

## Evaluation and Monitoring for the EU Directive on Energy End-Use Efficiency and Energy Services

# National Workshops

## Proposed Structure and Contents

Anibal T. De Almeida, Paula Fonseca,  
Tiago Fernandes

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Universidade de Coimbra



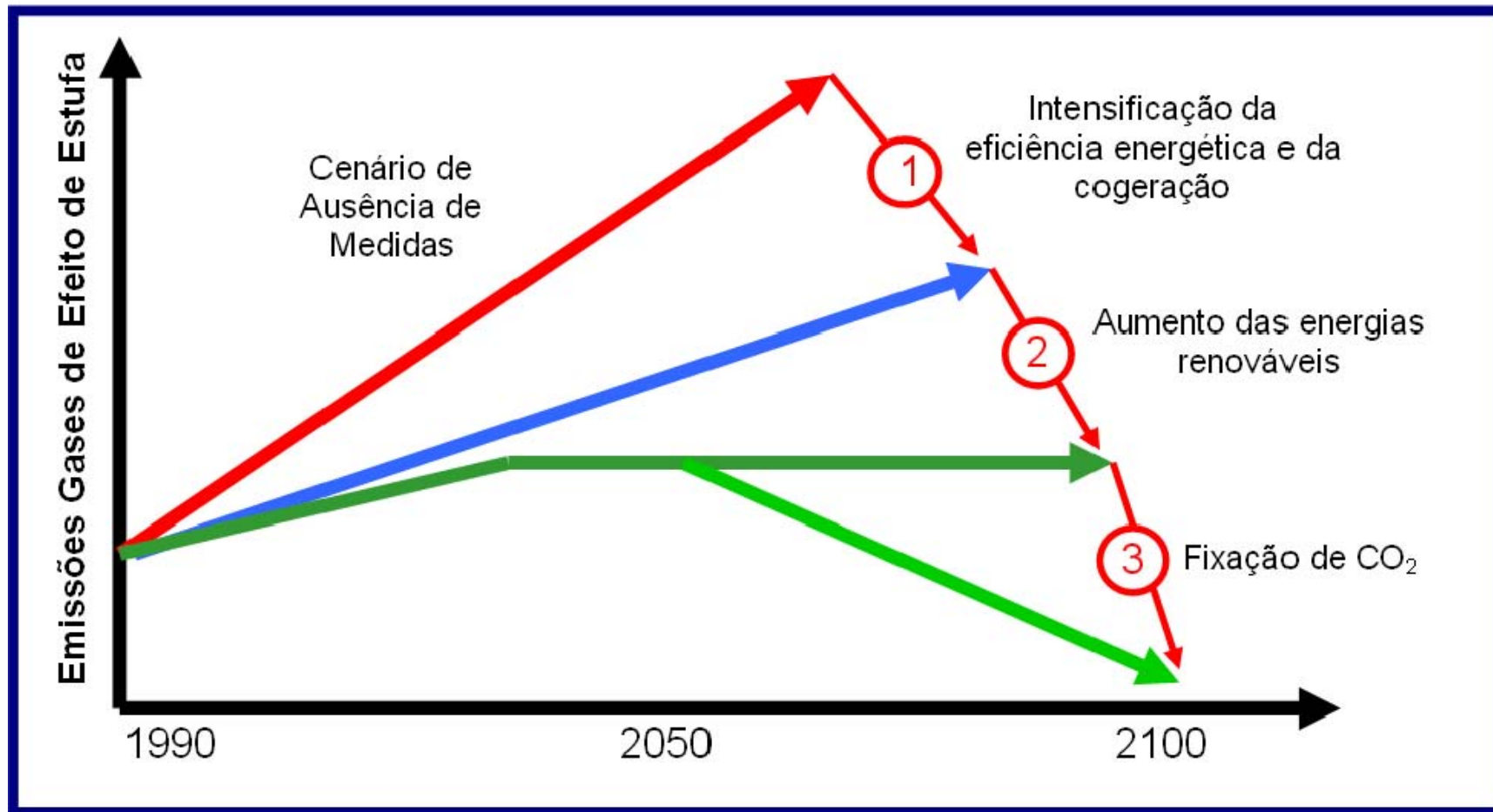
# Workshop agenda

- 14.30**    **Welcome**
- 14:45**    **Introduction and project context :  
Terminology for working on monitoring methods**
- 15.30**    **Development of evaluation methods:  
bottom up and top down**
- 16.00**    **Examples (1): bottom up methods**
- 16.30**    **Examples (2): top down methods**
- 17:00**    **Discussion**
- 17:30**    **End of Workshop**

