

Energy efficiency policies under the EED and the rebound effect

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Energy Efficiency Directive A.7

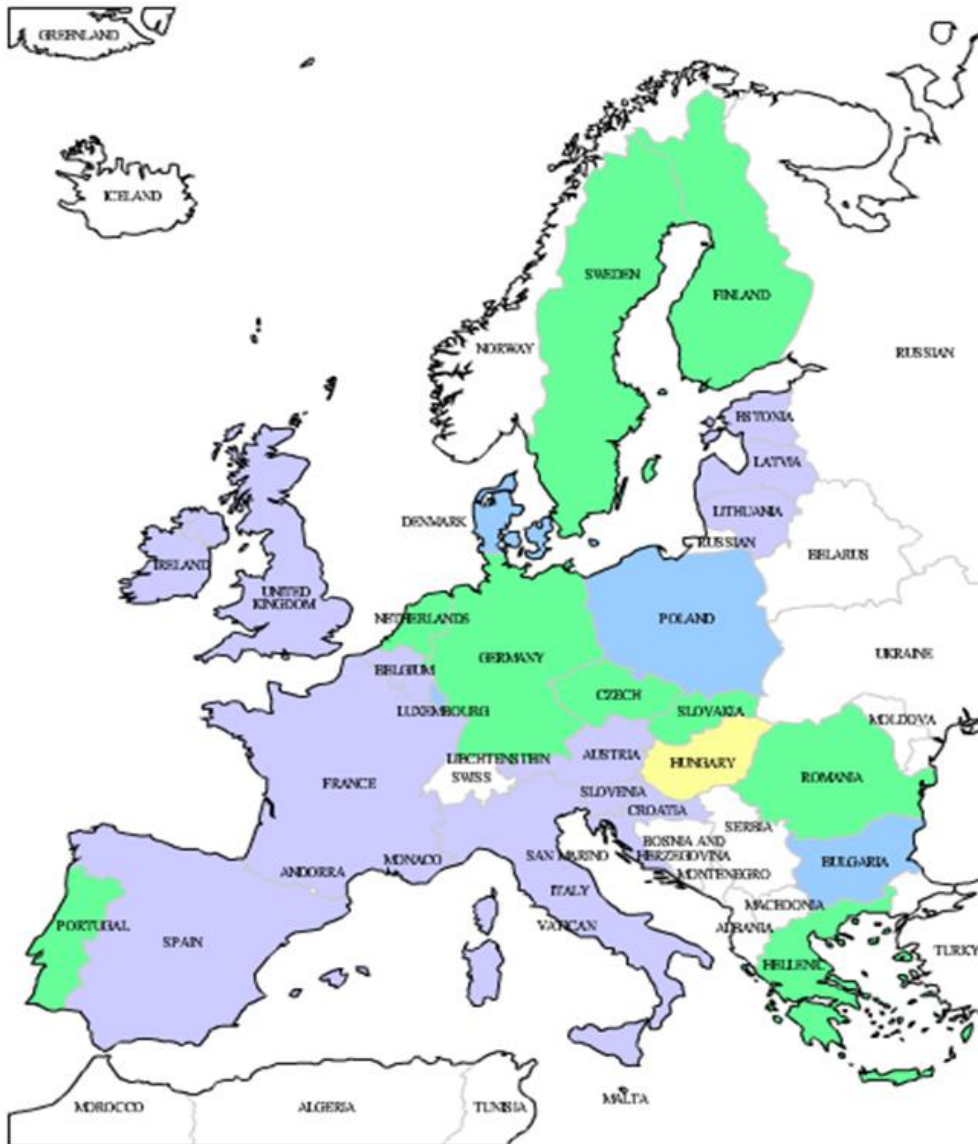
- ❖ **Directive 2012/27/EU**, commonly referred to as the **Energy Efficiency Directive - EED**, requires each Member States (MS) to apply **energy efficiency measures** and sets several **ambitious objectives for 2020**.
- ❖ As prescribed in **Articles 7 and 20** of the Directive, each MS must adopt policy measures in order to set up an **Energy Efficiency Obligation scheme (EEOs)**, or alternative policy measures that would deliver a certain amount of end-use energy savings over the **2014 - 2020 obligation period**.

