

# EU Energy Efficiency Policies and JRC Activities

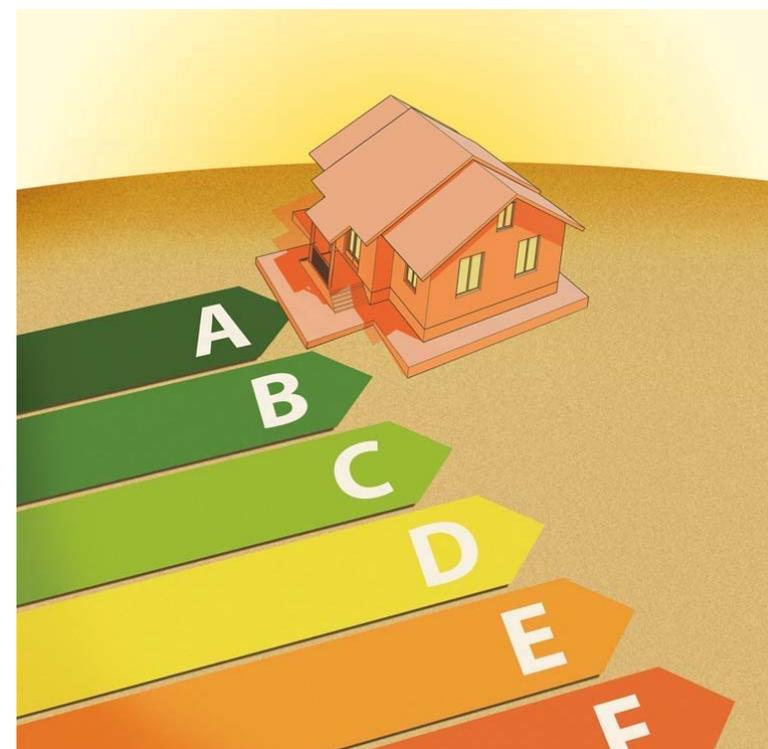
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**IE - Institute for Energy**

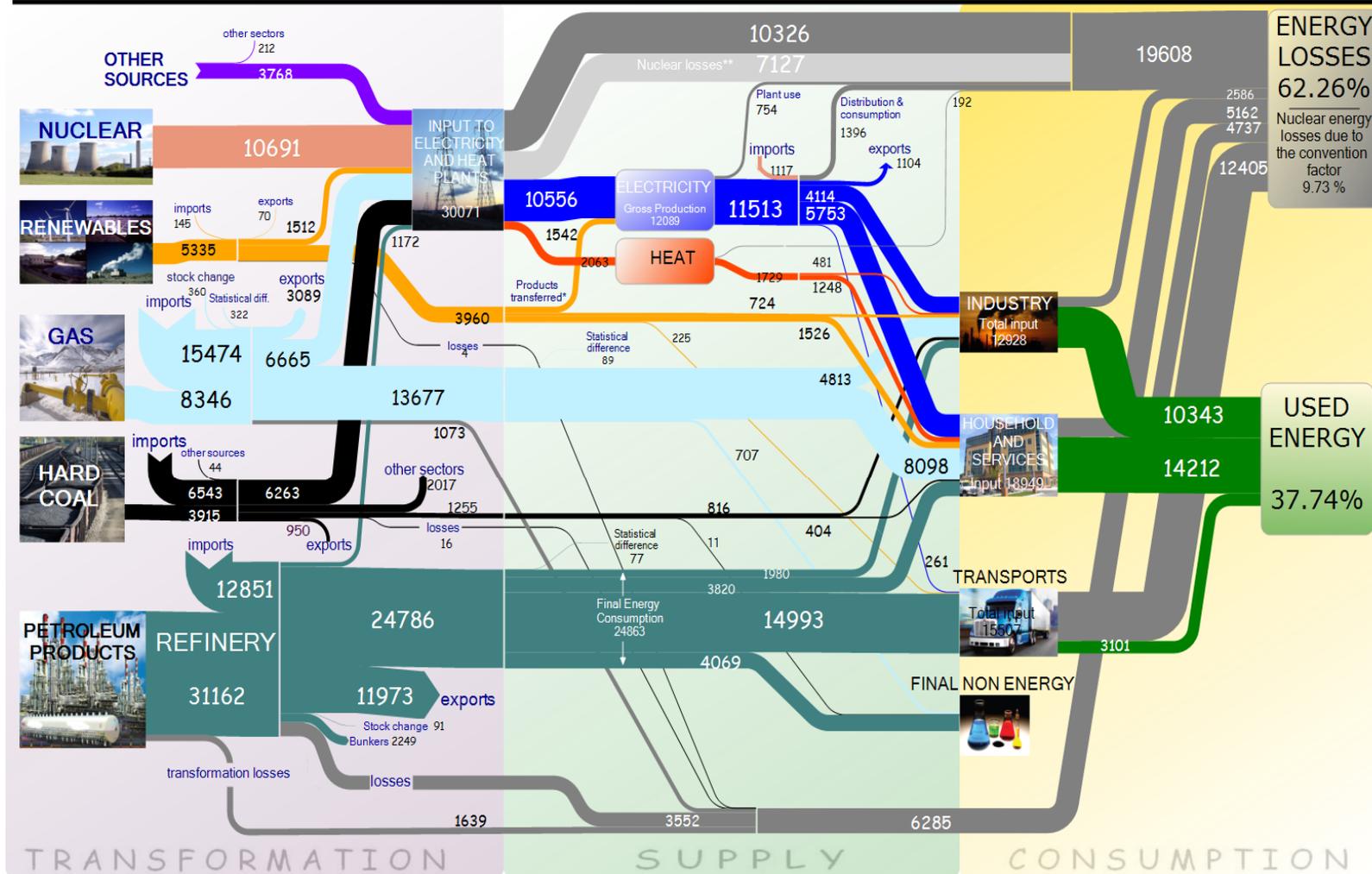
<http://re.jrc.ec.europa.eu/energyefficiency>



