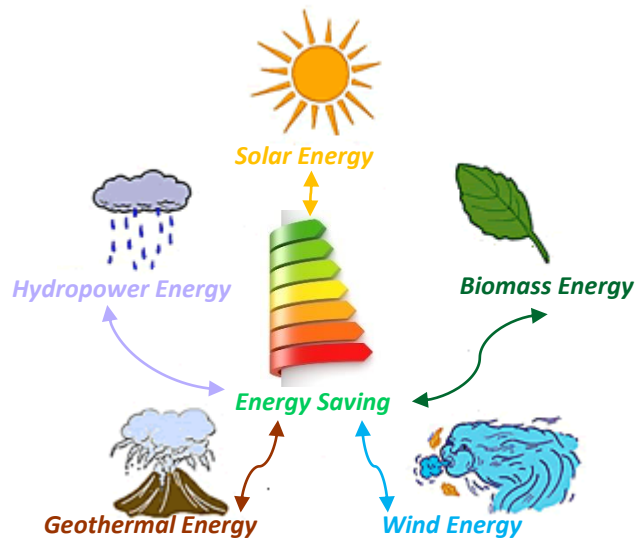




# Clean Energy for All Europeans package

## *Do the Commission's Impact Assessments Assign the Right Role to Energy Efficiency?*



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*Making the Negawatt dream a global reality*



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# Understanding EE impact assessments requires a lot of reading !



## Staff working documents

- EED IA (3 reports with a total of 336 pages)
- EPBD IA (1 report of 121 pages)
- SFSB (1 document of 10 pages)

## Complementary documents

- PRIMES report (Technical report on MSs results of EUCO scenarios, 381 pages)
- GEM-E3 report (Technical report on macroeconomic MSs results of the EUCO policy scenarios, 10 pages)
- E3ME report (Summary of E3ME modelling, 8 pages)

# Understanding EE impact assessments requires analysing 7 EED scenarios and 4 EPBD scenarios



EED	EPBD
<ul style="list-style-type: none"><li>• <b>2016 Reference scenario</b> which does not meet the EU2030 targets</li><li>• <b>2 core scenarios (EUCO27 and EUCO30)</b> which meet the EU2030 targets and have been used also for RED IA</li><li>• EUCO27 is the baseline scenario used also for other IAs (MDI, ESD)</li><li>• <b>3 additional scenarios (EUCO+33, EUCO+35, EUCO+40)</b> which go beyond the EU2030 targets</li><li>• <b>1 sensitivity scenario (EUCO3030)</b> with 30% target for EE and RE</li></ul>	<p>Reference scenario: No changes in current practice</p> <p>Option I: Guidance to MS on cost-optimality calculation methodologies to address the gap between calculated and actual consumption</p> <p>Option II (preferred option by the EC) Setting milestones for the decarbonisation of the building stock by 2050 Clarify provisions in cost-optimality calculation methodology Technical building systems (documentation of initial performance and maintain their operational performance over time) Reinforced quality of EPCs Smartness indicator Electro-mobility</p> <p>Option III: Setting milestones for the decarbonisation of the building stock by 2050 Obligation of building owners to renovate their building to a given energy performance standard Clarify provisions in cost-optimality calculation methodology and including additional benefits and going beyond cost-optimality level Technical building systems (documentation of initial performance and maintain their operational performance over time) Reinforced quality of EPCs and harmonized template for EPCs based on a common list of indicators Smartness indicator Electro-mobility</p>



# A combination of 7 models was used to provide a comprehensive picture of various impacts of EC scenarios (7 for EED and 4 for EPBD)