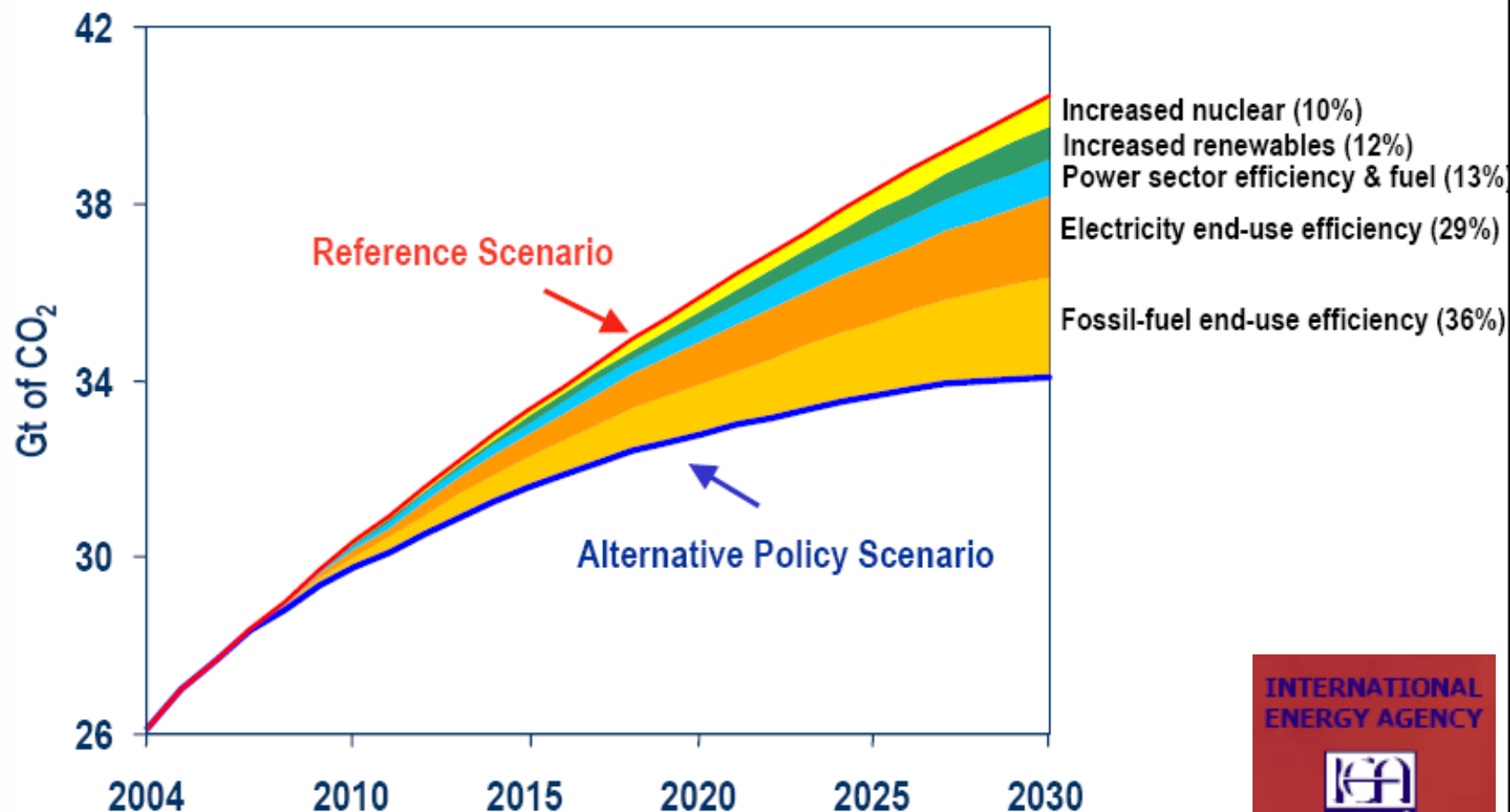
# Contents

- Need to promote energy efficiency
- Objective of the workshop
- Terminology
- Development of methods
- Examples: bottom up
- Examples: top down
- Conclusions and further processes