AERE/TEP Meeting 1st June 2010

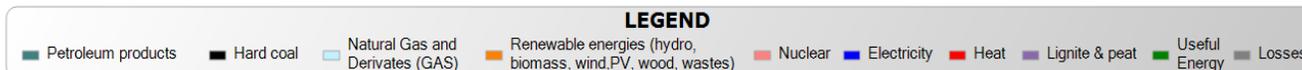
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## EU-27 streamlined energy flow trends - 2006 Supply, transformation, consumption (PJ)

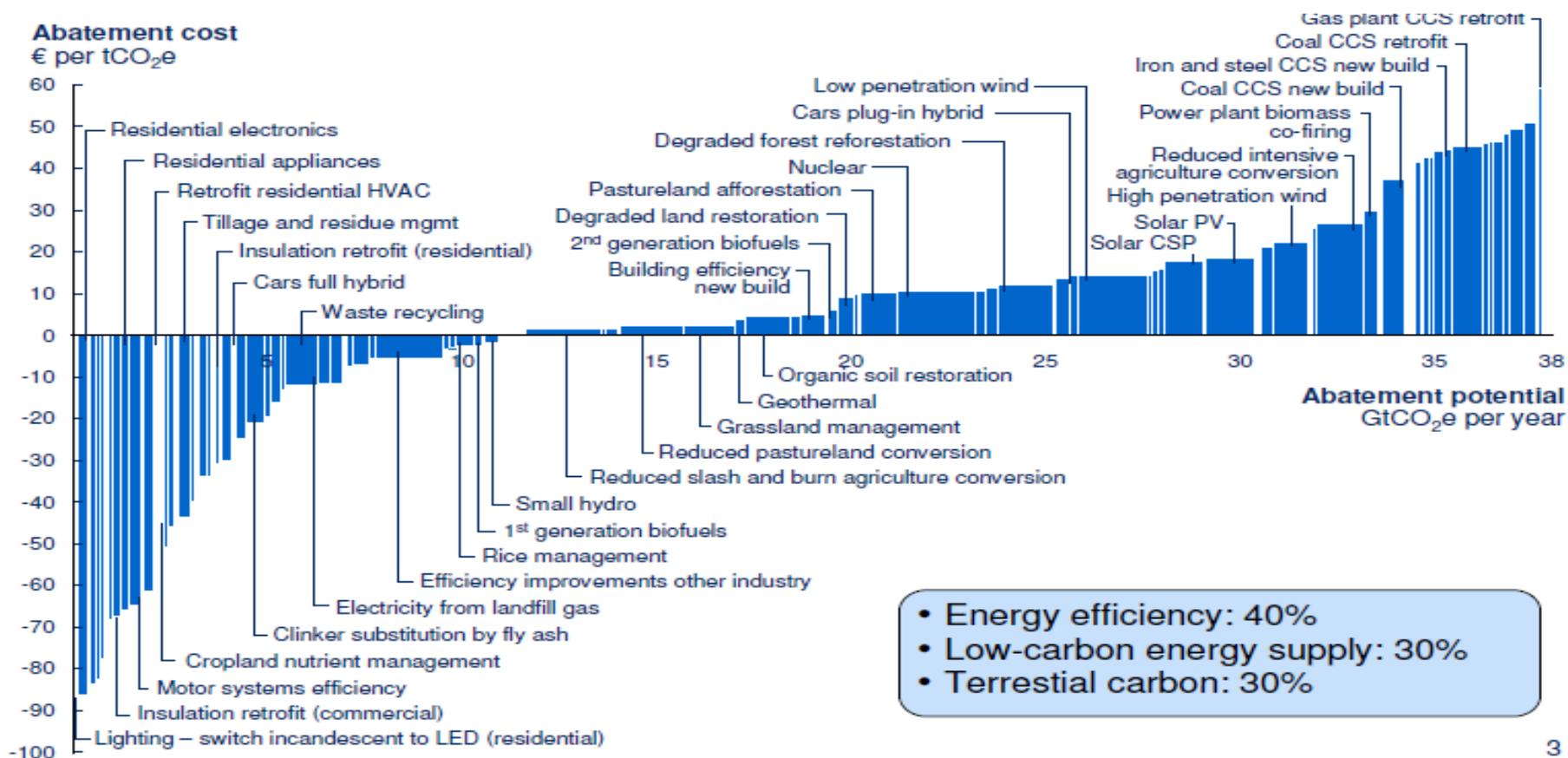


\* It refers to electricity produced from Hydro, Wind and Photovoltaic Power which is directly counted as gross electricity production. It has been added also the gross electricity generation from pumped storage plants.

\*\* Losses occurred due to the convention factor for nuclear power. These are not properly losses.



