buildings
- Commission will start establishing the new **Financial Facility** after agreement was reached **on** the Amendment to the Regulation on the EERP- **146 million Euros for EE/RES.**  
In preparation: **Smart Cities, Energy Strategy, Energy Efficiency Plan** *Key date:* 4th February 2011: special EU summit on energy issues  
DG ENV voluntary **Eco label for buildings** (2011)



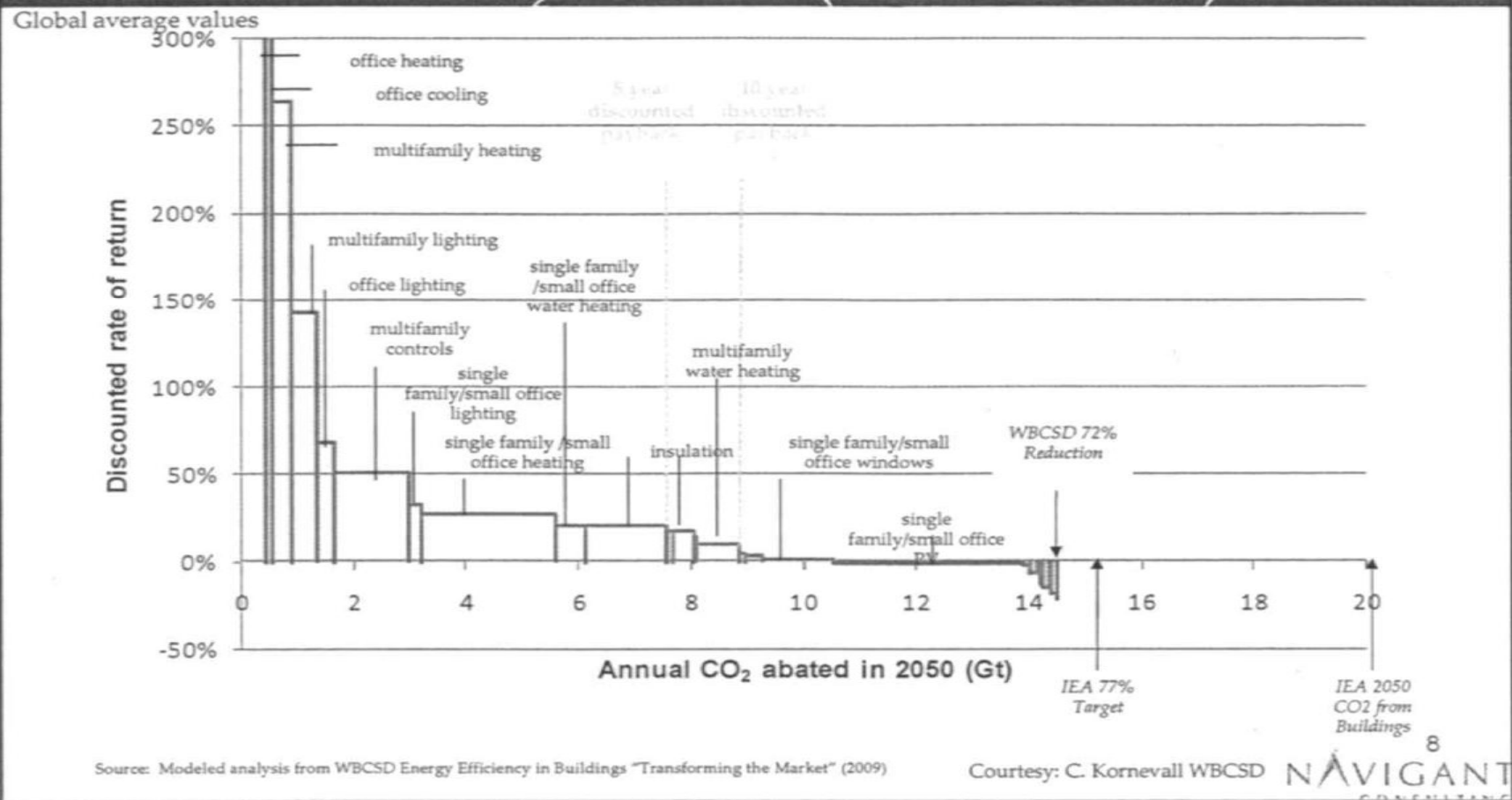
# The EU methodology framework on cost-optimality in support of the EPBD

Directorate-General  
for Energy





# Efficiency in buildings is the largest and net-cheapest abatement option: IRR vs. CO<sub>2</sub> abatement (source: WBCSD)