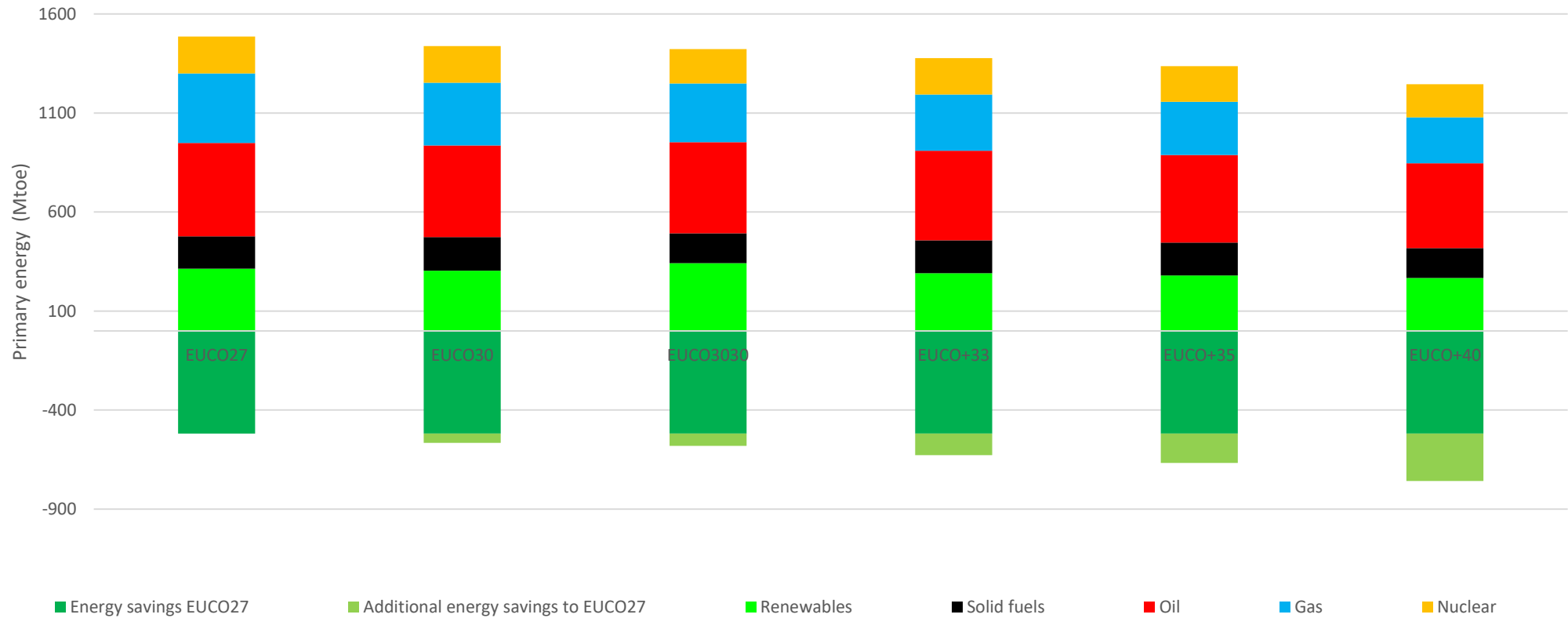


Model	Output	Expert's access
- PRIMES (Price-Induced Market Equilibrium System)	Energy Balances	<b>N</b>
	GHG emissions , ETS prices	
	Energy system costs	
	Investment expenditures	
- E3ME (Energy-Environment-Economy Model for Europe) - GEM-E3 (General Equilibrium Model for Energy, Economy and Environment interactions)	GDP	<b>N</b>
	Employment	
	Balance of trade	
- GAINS (Greenhouse gas and Air Pollution Information and Simulation).	Pollution impacts on human health	<b>Y</b>
- POLES (Prospective Outlook on Long-term Energy Systems)	International fossil fuel prices	<b>N</b>
- IEEM (Industrial Energy Efficiency Model)	Bottom-up assessment of savings potential in industry	<b>N</b>
- BEAM <sup>2</sup> (Built Environment Analysis Model)	Bottom-up assessment of saving potential in buildings	<b>N</b>