## End-use efficiency is recognised as the fastest and cheapest way to reduce CO2 emissions by 2020.



Note: The curve presents an estimate of the maximum potential of all technical GHG abatement measures below €60/tCO<sub>2</sub>e if each lever was pursued aggressively. It is not a forecast of what role different abatement measures and technologies will play.

# EU Key Climate and Energy Objectives for 2020

By 2020 -20% **EU GHG**

By 2020 +20% **ENERGY  
SAVING**

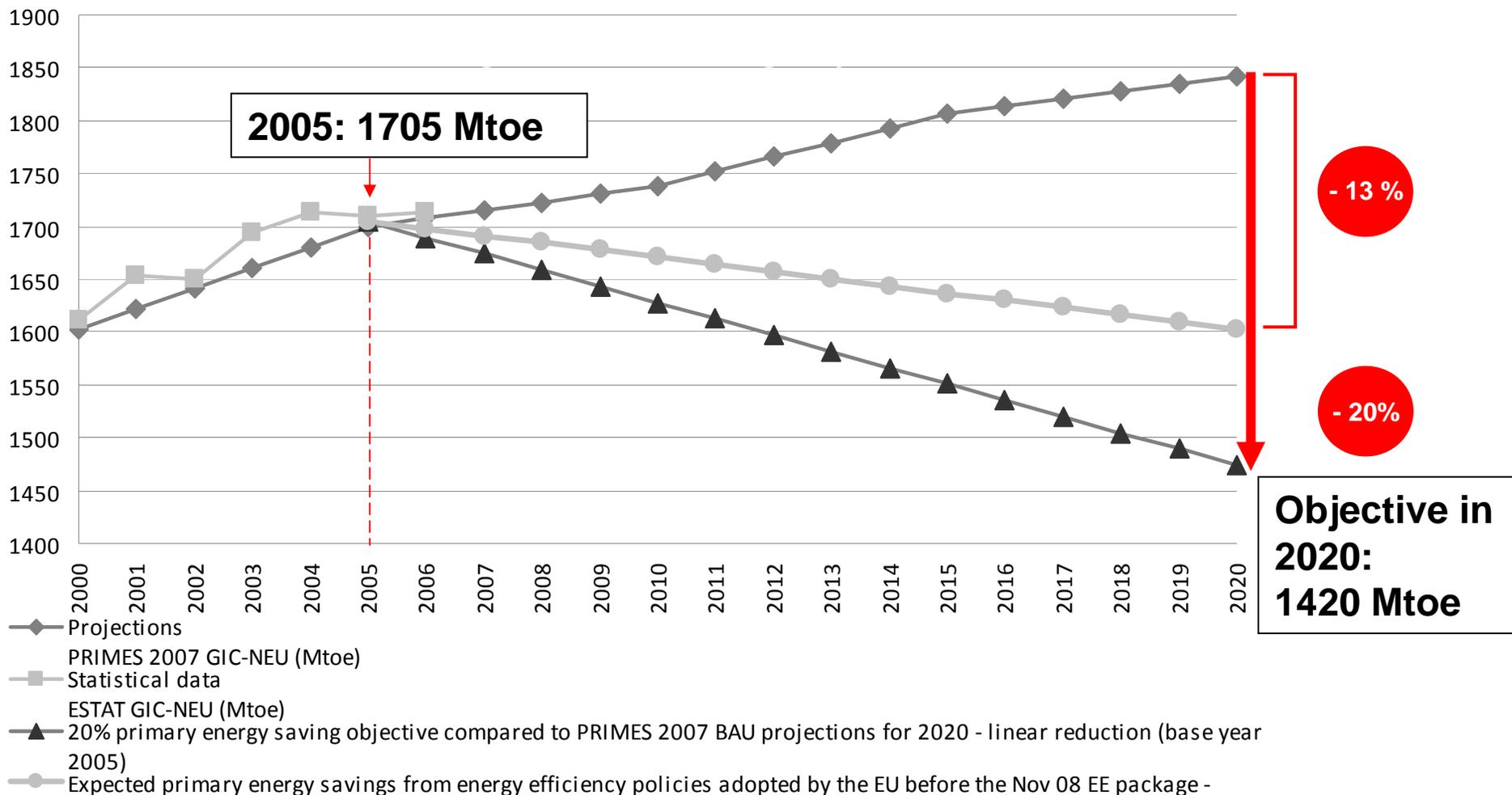
By 2020 binding 20% **RENEWABLES** in final  
energy consumption at EU level