# The CO framework

- To be presented by the Commission by 30 June 2011
- Will be the basic framework on which MS develop and use as basis, then the comparative benchmark for their national methodologies on setting minimum requirements
- Commission will give a framework on calculating energy performance (based on or equivalent to CEN standards) and for cost calculation (based on net present value in EN 15459)
- Member States complete framework with national parameters (discount rate, labour cost, energy price etc.) and apply packages of energy efficiency measures to reference buildings
- MS report their calculations plus input data to Commission
- MS compare result of calculations with current requirements and adjust their building codes

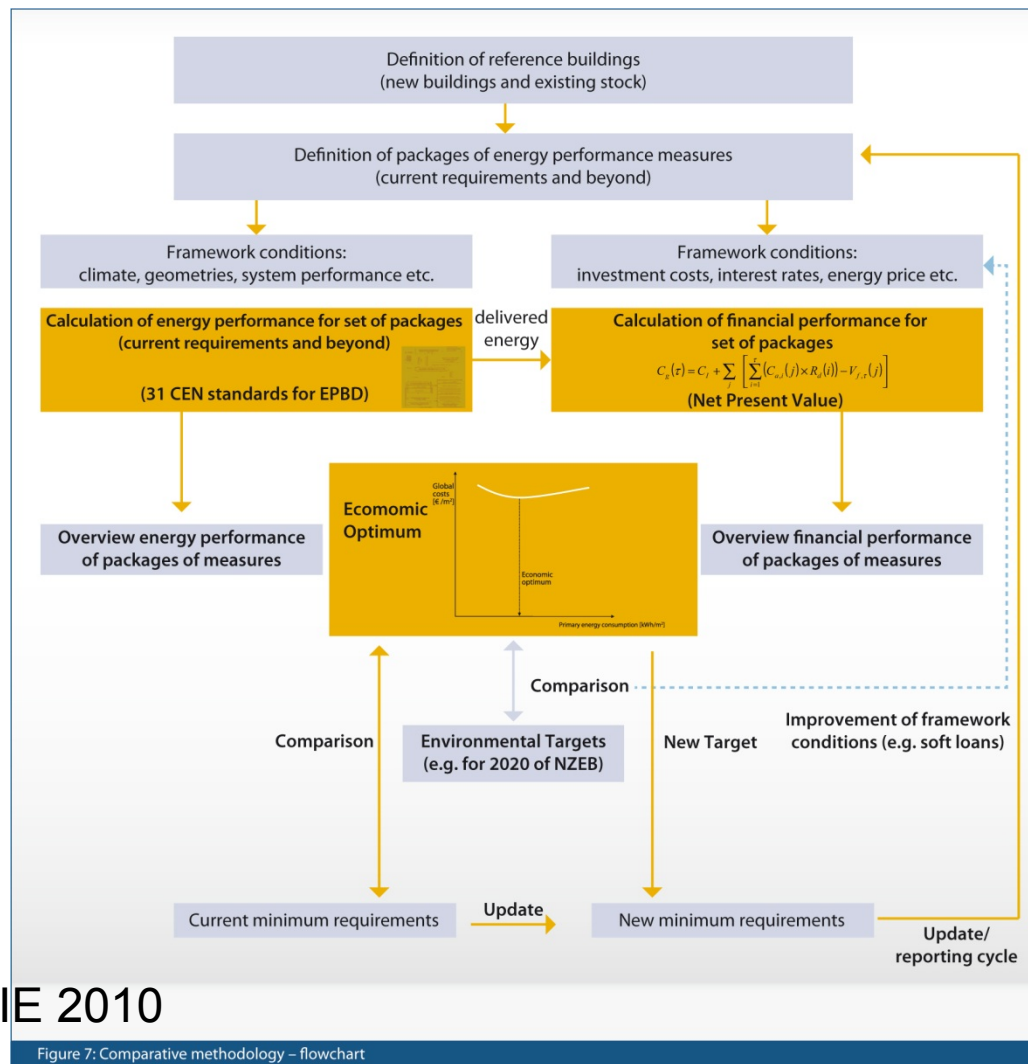
# The CO framework

- Steps:
  - **1. Selection of reference buildings/systems**
  - **2. Establishment of sets of energy efficiency measures**
  - **3. calculation of the energy performance**
  - **4. calculation of the life cycle costs using net present valuation**

result: Cost optimal set of measures for optimising energy performance of a reference building in a given MS, in kWh/(m<sup>2</sup>,a)

