

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

## National Workshop - Sweden

### *Introduction and terminology*

Carlos Lopes - The Swedish Energy Agency

*Adapted from:*  
Ralf Schüle, Stefan Thomas – Wuppertal Institute

6 March 2008

Supported by




coordinated by



**Wuppertal Institute**  
for Climate, Environment  
and Energy

supported by

Intelligent Energy  Europe

# Workshop agenda

- 09.50 **Implementation of the ESD in Sweden**
- 10.15 **The EMEEES Project: context and terminology**
- 10.40 *Paus*
- 11.00 **Bottom-up methods**  
– Development process  
– Examples
- 12.30 *Lunch*
- 13.30 **Top-down methods**  
– Development process  
– Examples  
**Combination of "top-down"**
- 15.00 *Paus*
- 15.15 **Debate**
- 16.30 **Conclusions**
- 17.00 *End of the workshop*

# 1. Project Context

***EMEEES***

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

evaluate  
energy savings<sup>EU</sup>

## 1.1 Objective of the project EMEEES

### ■ Objective:

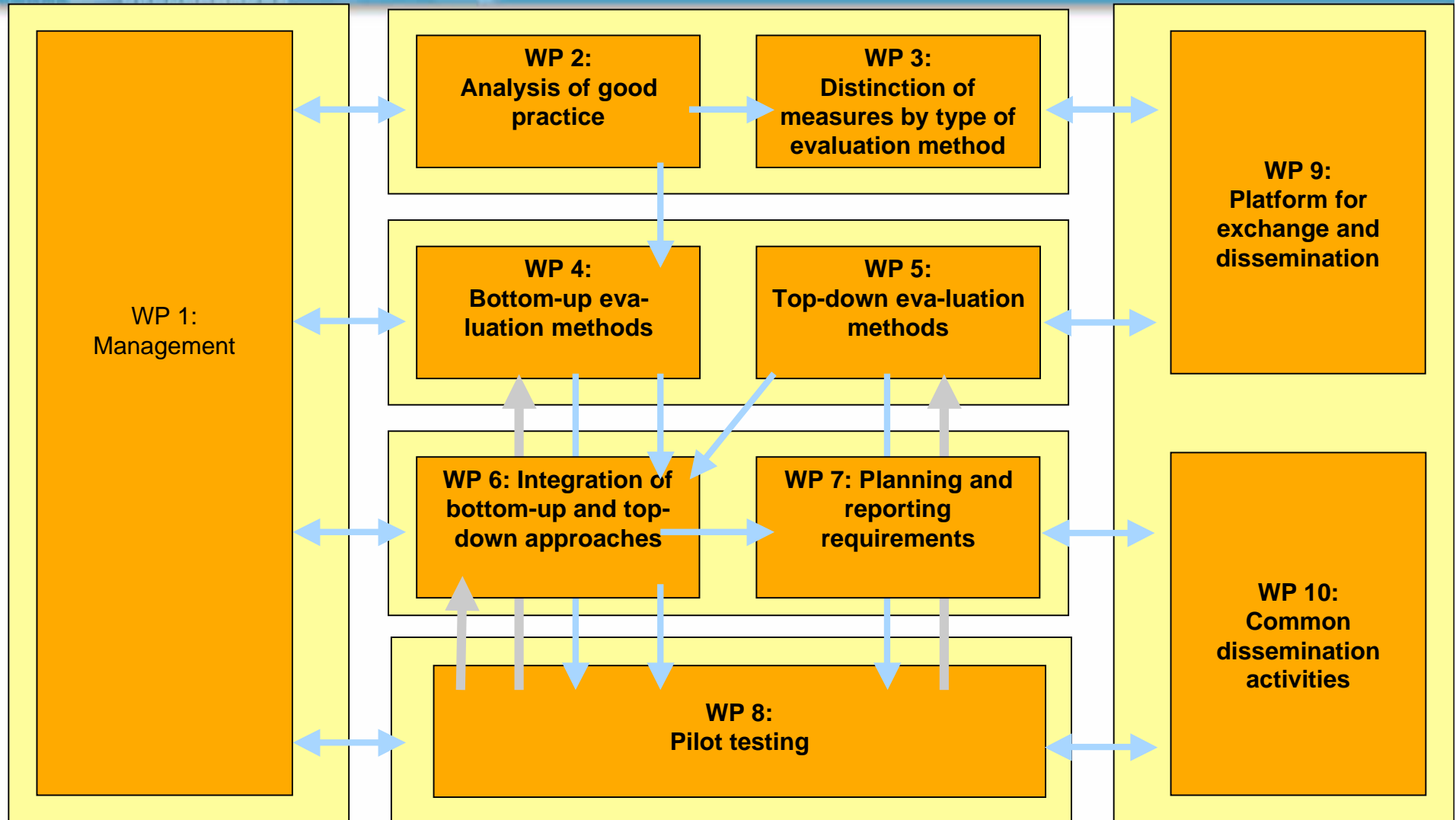
**Support** the implementation of the EU Directive on energy end-use efficiency and energy services, ESD (2006/32/EC)