# Estratégias globais para o Desenvolvimento Sustentável



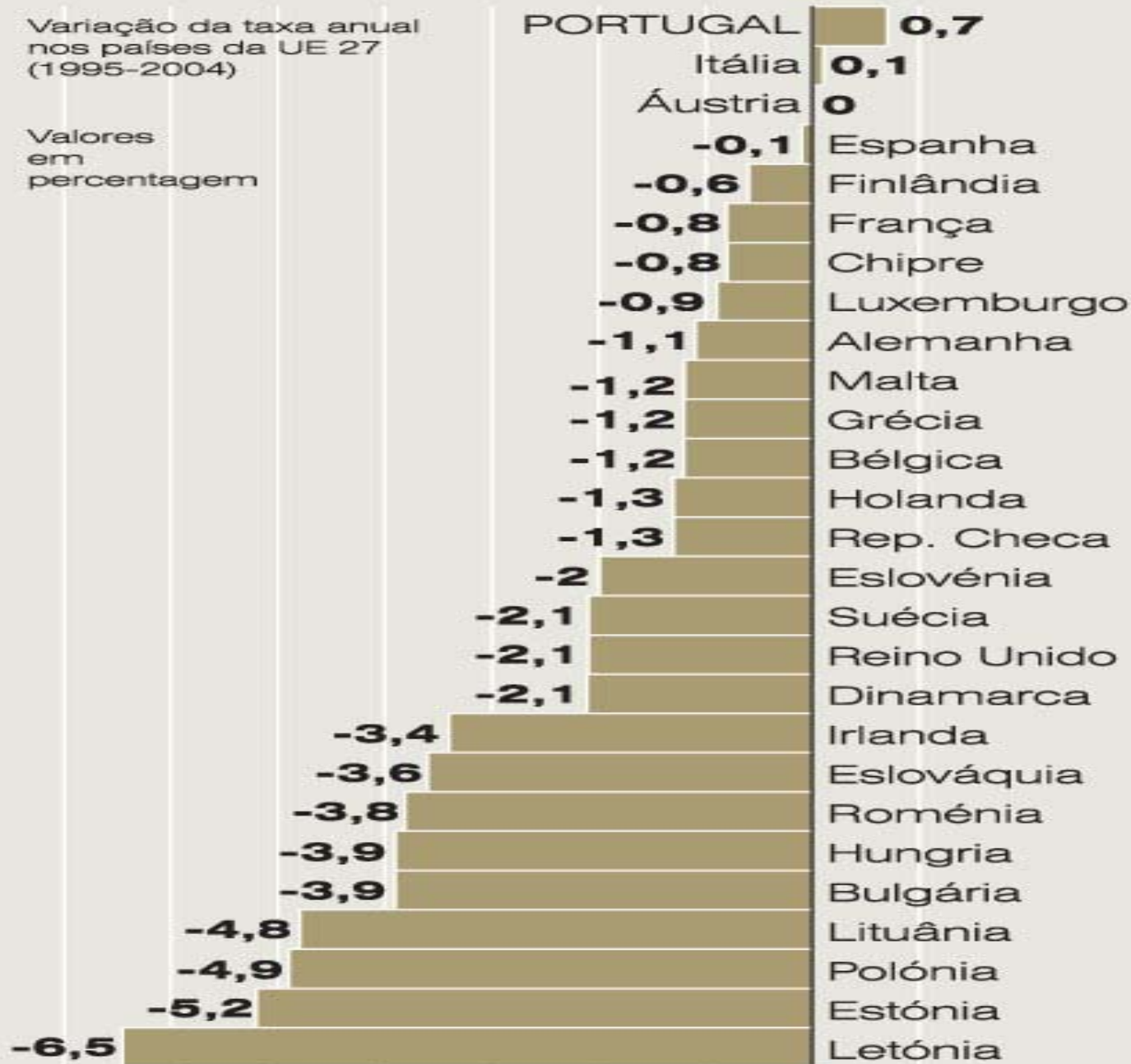
# IEA-Energy-Efficiency accounts for 2/3 of avoided emissions in 2030 in