# Energy savings are projected to be the “First Fuel” of Europe in 2030 in each of the EUCO scenarios but



## EU 2030 primary energy mix in the Commission’s scenarios



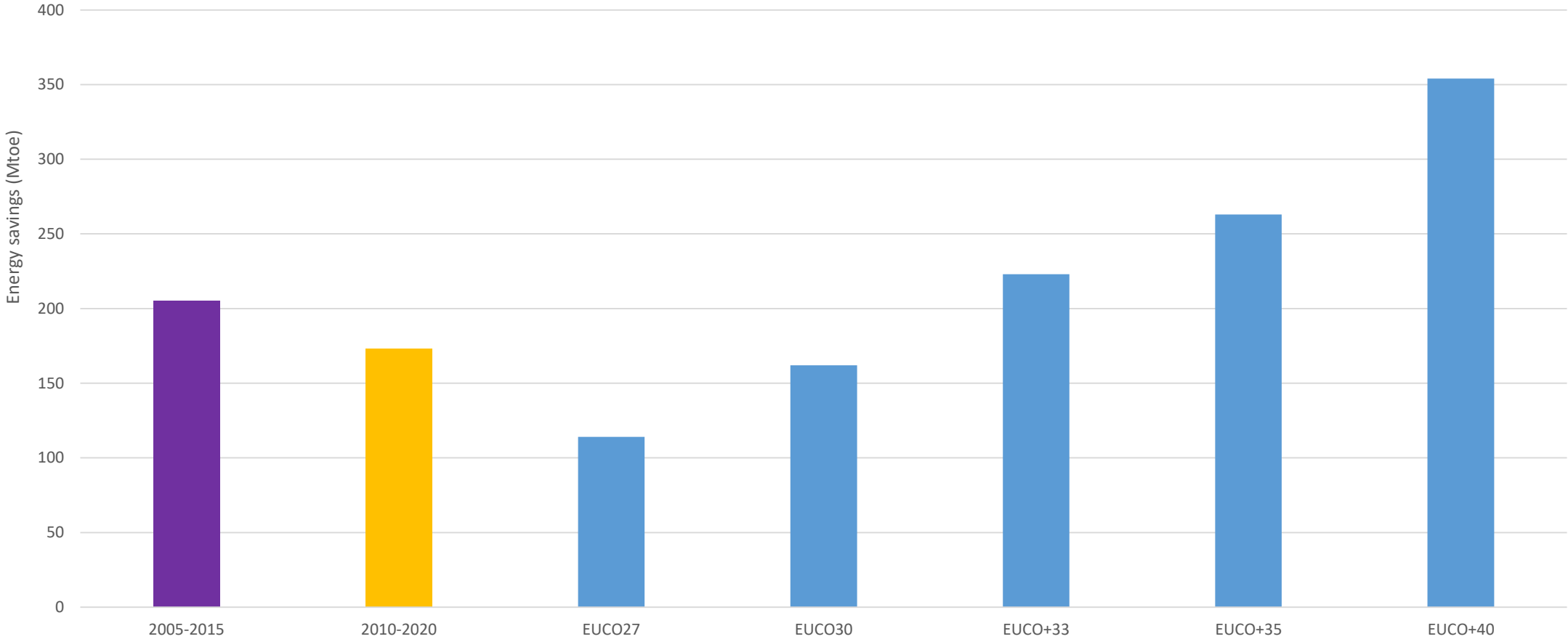
***In the EUCO+40 scenario, the sum of RE and energy savings is projected to overtake the sum of fossil fuels and nuclear***



# Energy savings ambition for the next decade in EUCO27 and EUCO30 is lower than the one for the current decade.



Energy savings in the period 2021-2030 (EUCO scenarios) and in the periods 2010-2020 and 2005-2015