According to Article 7:







“That target shall be at least equivalent to achieving new savings each year from 1 January 2014 to 31 December 2020 of 1,5 % of the annual energy sales to final customers of all energy distributors or all retail energy sales companies by volume, averaged over the most recent three-year period prior to 1 January 2013.”

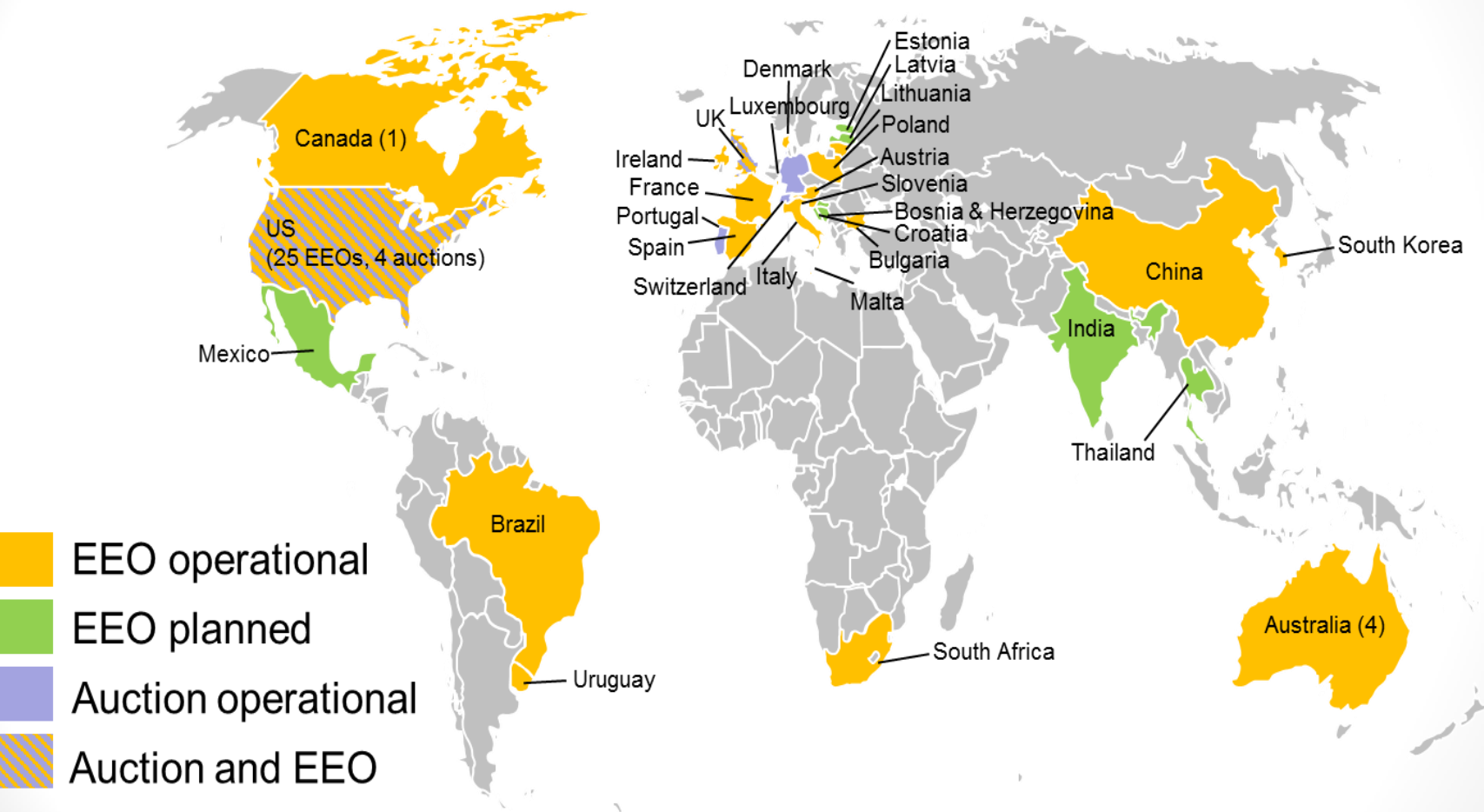
Overview of policies



- Compliance with Article 7 requirements is proposed through either:
 - **EEO scheme** (4 countries: Bulgaria, Denmark, Luxembourg, Poland)
 - **Combination of EEO schemes & Alternative measures** (13 countries: Austria, Belgium, Croatia, Estonia, France, Ireland, Italy, Latvia, Lithuania, Malta, Slovenia, Spain, UK)
 - **Alternative measures** (10 countries: Czech Rep., Cyprus, Finland, Germany, Greece, Netherlands, Portugal, Romania, Slovakia, Sweden).

-  Alternative measures
-  Combination (EEO schemes & Alternatives Measures)
-  EEO schemes
-  Not specified yet

Global snapshot



Source: RAP 2016, Rosenow 2016

Reports till 2015.. Situation better now

	Double counting	Calculation methodology	Savings in intermediate periods	Additionality	Materiality	Categories of actions	Lifetimes
Austria							
Belgium							
Bulgaria			N/A				
Croatia							
Cyprus							
Czech Republic							
Denmark			N/A				
Estonia							
Finland							
France							
Germany							
Greece							
Hungary							
Ireland							
Italy							
Latvia							
Lithuania							
Luxembourg			N/A				
Malta							
Netherlands							
Poland			N/A				
Portugal							
Romania							
Slovakia							
Slovenia							
Spain							
Sweden		N/A				N/A	
United Kingdom							



Rebound effect neglected in EU policies

- In the MS notifications to the EC, there is no mentioning of rebound effect, both in the baseline – target setting, as well as in the energy savings calculation methods.
- In EED, Annex V.1 covers the rebound effect in the way that *energy savings values are determined, that is, when calculating the actual reductions in energy consumption for the individual measures, any direct rebound effects need to be estimated and the reduced value used in the deemed or scaled energy savings used by obligated parties (RAP Toolkit), BUT*
- Article 7 of the EU EED does not discuss the indirect or macroeconomic rebound effect and therefore it does not need to be taken into account for energy savings counting toward the EED target.

Energy savings calculations

- Deemed savings
- Scaled savings/ engineering approaches
- Metered savings

No correction factors for rebound effects (JRC 2016)