### ■ Tasks

- Develop harmonised **methods** for evaluation of energy savings (20 bottom-up and 15 top-down)
- Develop a **template** for national energy efficiency action plans
- Provide **practical advice and support** for the European Commission
- Provide a **platform for information exchange**:

*[www.evaluate-energy-savings.eu](http://www.evaluate-energy-savings.eu)*

# 1.2. EMEEES - Structure



## 1.3 EMEEES: the Consortium

**21 partners  
experts**

**15 Member  
States**

Participant name	Short name	MS
Wuppertal Institute for Climate, Environment and Energy	Wuppertal Institute	DE
Agence de l'Environnement et de la Maitrise de l'Energie	ADEME	FR
SenterNovem	SenterNOVEM	NL
Energy research Centre of the Netherlands	ECN	NL
Enerdata sas	ENERDATA	FR
Fraunhofer-Institut für System- und Innovationsforschung	Fraunhofer	DE
SRC International A/S	SRCI	DK
Politecnico di Milano, Dipartimento di Energetica	eERG	IT
AGH University of Science and Technology	AGH-UST	PL
Austrian Energy Agency	A.E.A.	AT
Ekodoma	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	Enova SF	NO
Motiva Oy	Motiva	FI
Department for Environment, Food and Rural Affairs	DEFRA	GB
ISR – University of Coimbra	ISR-UC	PT
KE Marked A/S	KEM	DK
Centre for Renewable Energy Sources	CRES	GR

## 1.4 EMEEES: Timeline

- Dec. 2007/Mar. 2008 **National Workshops in 13 MS, Review of methods, Advice to Commission on NEEAPs assessment**
- Spring 2008 **Subcommittees on top down and bottom up planned by Commission**
- May 2008 **Finalising, publishing and presenting results on methods**
- Autumn 2008 **Final EMEEES Conference on methods**
- Winter 2007 to early 2009 **Six Pilot cases testing the methods**
- April 2009 **End of project**

## 2. Objective of the Workshop



# Objective of the EMEEES National Workshops

- **Present and discuss preliminary results** in the project with the experts from governments, agencies and also other stakeholders like energy companies, ESCO's, science, and other non governmental organisations
- **get feedback** about the principles and bases for the methods and if they are relevant and acceptable to all MS before finalising the methods
- invite experts also from neighbouring countries not represented by a participant in the project

### **3. Terminology and open issues for working on evaluation and monitoring methods**



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

- **The Target:** Indicative for MS to achieve a **9% annual energy saving by 2016** from energy services and other energy efficiency improvement (EEI) measures
- There is no (not yet) ***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 9% target

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

- **ESD Art 3. h) "energy efficiency improvement measures"**: *"all actions that normally lead to verifiable and measurable or estimable energy efficiency improvement"*