# Intensidade energética

Variação da taxa anual nos países da UE 27 (1995-2004)

Valores em percentagem



Fonte: Agência Europeia do Ambiente - 2007

## 2. Project Context

evaluate  
energy savings<sup>EU</sup>

## 2.1 Project Context: EMEEES

- **support** the implementation of the EU Directive on energy end-use efficiency and energy services, ESD (2006/32/EC)
- develop harmonised **methods** for evaluation of energy savings (20 bottom-up and 15 top-down methods)
- build trust in methods and hence in savings evaluated
- develop a **template** for national energy efficiency action plans
- provide **practical advice and support** for the European Commission
- provide **platform for exchange of experiences**:  
[www.evaluate-energy-savings.eu](http://www.evaluate-energy-savings.eu)

## 2.2 Elements (Work Packages)

- WP1: Management
- WP2: Analysis of good practice
- WP3: Distinction of measures by type of evaluation method
- WP4: Bottom-up evaluation methods
- WP5: Top-down evaluation methods
- WP6: Integration of bottom-up and top-down approaches
- WP7: Planning and reporting requirements
- WP8: Pilot testing
- WP9: Platform for exchange and dissemination
- WP10: Common dissemination activities

## 2.3 The EMEEES Consortium

21 partners  
well-experienced  
in evaluation of  
energy savings

Project partner	Country
Wuppertal Institut for Climate, Environment, Energy (WI)	DE
Agence de l'Environnement et de la Maitrise de l'Énergie (ADEME)	FR
SenterNovem	NL
Energy research Centre of the Netherlands (ECN)	NL
Enerdata	FR
Fraunhofer-Institut für System- und Innovationsforschung (FhG-ISI)	DE
SRC International A/S (SRCI)	DK
Politecnico di Milano, Dipartimento di Energetica, eERG	IT
AGH University of Science and Technology (AGH-UST)	PL
...sterreichische Energieagentur Österreich Austrian Energy Agency (A.E.A.)	AT
Ekodoma	LV
Istituto di Studi per l'Integrazione dei Sistemi (ISIS)	IT
Swedish Energy Agency (STEM)	SE
Association pour la Recherche et la Développement des Méthodes et Processus Industriels (ARMINES)	FR
Electricité de France (EdF)	FR
Enova SF	NO
Motiva Oy	FI
Department for Environment, Food and Rural Affairs (DEFRA)	UK
ISR University of Coimbra (ISR-UC)	PT
Dong Energy	DK
Centre for Renewable Energy Sources (CRES)	GR

## 2.4 EMEEES Timeline

- December/January 2007/8 **National Workshops in 13 MS, Review of methods, Advice to Commission on NEEAPs assessment**
- February/March 2008 **Subcommittees on top down and bottom up methods**
- May 2008 **Finalising, publishing and presenting results on methods**
- Autumn 2008 **Final Conference on methods**
- Winter 2007 to early 2009 **Six Pilot cases testing the methods**
- April 2009 **End of project**

### 3. Terminology for working on evaluation and monitoring methods



### 3.1 ESD - Energy End Use Efficiency and Energy Services Directive

- The ESD sets an indicative target for EU MS to achieve a **total 9% energy saving by 2016** from new energy services and other energy efficiency (EEI) measures.
- But until now there has not been developed a ***common methodology on how to measure and evaluate these savings.***
- The set of common and harmonised evaluation methods to be developed will ***enable the MS to report EEI activities and their impacts in a common way and with a harmonised accounting system.***
- Consequently, the methods designed will help the MS to prove to the Commission the fulfilment of the indicative cumulative annual energy savings target of 9 percent by 2016.