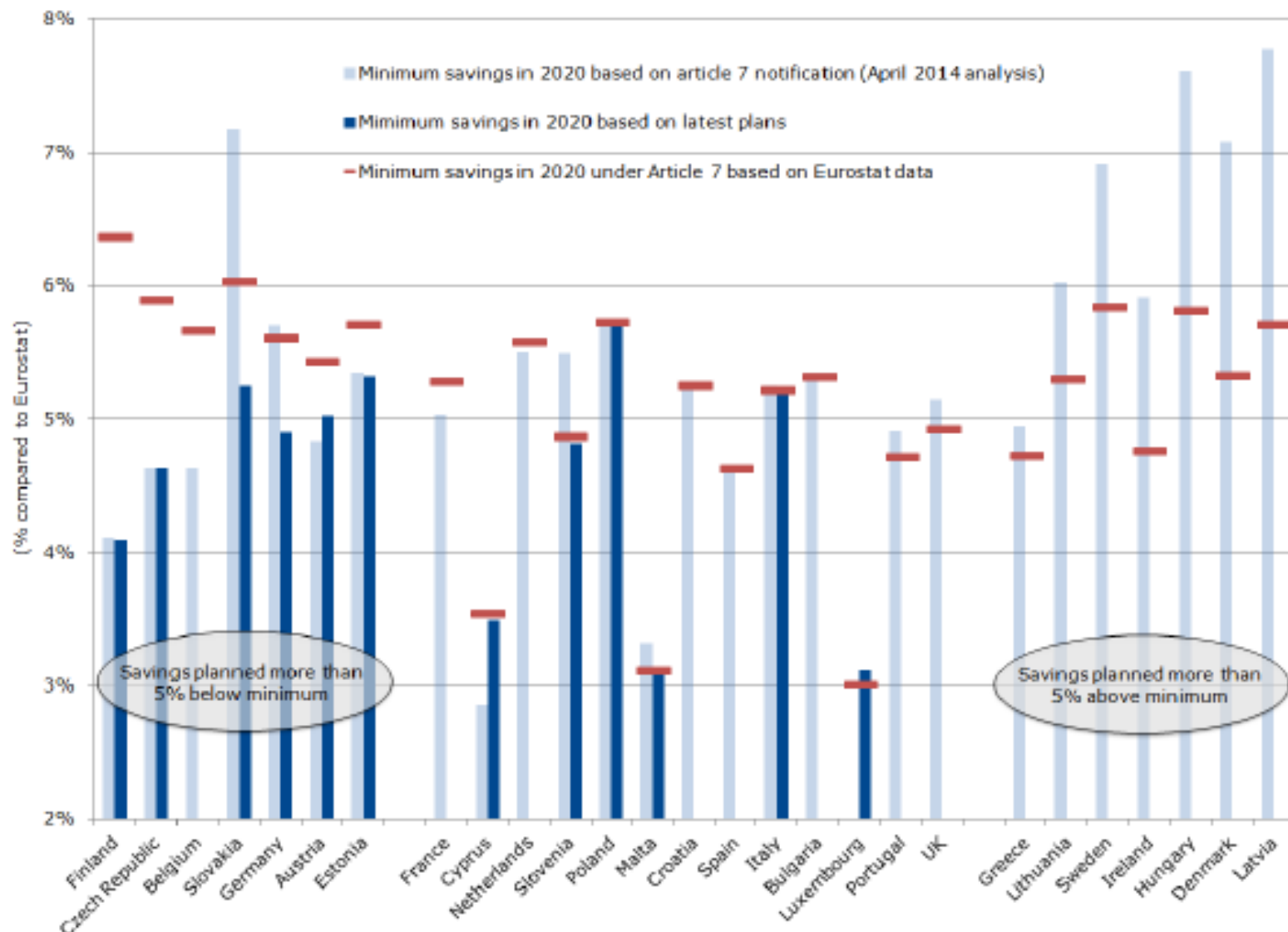
Scaled savings present difficulty in accuracy (compared to deemed savings) as the level of standardization of individual actions addressed is lower and due to the higher difficulties linked to the collection of data needed to calculate the values of parameters included in engineering estimates.

In *Deemed Savings* a rough estimate of rebound effect (adding a figure to the fixed value) could take place