- Distinction between:

**(EEI) facilitating  
measure(s)**

**(abbr.: facilitating measures)**

stimulate end-use EEI actions  
and are delivered to final  
consumers or other market actors

(⇒ *a **cause** for an end-use action*)



**End-use (EEI)  
action(s)**

**(abbr.: end-use action)**

taken by final consumers  
or other market actors

(⇒ *can be an **impact**  
of an EEI measure*)

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

### (EEI) facilitating measures can be:

- Energy services, EEI policy instruments, EEI programmes, and other EEI measures
- **Examples:**
  - energy performance contracting (energy service)
  - Energy taxation (EE mechanism)
  - incentive programme (EEI 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 of a building
  - adoption of energy management system
  - purchase of efficient car instead of „gas-guzzler“
  - practicing eco-driving

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

				(EEI) Facilitating measures		
				Example 1: energy performance contracting	Example 2: white certificate schemes	Example 3: energy taxation
End-use (EEI) action	Sector	Energy end-use	Efficient Solution			
	Residential	example 1: heating	efficient boiler s		B 1	C
			heat pump s		B 2	
			etc.			
	Residential	example 2: lighting	CFL		B i	
			etc.			
	Tertiary	example 1: heating	efficient boilers, pumps, etc.	A1	B j	
			etc.			
		example 2: lighting	CFL		etc.	
efficient ballasts			A2			
etc.						

## 3.5. ESD energy savings and targets (1)

### Some key extracts from the ESD

- **ESD Art 4 – General target**

- “Member States shall adopt and aim to achieve an overall national indicative energy savings target of 9% for the ninth year of application of this Directive, to be reached by way of energy services and other energy efficiency improvement measures”