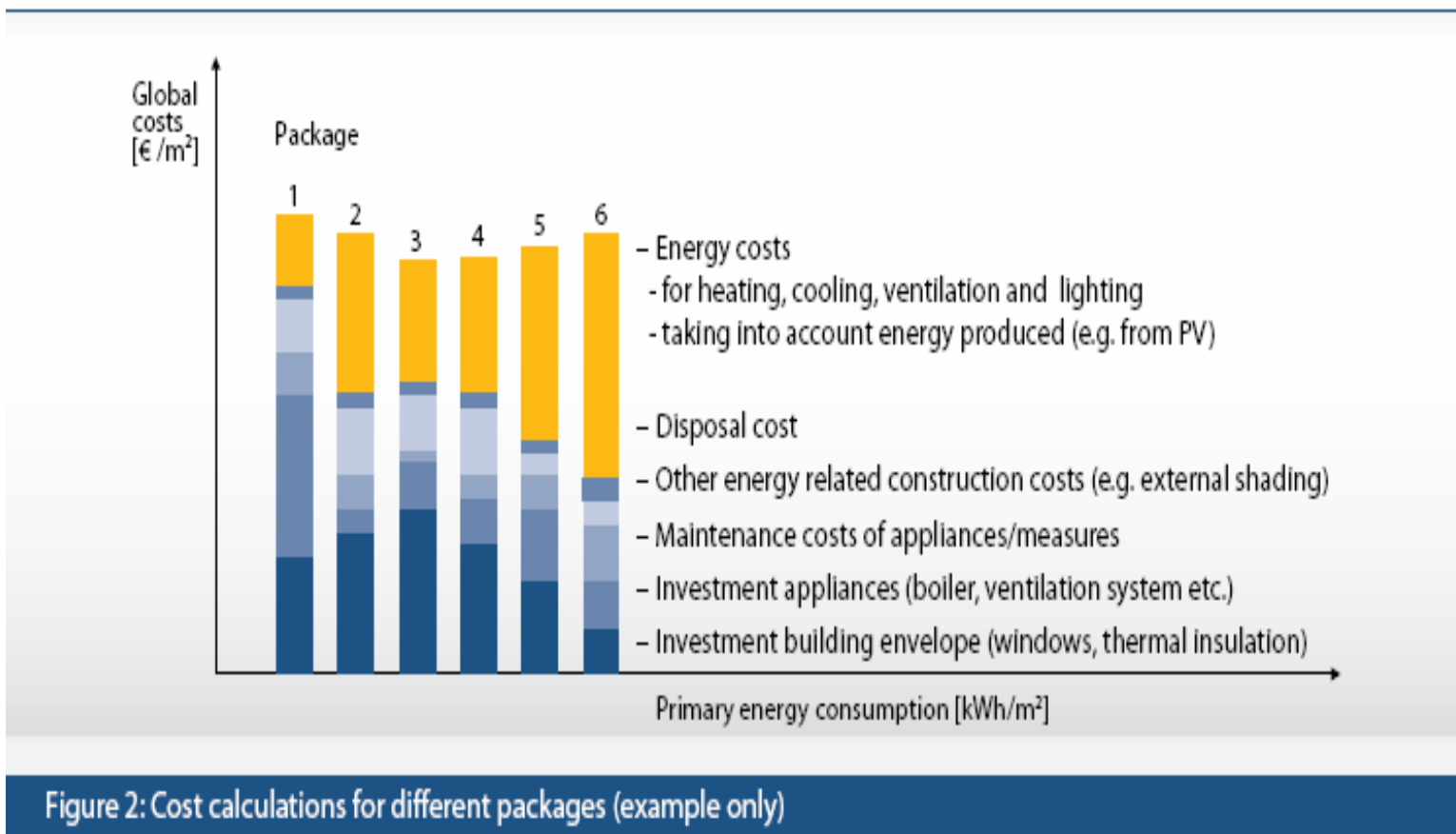
- **5. Report to Commission on calculations and input data used**
- **6. Comparison of results with current building codes**  
→if need be adjustment !





Source BPIE 2010

Figure 7: Comparative methodology – flowchart



Source: BPIE 2010

# Cost optimal levels at system level

- In 2002/91/EC: no requirement on technical building systems and lighting systems.
- 2010/31/EU, Art.8: MS shall set system requirements the proper installation, and the appropriate dimensioning, adjustment and control of the technical building system
- Challenge: Many MS have requirements for heating/hot water/AC, but mostly covering only parts. Picture is worse on lighting where only a few MS set requirements and if so only on illumination level or provision of low energy bulbs. But levels are not set according to cost effectiveness in many cases, rather based on experts view.
- Need to link with Boiler efficiency Directive/soon Eco-design and energy labelling requirements (IM on air conditioning/ventilation, boilers, water heaters in the pipeline)