## 3.2 Analytical clarification: subject of monitoring and evaluation (1)

- Energy efficiency improvement (EEI) measure (ESD Art 3 (h)):
- Distinction useful between

### EEI facilitating measure(s)

stimulate end-use EEI actions  
and are delivered to final  
consumers or other market actors  
(↑ *a cause for an end-use action*)

and

### end-use (EEI) action(s)

(  
taken by final consumers  
or other market actors  
(↑ *direct impact  
of an EEI measure*)

## 3.3 Analytical clarification: subject of monitoring and evaluation (2)

### EEI facilitating measures can be:

- Energy services, EEI programmes, EEI policy instruments, and other EEI measures
- **Examples:**
  - energy performance contracting,
  - incentive programme,
  - building codes,
  - voluntary agreement

### end-use EEI action(s) can be:

- technical, organisational, or behavioural action that actually improves energy efficiency at the end-use level
- **Examples:**
  - thermal insulation,
  - Efficient appliances
  - energy management,
  - purchase of efficient car instead of „gas-guzzler“,
  - practicing eco-driving

### 3.4 Analytical clarification: subject of monitoring and evaluation (3)

				<b>(EEI) Facilitating measures</b>		
				Example 1: energy performance contracting	Example 2: white certificate schemes	Example 3: energy taxation
<b>End-use (EEI) actions</b>	<b>Sector</b>	<b>Energy end-use</b>	<b>Efficient Solution</b>			
	Residential	example 1: heating	efficient boilers		B1	C
			heat pumps		B2	
			etc.			
		example 2: lighting	CFL		Bi	
	Tertiary	example 1: heating	efficient boilers, pumps, etc.	A1	Bj	
			example 2: lighting	CFL	etc.	
		efficient ballasts	A2			
		etc.				
		etc.				

### 3.4.1 Integration of white certificates in the EU

A **white certificate** is an instrument issued by an authority or an authorised body providing a guarantee that a certain amount of energy savings has been achieved. Each certificate is a unique and traceable commodity that carries a property right over a certain amount of **additional** savings and guarantees that the benefit of these savings has not been accounted for elsewhere.

#### ***Key benefits of a TWC system:***

- Certification guarantees meeting the agreed target.
- Introduction of tradability aims at least-cost achievement of targets.
- The system could unlock energy saving potentials and actors that are currently not unlocked by other instruments.
- Can reduce pressures on public budgets
- Can stimulate the market for ESCOs

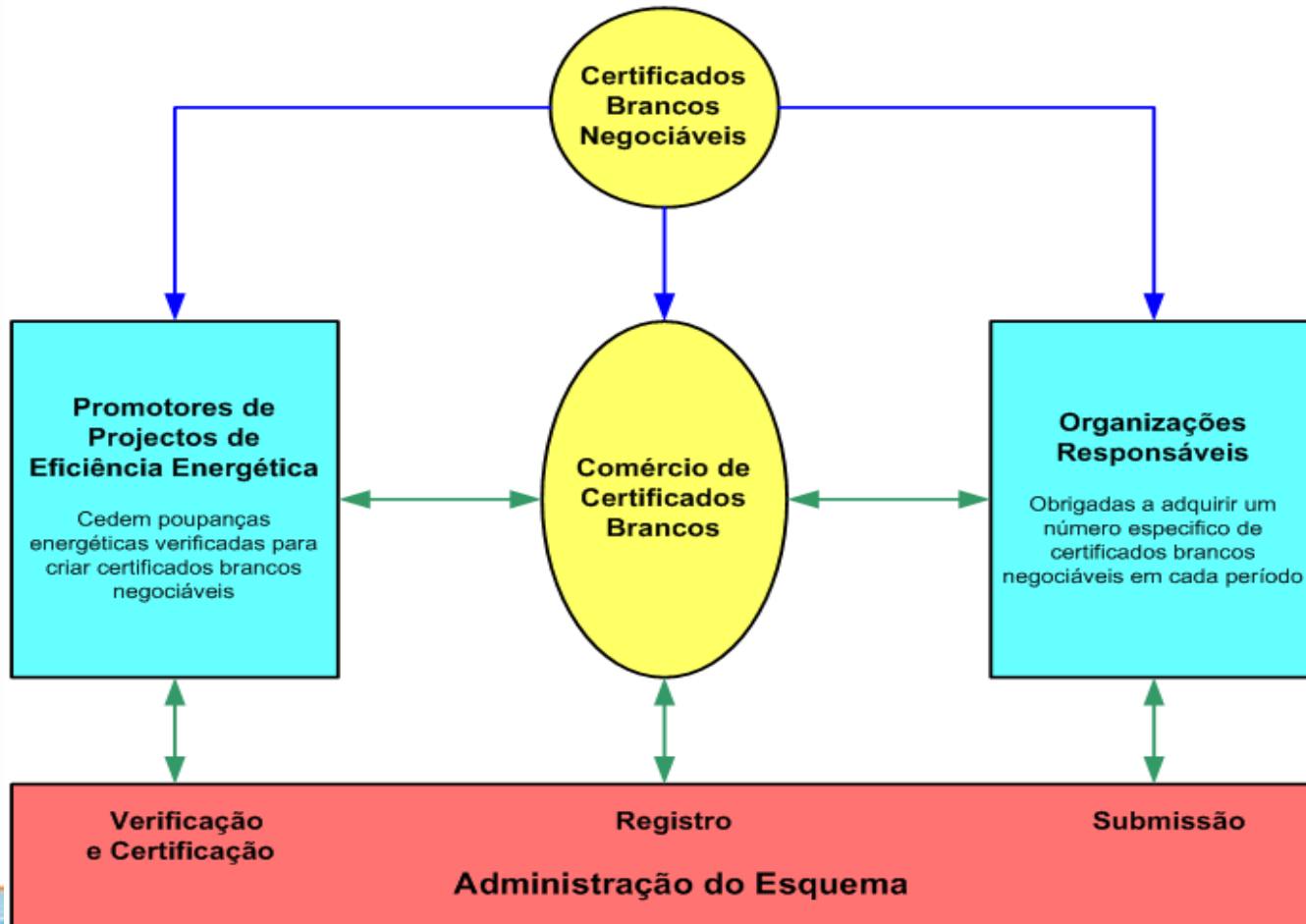
## 3.4.1 Integration of white certificates in the EU