**RES in  
transport**  
Min 10%  
binding

**ELECTRICITY**  
MS binding  
choice

**HEATING &  
COOLING**  
MS binding  
choice

**NATIONAL TARGETS & ACTION PLANS**



Generation

Products

Buildings

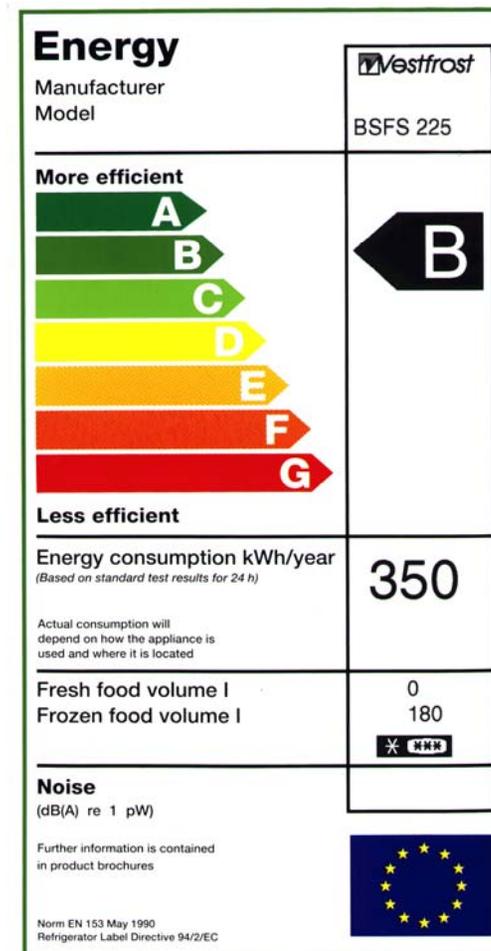
Services

Taxation

- Directive on the promotion of the use of **energy from renewable sources**
- Directive on the promotion of **cogeneration**
- Regulation of Energy Star labelling for office equipment
- Directive establishing a framework for the setting of **eco-design requirements** for energy-using products
- **Construction products** Directive (Proposal for a regulation laying down harmonised conditions for the marketing of the construction products)
- Energy performance of **buildings Directive (EPBD)**
- Energy **end-use efficiency and energy services** Directive
- **Directive for the taxation of energy products and electricity**

- In the EU policies have been developed both for the **buildings** (building shell and installed equipment) and for the **appliances/plug loads** inside buildings (TV, lightings, refrigerators, standby, PCs, washing machine, room air conditioners, etc.).
- In the EU policies includes **information** (e.g. labelling), **minimum efficiency standards** (eliminating from the market inefficient equipment, and new building only well insulated), **awareness and promotion**, and **financial incentives** (mainly at Member States level).