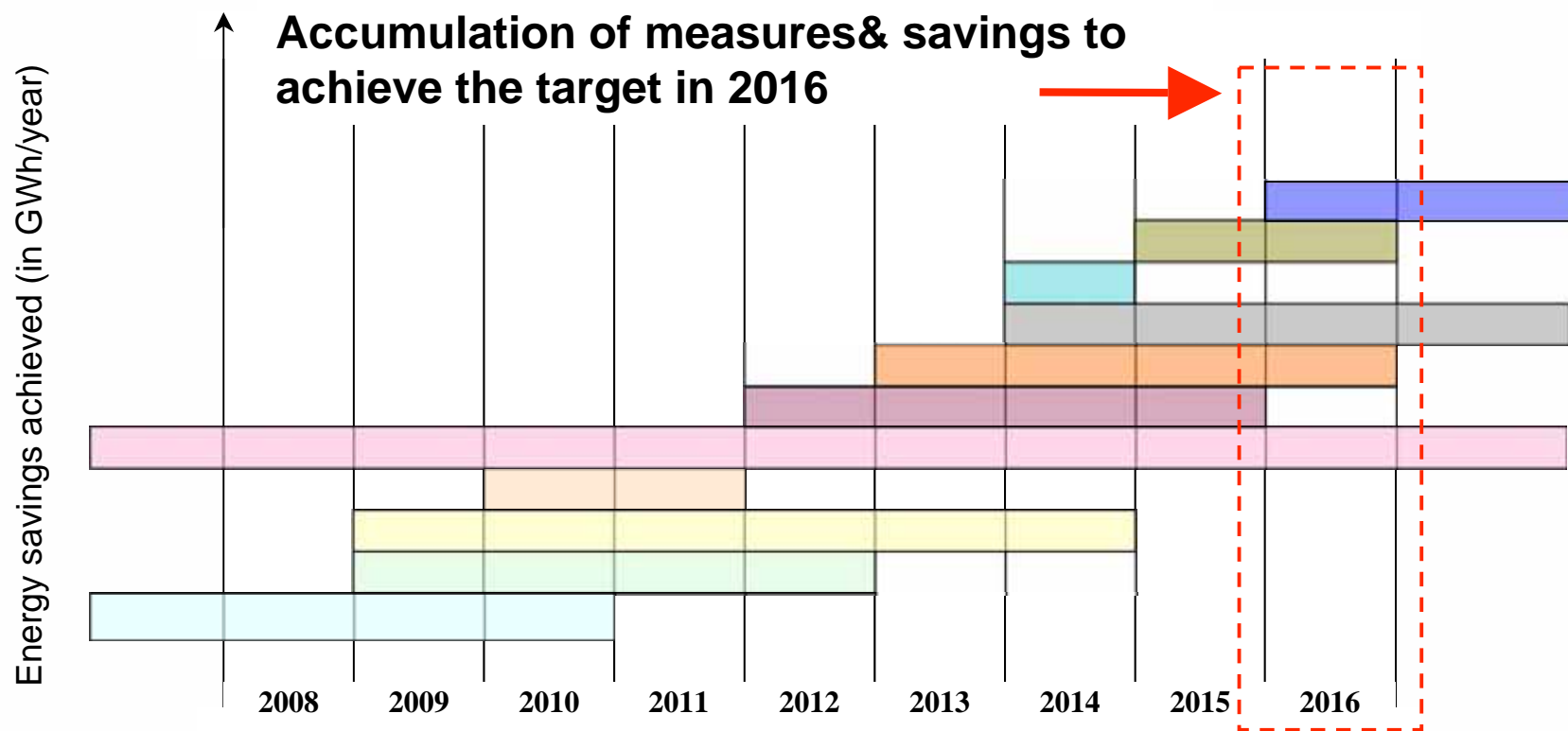
- **ESD Annex IV – General**

- In measuring the realised energy savings as set out in Article 4 with a view to capturing the overall improvement in energy efficiency and to ascertaining the impact of individual measures, a **harmonised calculation model which uses a combination of top-down and bottom-up calculation methods shall be used ....**