Targets of countries where **white certificates** are in place :

Country	Target and period	% of annual demand
Denmark	7.5 PJ/yr in 2006-13	1.7% (end year)
France	194 PJ total in 2006-08	1% (average)
Great Britain	468 PJ total in 2005-08	1% (average)
Italy	230 PJ total in 2005-09	0.5% (average)
Netherlands	65 PJ total in 2020	1.8% (end year)

# Certificados Brancos (Itália, França, Holanda, Dinamarca e UK)

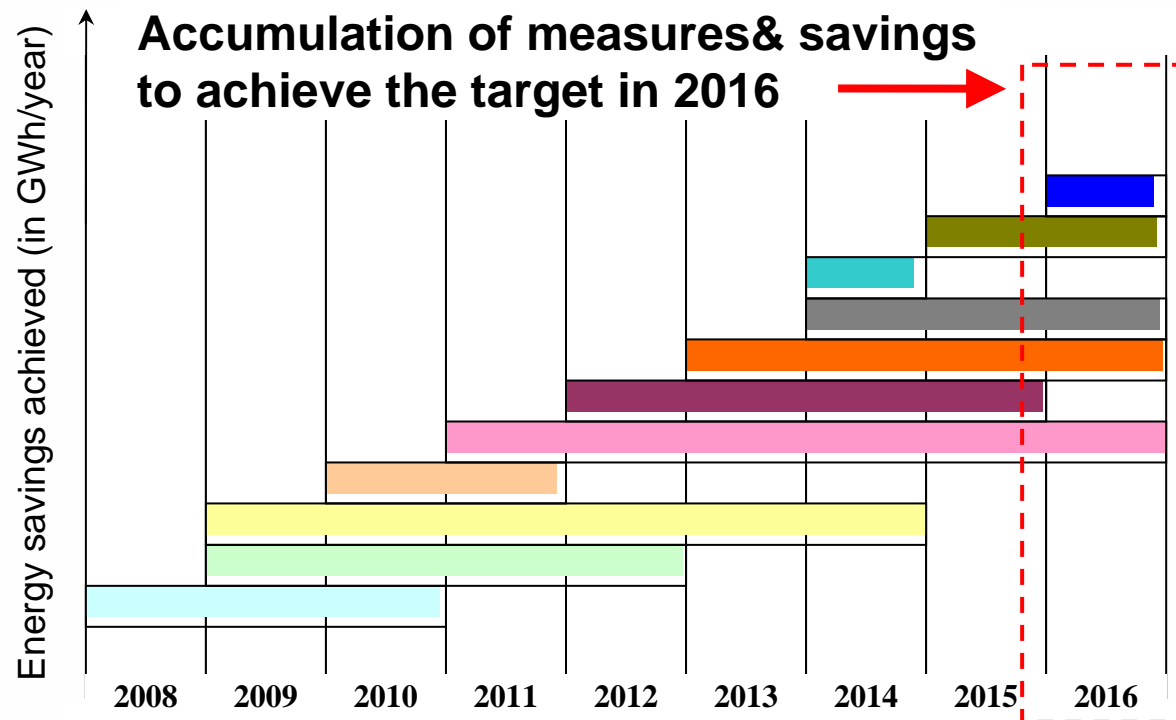
Esquema do mercado de certificados brancos