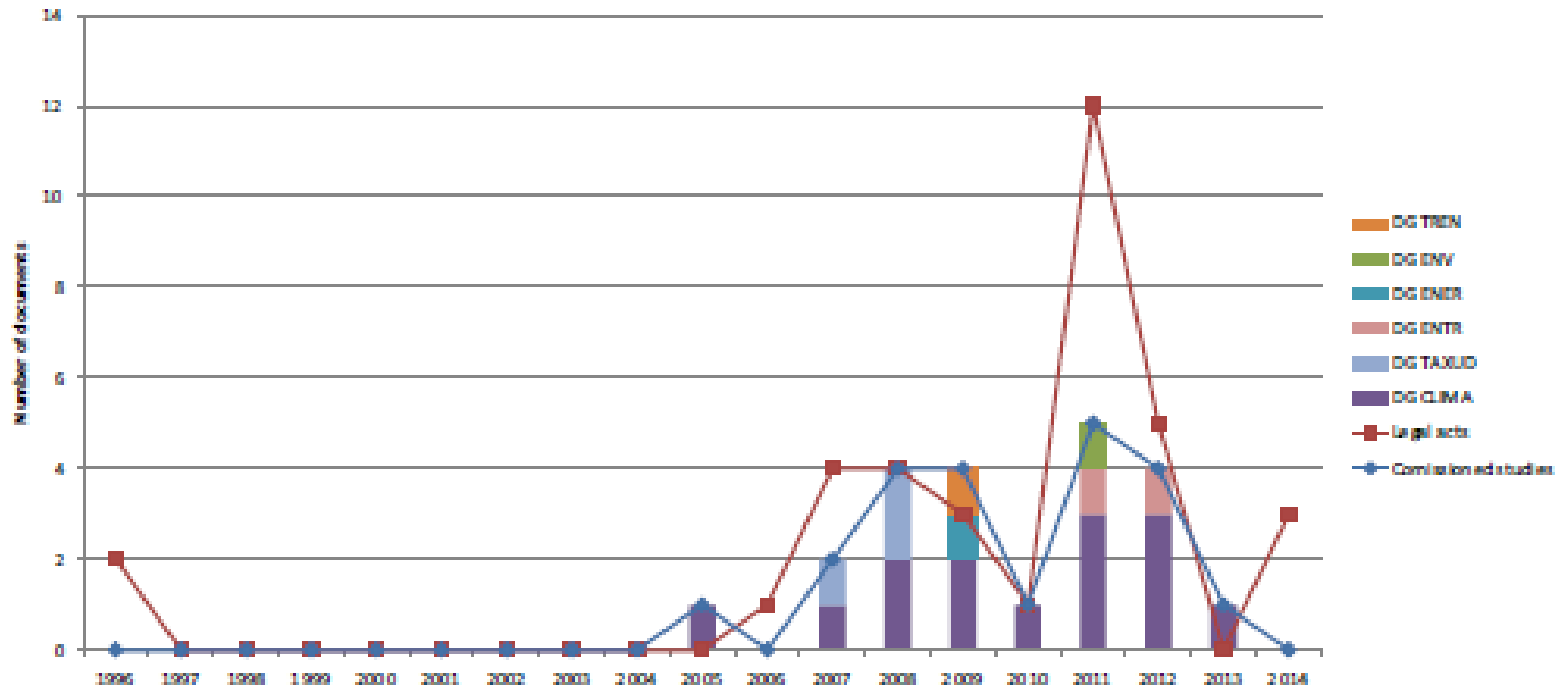
Some good examples

- Home energy efficiency programs: The UK calculates savings by using the Domestic Energy Model for Scotland (DEMScot) which is based on data from the Scottish House Condition Survey, building physics parameters and Scottish weather variables, and assumes a rebound effect of 15%.
- The UK has an established process and detailed guidance in place to avoid double-counting of expected savings from energy and carbon emissions reductions policies, which applies to projects and policies both within and without the scope of Article 7 (DECC 2015). This gives guidance on issues including baselines, counterfactuals and the rebound effect, and has an accompanying spreadsheet tool which can be used by policy analysts.
- Ireland Better Energy Warmer Homes Scheme where rebound effect at the lower income householders is embedded in the calculations (70%)

Inconsistencies...



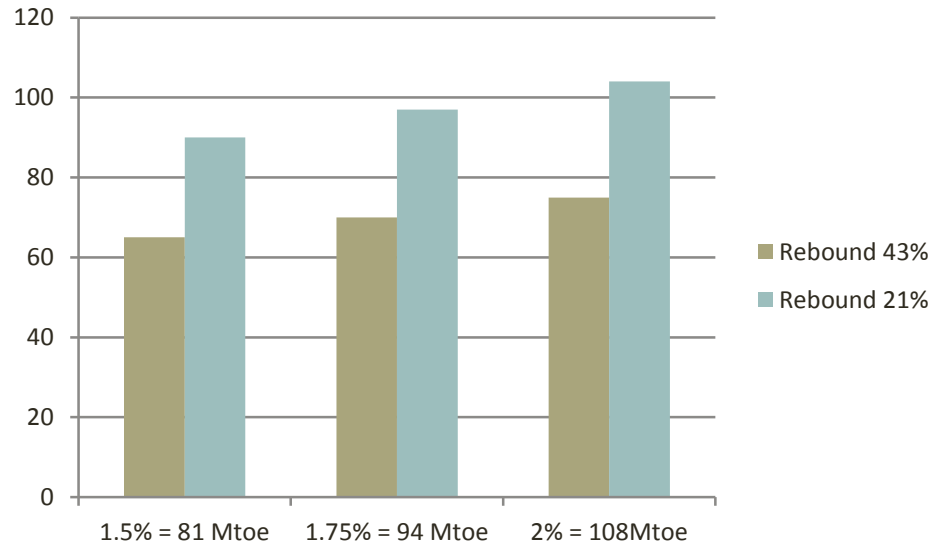
Although EC legal texts mention it



Source: Vivanco et al. 2016

Increase in legal documents and communication texts from the EC to MS referring to rebound effect!!