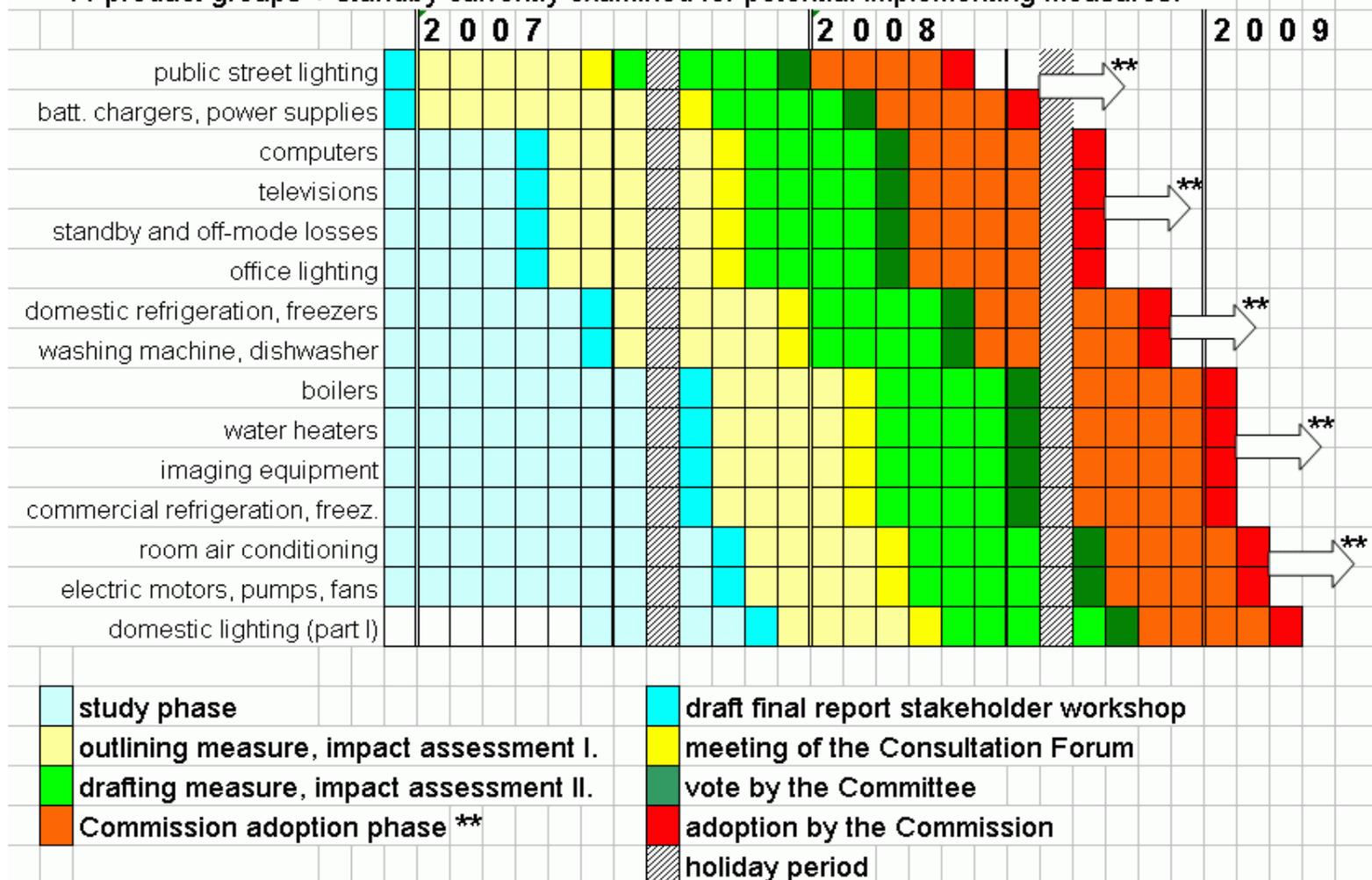
- The EU adopted a Framework Appliance Energy Labelling Directive in 1992 (92/75/EEC) followed by implementing Directives for the following appliances:
- Cold appliances (Directive 94/2/EC of 21.1.94)
- Clothes washers (Directive 95/12/EC of 23.5.95)
- Clothes dryers (Directive 95/13/EC of 23.5.95)
- Washer-dryers (Directive 96/60/EC of 23.5.95)
- Dishwashers (Directive 97/17/EC of 7.5.97)
- Household lamps (Directive 98/11/EC of 27.1.98)
- Air-conditioners (Directive 2002/31/EC of 22.3.2002)
- Electric ovens (Directive 2002/40/EC of 8.5.2002).
- Directive 2003/66/EC on refrigerators and freezers (A+/A++)



- Mandatory minimum efficiency requirements have been introduced in the EU for:
  - Cold appliances
  - Heating Boilers
  - Ballast for fluorescent lighting
- The new Eco-Design of Energy Using Products Directive allows a faster adoption of Mandatory minimum efficiency requirements. The Eco-Design Directive does not create immediate obligations for manufacturers but allows the Commission to do so through implementing Directives/Regulations;

### Planning for the adoption of ecodesign implementing measures \*

14 product groups + standby currently examined for potential implementing measures:



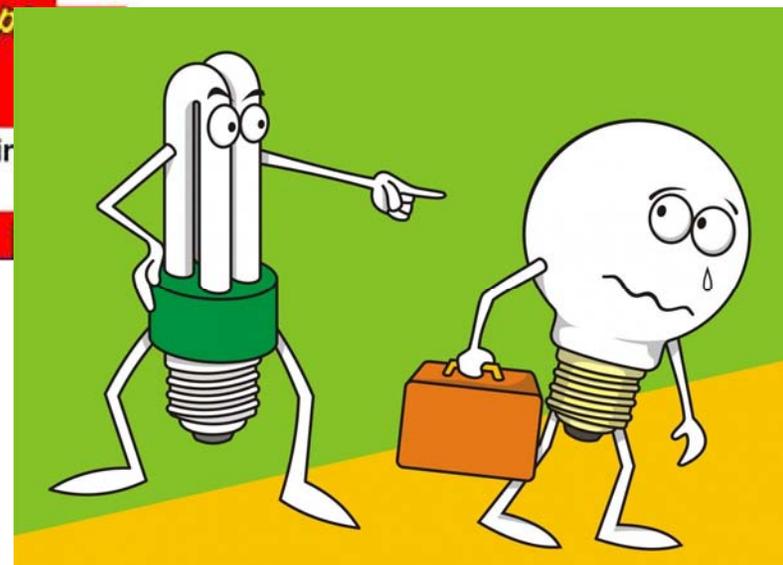
- study phase
- outlining measure, impact assessment I.
- drafting measure, impact assessment II.
- Commission adoption phase \*\*
- adoption by the Commission
- holiday period
- draft final report stakeholder workshop
- meeting of the Consultation Forum
- vote by the Committee