## 3.5 ESD energy savings and targets

What does “*cumulative annual energy savings*” mean?

- ↑ sum of the annual energy savings (kWh/year) from the different EEI measures, but **only in 2010 and 2016**



## 3.6 Additional energy savings?

- **ESD does not mention** that energy savings counting towards the 9 % target must be in addition to energy savings from autonomous changes and previous policy
- **EU Action Plan for Energy Efficiency** obviously expects strong contribution from ESD (and other recent Directives):  
„new policy“ leading to **new and additional** energy savings compared to autonomous changes and previous policy
  - EU Action Plan requires 1.5 % per year of primary energy efficiency improvement; „new policy“ to bring 0.7 % per year (equivalent to 1 % per year in non-ETS sectors)
  - autonomous changes: “brought about by natural replacement, energy price changes, etc.” (EU Action Plan)

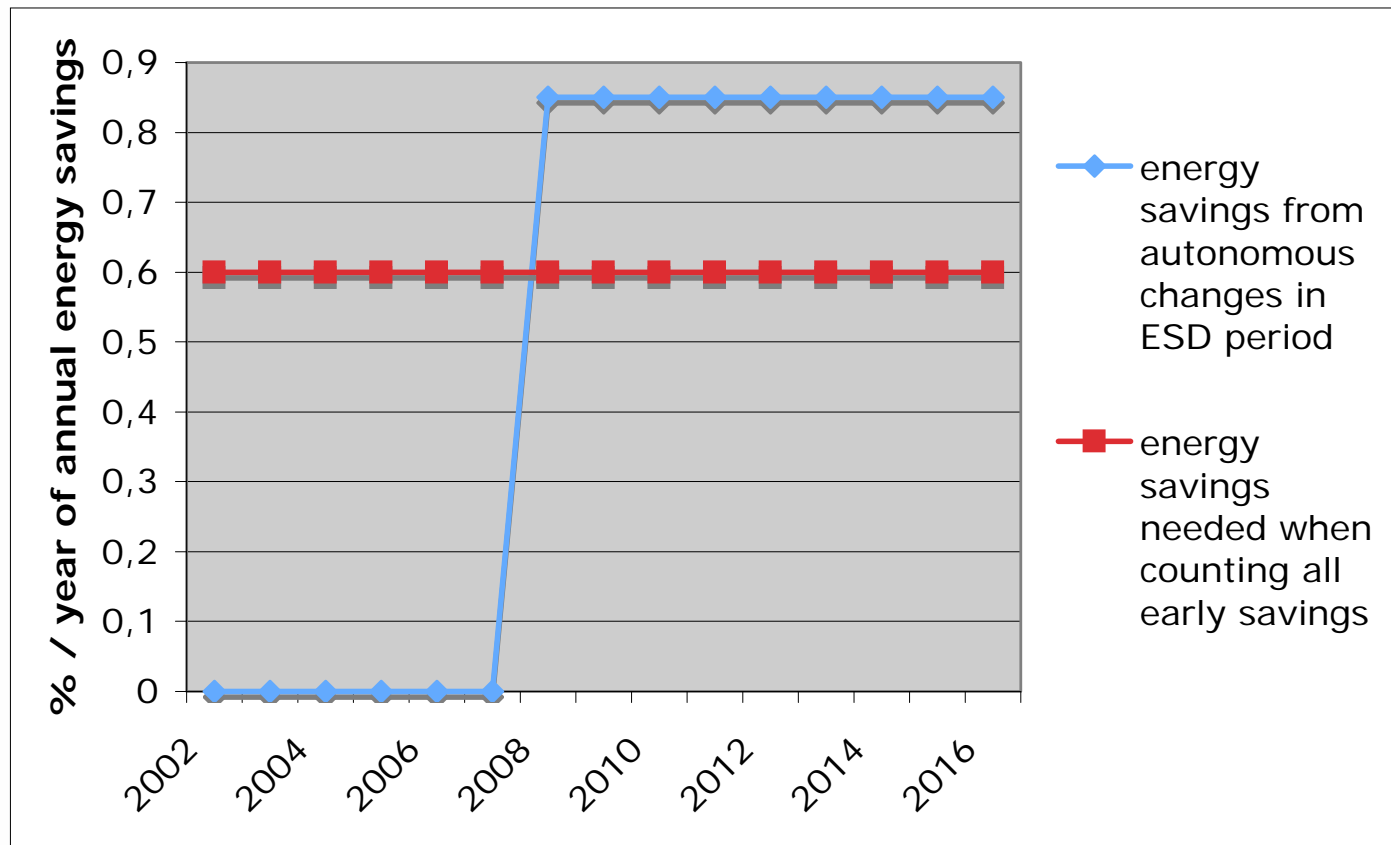
## 3.7 Early Action

- ESD Annex I: “**Energy savings** in a particular year following the entry into force of this Directive that result from energy efficiency improvement **measures** initiated in a previous year not earlier than 1995 and **that have a lasting effect** may be taken into account in the calculation of the annual energy savings.”
- Interpretation unclear – How to account early actions?
  - **Which Early measures to consider ?**  
(e.g., building code from 2005 and still in force in 2008 - 2016)

Or

- **How to evaluate Early energy savings?**  
(e.g., from energy-efficient building constructed in 2005)

### 3.8 Potential consequences of admitting both autonomous and early energy savings: no new energy savings needed at all



## 4. General Principles for the Development of Evaluation and Monitoring Methods:

*bottom up and top down*

evaluate  
energy savings<sup>EU</sup>

## 4.1 Definitions

- **direct rebound effect** - measures targeting thermal comfort of buildings, lighting, and cars, whether direct rebound effects are relevant and how they can be evaluated
- **double-counting** - measures targeting the same energy end use (or end-user EEI measure) in one evaluation together (e.g. Lamps+ballasts)