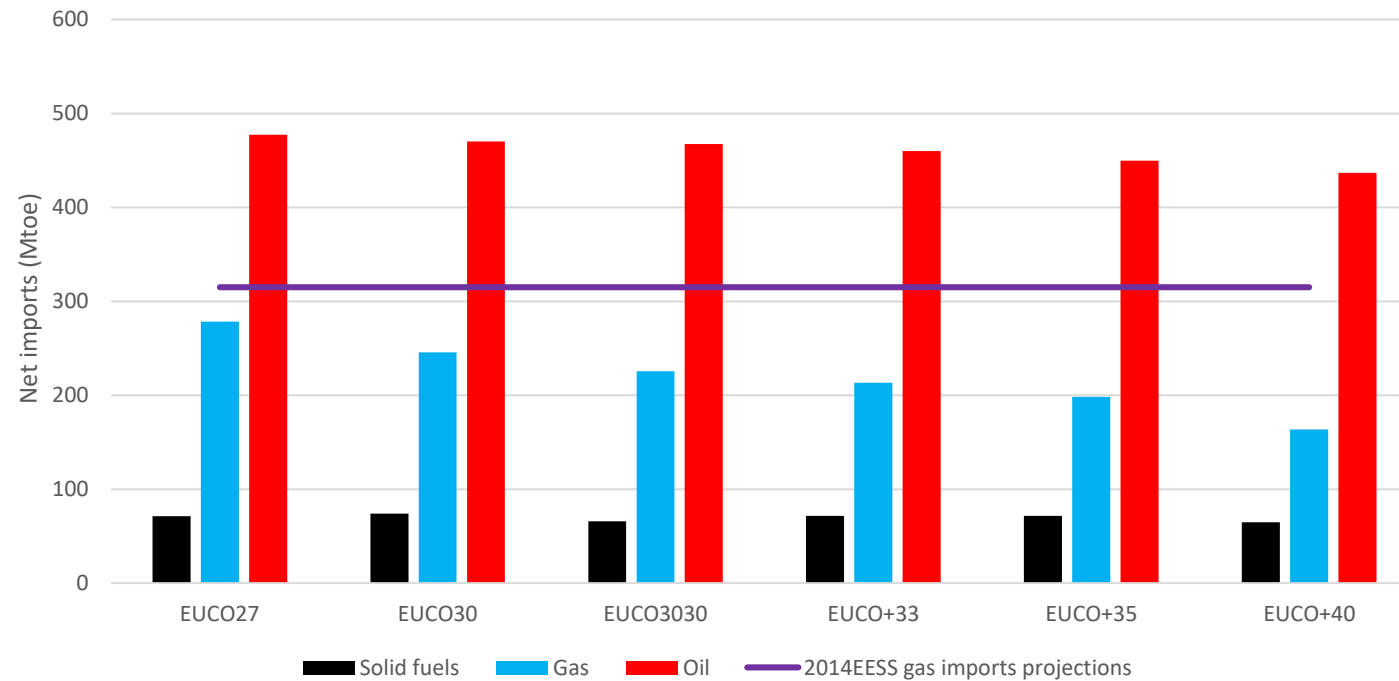


***Energy savings in the EUCO+40 scenario are more than double of those in the EUCO27***

# EC energy projections are misaligned



## 2030 Net imports projections of solid fuels, oil and gas in EUCO scenarios and 2030 gas projections in the 2014 EESS



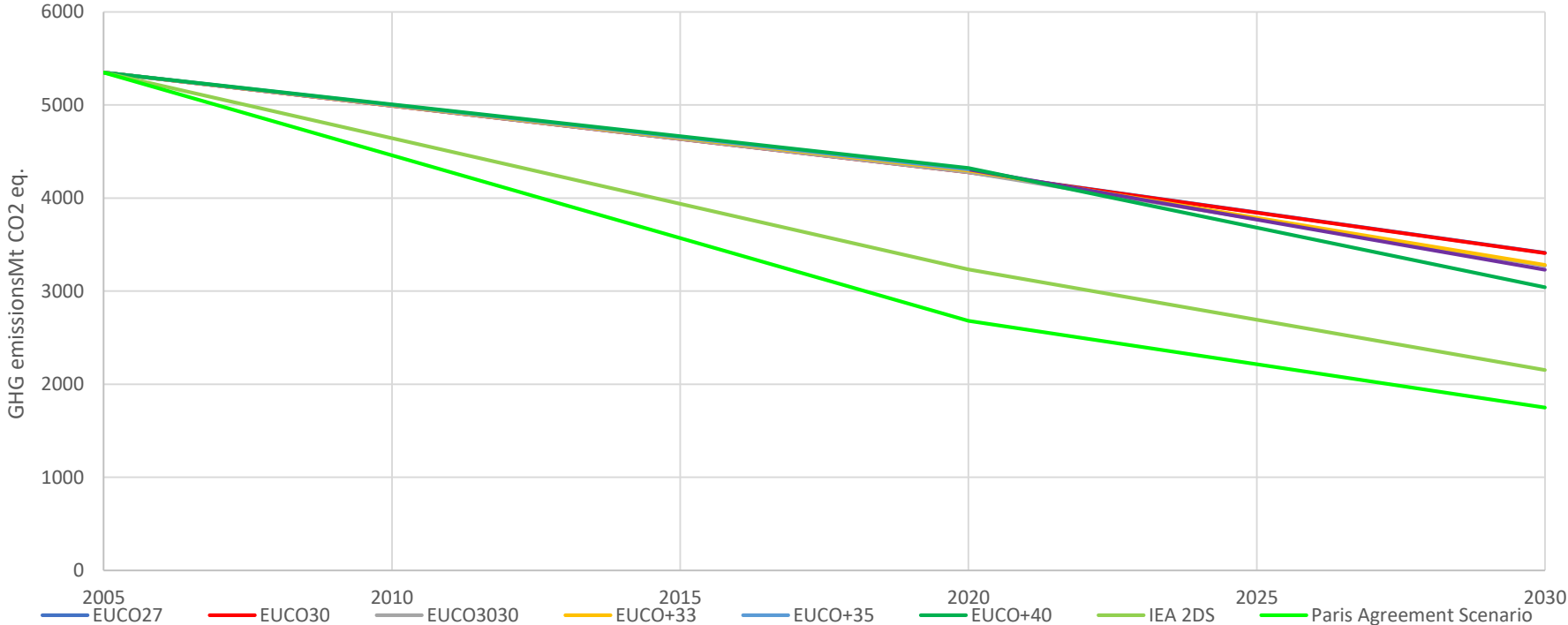
***In the EUCO+40 scenario projects gas imports to be almost half of gas import projections in the 2014 European Energy Security Strategy***