\* Assumption: Committee and EP are immediately in favour of the draft

\*\* Could take from 4 to 12 months depending in particular on discussions on reinforced scrutiny by EP - includes WTO notification and translations

In March 2009 the European Commission adopted the Eco-design Regulation to improve the energy efficiency of household lamps, which envisages the progressive phase-out of incandescent bulbs starting in 2009 and finishing at the end of 2012.

Date	Non-clear lamps				Clear lamps						
	Requirement energy class	Incandescent	All halogen	CFLs	Requirement energy class	Conventional halogen				Halogen C	Halogen B
						≥100 W	≥75 W	≥60 W	<60 W		
Today	None				None						
Sep-09	A	<b>phased-out</b>			C for ≥100W, E for the rest <sup>1</sup>						
Sep-10	A				C for ≥75W						
Sep-11	A				C for ≥60W						
Sep-12	A				C for all						
Sep-13					Second level of functionality requirement						
Review 2014					Review						
Sep-16	A	<b>phased-out</b>			B / C <sup>2</sup>						



**..but improvements in efficiency are offset by additional consumption**



**Including standby consumption**

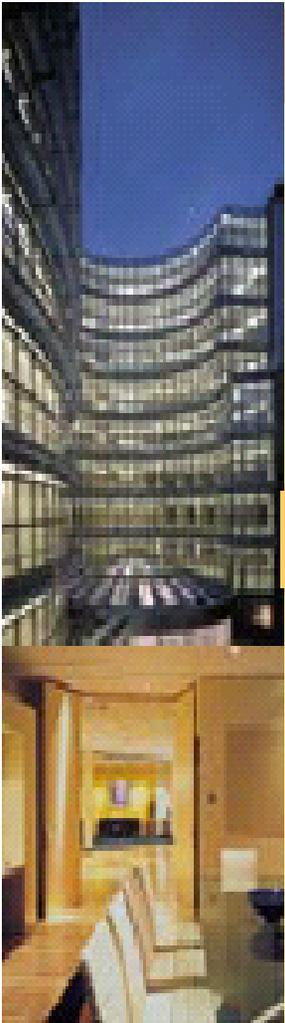


## Objectives

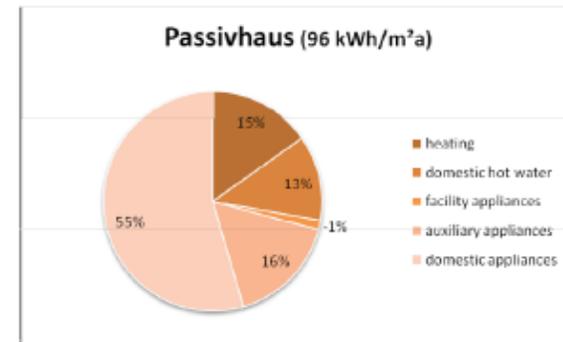
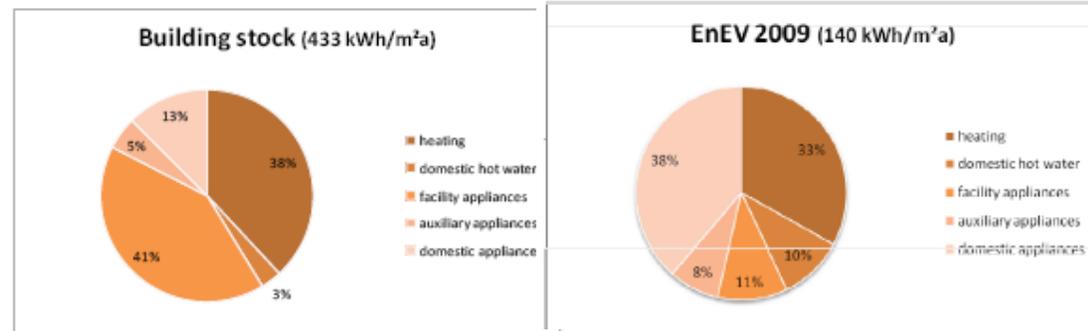
- Promoting the improvement of energy performance of buildings within the EU through cost-effective measures
- Convergence of building standards towards those of Member States which already have ambitious levels