- **multiplier effect** - equivalent to market transformation effects *after* the operation time of the EEI promotion
- **Free riders** – participantes who would implement the measure even if it does not exist with or without incentives

## 4.2 General principles for Evaluation method development

- Be as thorough as possible in analysing the relevance of correction factors, and the possibilities to evaluate them.
- But be as pragmatic as possible in the methods proposed as a result of the analysis
- With as many EU-level average values as possible
- Avoiding **double-counting**
- Estimating the **multiplier effect**, if possible
- Distinction between **bottom up** and **top down** methods

## 4.3 General principles for method development

(1): compromise between exhaustive and cost-effective

- Be **as thorough as possible in analysing** the relevance of correction factors, and the possibilities to evaluate them
- But be **as pragmatic as possible in the methods proposed** as a result of the analysis
  - ➔ *the evaluation system has to be **applicable** (technically), **not costly** (economically) **and fair** (ethically)*

## 4.4 General principles for method development

(2): harmonisation (between MS; between measures)

- MS will have to report energy savings based on **harmonised methods** (ESD Annex IV(1.1)) ; this harmonisation covers the following issues:
  - using the **same accounting unit**
  - using a **consistent level of evaluation efforts**
  - using **common basic assumptions** (e.g. baseline)
  - **providing a minimum set of information** for each type of bottom-up calculation
- Member-States have **different experiences**, starting points; but they shall use harmonised requirements for reporting their results

## 4.5 General principles for method development (3): concrete objectives

- Proposing a progressive approach in a harmonised frame
  - Providing **as many EU-level average values as possible**
  - Avoiding **double-counting**
  - Estimating the **multiplier effect**
  - Distinction between **bottom up** and **top down** methods
- } *ESD*  
*Annex IV(5)*