EC scenarios for 2030 (updating EED)



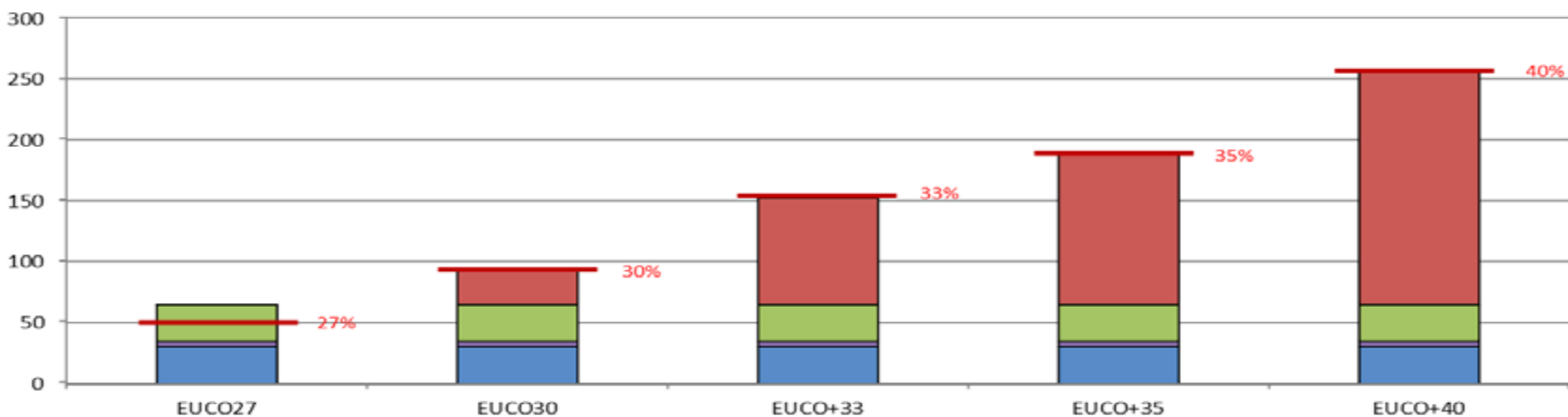
43% from Barker et al 2009, as an average of 31% by 2020 and 52% by 2030

21% from Cambridge Econometrics (2015)

- Option 1: Baseline scenario keep policies as such for 2020
- Option 2: Extend Article 7 to 2030 with 1.5% savings
- Option 3: Extend Article 7 to 2030 and simplify and update including energy poverty, also including renovations etc, on building RE
- Option 4: Extend Article 7 to 2030 and increase rate of savings (1.5 to 1.5 to 2%)

EC scenarios (updating EED)

Energy efficiency policy mix to achieve the required energy savings in 2030
(Conservative rebound effect)