## Proposed measures

- Methodology for integrated buildings energy performance standards
- Application of these standards on new and existing buildings
- Certification schemes for all buildings
- Inspection & assessment of boilers/heating and cooling installations



- **Passive house** (15kWh/m<sup>2</sup>/year, heating only)
- **Zero Net Energy House** (renewable energies: PV, wind, geothermal, etc.) to provide all the energy needed. It requires very efficient appliances and lighting (LEDs)



**Source:** Hannes Guddat\*, Michael Keller\*\*, Christoph Thim\*\*\*

\* Soap architecture GbR, Darmstadt

\*\* TU Darmstadt, department of architecture, energy-efficient building design group

\*\*\* ZTV, BSH Bosch und Siemens Hausgeräte GmbH, Munich



- Introduce the national energy saving target
- Measured from 1.1.2008 until end of 2016.
- 9-year 9 % target.
- Indicative but carefully monitored & reported.
- Fixed amount of energy (TWh) calculated as 1% of 5-year average of unadjusted final cons.
- Credit for some “early actions” >1995.
- All measures must be verifiable and measurable or estimable. (Details Annexes I, II, III & IV.).
- Member States have to submit Action Plans (NEEAPs)

- The Energy Services Directive requires Member States to put in place **institutional and legal frameworks and measures** needed to remove **barriers** to the efficient end-use of energy.
- The Directive is intended to act as a catalyst for renewed and more ambitious energy efficiency initiatives at all levels of European society – local, regional, national and Community.
- The Directive should create the necessary conditions for the development and promotion of a **market for energy services** and the delivery of energy efficiency to end-users – the two main objectives of the Directive.
- NEEAPs are intended to set out the **national strategies** of Member States towards the overall and intermediate national indicative targets, reflecting the spirit of the Directive and its overall objectives. Member States should show, in particular, how they intend to comply with the provisions on the exemplary role of the public sector and the provision of information and advice on energy efficiency to end-users

- The Public Sector in Member States will be obliged to fulfil an exemplary role;
- Publish energy efficiency guidelines as assessment criteria in tendering for public contracts;
- Select two mandatory measures from a list in Annex VI, requiring energy-efficient public procurement, energy audits and energy performance contracting.

- Member States and suppliers to promote energy services & energy efficiency measures.
- Obligation for energy distribution and/or retail energy sales companies to provide energy services, energy audits, energy efficiency measures
- Energy companies to help remove market barriers, and not hinder EE market development
- Energy suppliers to provide to net-bound & domestic hot water customers: competitively priced, accurate individual meters + information on time of use.
- Billing based on actual & relative consumption & presented in understandable terms.
- Appropriate information on energy costs & previous consumption.
- Billing frequently enough to enable customer to regulate consumption

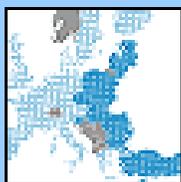
- Removal of legislation that restricts use of financial instruments for energy savings
- Promotion of financial instruments for energy savings, e.g. third-party financing and energy performance contracting.
- For tariffs and regulations for net-bound energy, regulators to use tariff structures that avoid unnecessary volume driving incentives.



## End-use Energy Efficiency <http://re.jrc.ec.europa.eu/energyefficiency/>



### Scientific & Technical Reference on Renewable Energy and End-use Energy Efficiency



#### 1. Electricity end-use efficiency in buildings in MS and Candidate Countries



#### 2. Policy Analysis

- Energy Service Companies
- Financing
- Energy Star, Ecodesign, EPBD
- background support for EU energy efficiency policy (white certificates)

#### 4. EC voluntary programmes



MotorChallenge



GreenBuilding



GreenLight

#### 3. Codes of Conduct & Energy Star



EU actions to improve energy efficiency on electrical equipment while either off and stand-by

## GreenLight



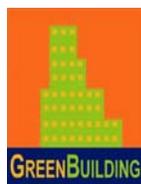
**EC Voluntary initiative to reduce lighting energy use in the commercial sector and street lighting**  
*today: 520 partners, 206 endorsers*

## MotorChallenge



**EC voluntary programme through which companies commit to energy efficiency measures in Motor Driven Systems (pumps, compressor, motors, fans)**  
*today: 95 partners, 69 endorsers*

## GreenBuilding



**EC voluntary programme through which companies commit to energy efficiency measures in non-residential buildings**  
*today: 130 partners, 32 endorsers*

# Support to the Energy Service Directive (2006/32/EC)

## 2. Policy Analysis: Tradable certificates for energy savings (white certificates)

- **Analysis of white certificate schemes in place in Europe: results, lessons learned;**
- **Comparison of white certificate schemes with other policy tools to promote energy efficiency;**
- **Integrating white certificates (project credits) into carbon markets.**
- **New study for DG TREN completed (October 2009)**