## 3.6. ESD energy savings and targets (2)

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

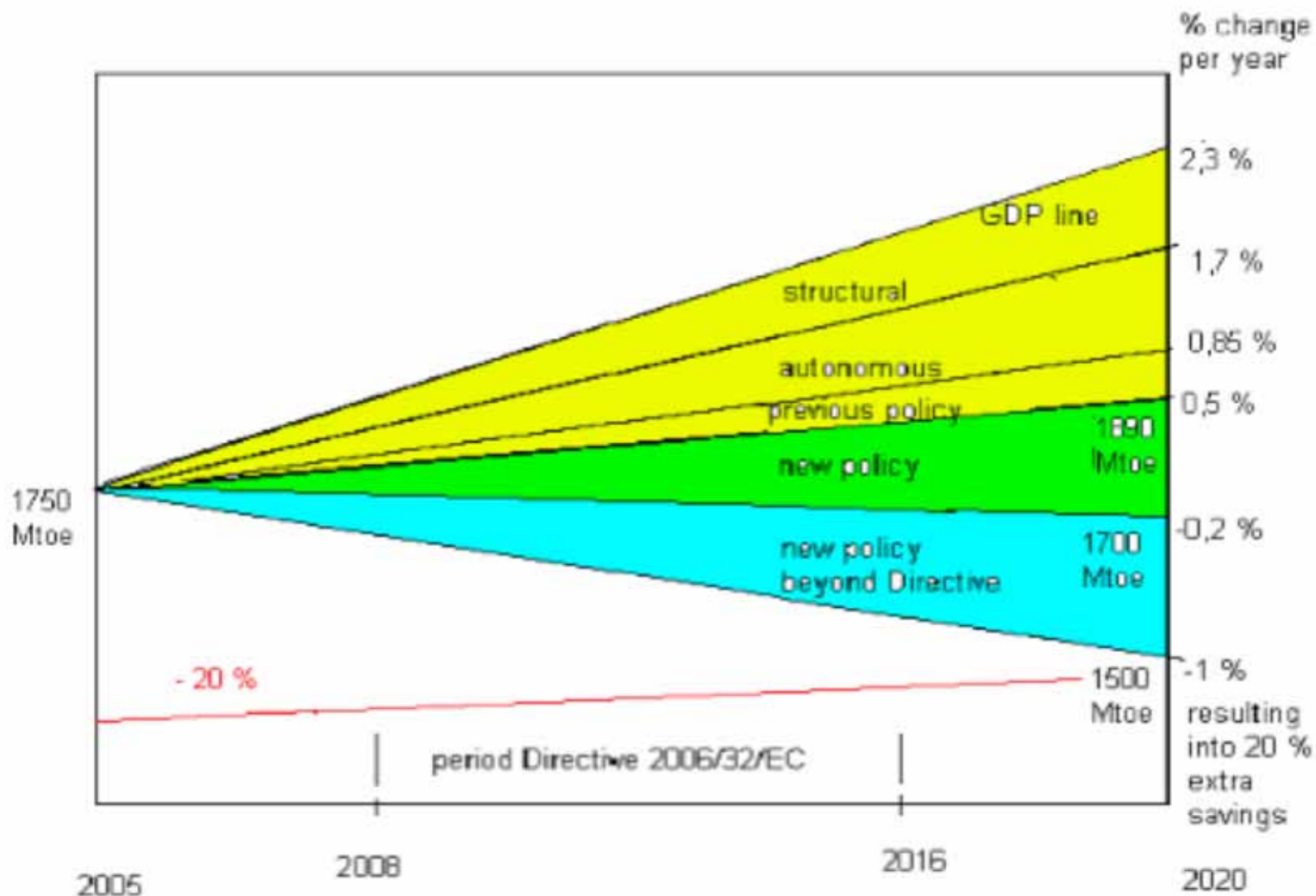
sum of annual energy savings (kWh/year) from EEI measures in **2016**  
(and 2010 as intermediate target)



## 3.7. 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)

### 3.8. Additional energy savings? The EU EE Action Plan



## 3.9. “Early Action“ (1)

- 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.”*
  - *“... that have a lasting effect”*: Interpretation unclear!
    - ‘Early measures’?  
(e.g., building code from 2005 and still in force in 2008 - 2016)
- Or
- Early energy savings’?  
(e.g., from energy-efficient building constructed in 2005)

## 3.10. “Early Action“ (2)

**Two interpretations possible:** (European Commission / ESD Committee to clarify):



early (EEI) facilitating measures, and only those energy savings that result from end-use actions that are implemented during 2008-2016, as a result of these facilitating measures that still have a lasting effect during 2008-2016, are eligible