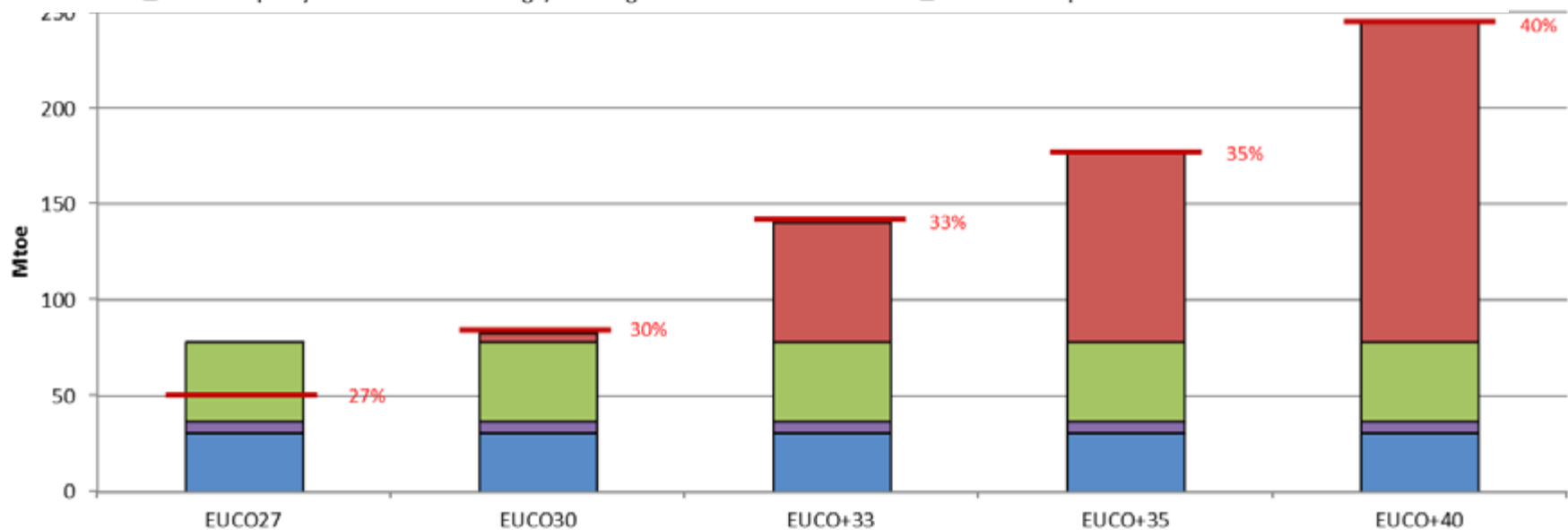


■ Article 7 beyond 2020 (1.5%)

■ Preferred policy option Art. 9-11 EED

■ Preferred policy mix EPBD and Ecodesign/Labelling

■ Additional EE policies to achieve the 2030



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The literature figures..

- Reviews demonstrate the 0-30% rebound effect for major energy services (Sorrell et al 2009), but more prominent in **lower income groups** (Hens et al 2009).
- Given the rising energy poverty (50% over the last 10 years), this is a real threat!
- The Recast EED (Clean Energy for all Europeans) targets at energy poverty but no real extra guidance on rebound effect calculation and endorsement in targets

Member States should adapt baselines!

- Rebound effect should be undertaken in the baseline calculation and the target setting, even by using values from acknowledged studies (Galvin 2014)
- Metering as a priority (also in the EC suggestions)
- Make use of the 2030 horizon and adapt the values with a consistent approach
- Focus on the direct rebound effect, the indirect lacks data (roughly 7% Druckman et al. 2011 but no real empirical evidence)

Such projects are really worthy and the main aim is to bring the values you found to the core of policy making!!

Policies for rebound effect from theory

- Provision of good quality information increase effectiveness of policies and long term impact (reducing rebound effect) – Energy Efficiency Watch
- Demand reduction through covering needs and income increase in space heating/cooling reduces rebound effect (Maxwell et al. 2011 EC)
- Early recognition in policy design, broader definitions and toolkits (such as the DECC one ‘Toolkit for valuing changes in GHG emissions’, as well as benchmarking tools can mitigate rebound effect. Furthermore, (Vivanco et al. 2016)

Policies at EU level for 30%

.. To a certain extent aligned with theory..

- Extension of Article 7 post 2020;
- Change of EPBD as indicated in the Impact Assessment to deliver additional energy savings in the buildings sector by 2030.
- Ambitious implementation of the Ecodesign Working Plan and the review of the Labelling Directive to deliver additional energy savings by 2030.
- Timely adoption of the proposed changes to the ETS and Effort Sharing Regulation to ensure a reduction of GHG emissions of at least 40% in 2030.
- Enforcement of renewables policies necessary to achieve a renewable target of at least 27% in 2030.
- Further strengthening of CO2 standards for cars and vans, measures on management of transport demand.
- Continued improvement of financial instruments and other financing measures at European and national level lowering the cost of capital for investment in thermal renovation of buildings are needed to increase the rate of renovation and depth of renovation as well as the uptake of efficient products.

Thank you for your attendance

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Relevant work

EC IEE ENSPOL project

EC H2020 EPATEE project