**TRADABLE CERTIFICATES FOR  
ENERGY SAVINGS  
(WHITE CERTIFICATES)**

**- THEORY AND PRACTICE -**

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## Support to the Energy Service Directive (2006/32/EC)

### 3. Financing Energy Efficiency Projects

# Market Development for Energy Efficiency Projects' Financing

(A) Benchmark Analysis of Existing Financial Schemes

(B) Country Status Reports

(C) Survey on Financial Institutions

(D) New Innovative Solutions

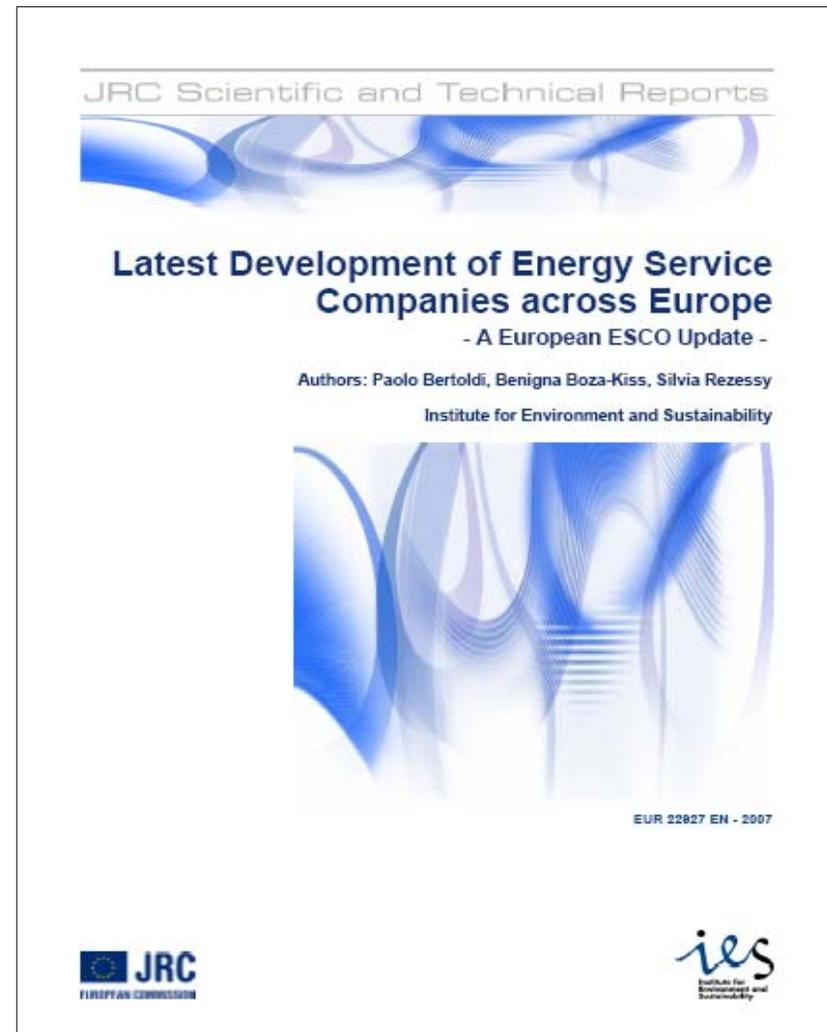
**WE ARE COLLECTING DATA ON NATIONAL ESCO MARKETS IN 2008/09,  
PLEASE SEND YOUR DATA AND INFORMATION  
Report ready by end of 2009**

## Support to the Energy Service Directive (2006/32/EC)

### 4. Energy Service Companies (ESCOs) across the European Union and beyond

## Contribution by the JRC

- **Monitoring of market development since 2002;**
  - **Review of state of the art, update reports;**
  - **Workshops – initiating exchange of experience;**
  - **ESCO databases (companies and projects).**
- 
- **WE ARE COLLECTING DATA ON NATIONAL ESCO MARKETS IN 2008/09, PLEASE SEND YOUR DATA AND INFORMATION**  
**Report ready by end of 2009**



# Support for the Covenant of Mayors

- More than 700 cities (from London and Paris to small villages) have committed to reduce CO<sub>2</sub> emission by more than 20%
- JRC developing methodologies and guidelines for Sustainable Energy Plans, supply assistance to cities to develop SEAP, and finally will assess all SEAPs

- There is a **large potential** to further improve energy efficiency in buildings (about **25%**) in Europe and elsewhere.
- It requires efficient solutions and **new technologies** both for the **buildings** shell and for the **equipment**, including **renewable energy sources**.
- Attention must be paid to **existing** buildings, and incentives and solutions for the building refurbishment needs to be introduced.
- **Policies and programmes** are needed: information (labelling and smart metering), minimum efficiency standards, and incentives.
- Finally it is required a **change in behaviour and life style** (smaller homes, less equipment, less cooling, walking, etc.).

**Thank you for your attention**



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