Or



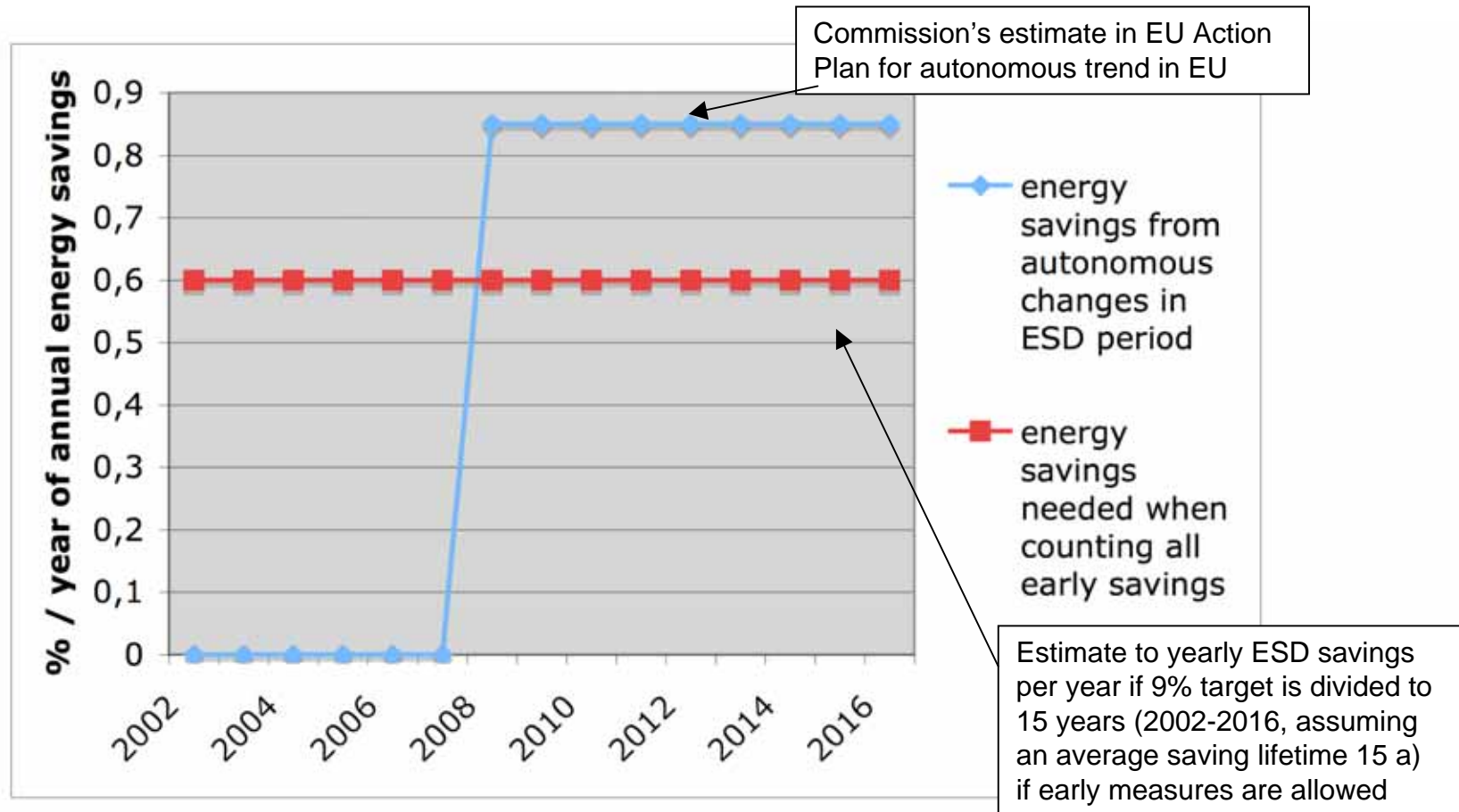
early energy savings from end-use actions initiated between 1995 and 2008, with the end-use actions having a lasting effect in 2010 (for the intermediate target) or 2016 (for the overall target).

The Commission to define the conditions under which early energy savings can be claimed for According to Annex I:

- Measures of a technological nature should either have been updated to take account of technological progress, or be assessed in relation to the benchmark for such measures.
- “The Commission shall provide guidelines on how the effect of all such energy efficiency improving measures should be measured or estimated [...]”

### 3.11. Potential consequences of admitting autonomous and early energy savings

→ in the extreme case, no new energy savings needed



## 3.12. Conclusions on autonomous and early energy savings (EMEEES proposal)

- **Autonomous progress:**
  - **Enable** the evaluation of energy savings **additional** to autonomous changes, if the ESD Committee and/or a MS decides to aim at this  
=> develop methods to estimating the **free-rider effect** and provide information for choosing the appropriate **baseline**
- **Early savings:**
  - **Enable** the evaluation of **early energy savings**, if the ESD Committee and/or a MS decides to allow these to be counted towards achieving the ESD target
- Analyse consequences of a **potential compromise**: allow on the part of early energy savings that exceeds the 2008 baseline level