# EUCO scenarios are not aligned with the EU obligations under the Paris Climate Agreement



## EU 2030 GHG emissions in EUCO scenarios, IEA 2DS and under the Paris Agreement



*The EUCO+40 scenario gives a hope to put Europe in the Paris path*





# GHG emissions reduction will be driven by the increased energy savings ambition and the increased share of renewables



	EUCO27	EUCO30	EUCO+33	EUCO+35	EUCO+40
ETS carbon price (€/t of CO <sub>2</sub> eq.)	42	27	27	20	14
Total GHG emissions reduction compared to 1990	-40,7%	-40,8%	-43,0%	-43,9%	-47,2%
GHG emissions reduction in ETS sectors compared to 2005	-43.1%	-43.1%	-44.3%	-44.2%	-48.3%
GHG emissions reduction in ESD sectors compared to 2005	-30.2%	-30.3%	-33.7%	-35.5%	-38.7%
Share of RE in gross final energy consumption	27%	27%	28%	28%	28%
Energy savings target	27%	30%	33%	35%	40%

***Low ETS prices do not adversely impact GHG emissions reduction***



# Ambitious energy savings scenarios are not expected to adversely impact EU competitiveness



	EUCO27	EUCO30	EUCO+33	EUCO+35	EUCO+40
Ratio of energy related costs (inclusive of auction payments ETS) to value added for energy intensive industries	40.8%	40.1%	40.0%	39.8%	40.6%
ETS carbon price (€/t of CO2 eq.)	42	27	27	20	14
Auction Payments (annual average €bn '13)	6.8	4.5	4.2	3.1	2.1
Average price of electricity (€ '13/MWh)	164	161	162	161	163
Energy purchases costs (annual average €bn '13)	175.7	173.4	169.5	165.6	158.7
Capital costs (annual average €bn '13)	29.8	30.9	34.7	38.4	50.6
Total energy related costs (annual average €bn '13)	212.4	208.8	208.4	207.2	211.4
Trade balance (€bn '13) E3ME model	803.6	801.4	793.4	768.2	744.0
Trade balance (€bn '13) GEM-E3 model	409.5	400.6	400.0	397.4	396.5

# Citizen-friendly energy transition requires going for ambitious EE scenario



## Changes in health damage in EUCO scenarios as compared to EUCO27 in 2030

Compared to EUCO27	EUCO30	EUCO+33	EUCO+35	EUCO+40
Million life years gained due to less PM2.5	2,5	8,7	11	16,9
Premature deaths ozone avoided (cases per year)	114	337	438	662

## Percentage change in real disposable income by socio-economic group

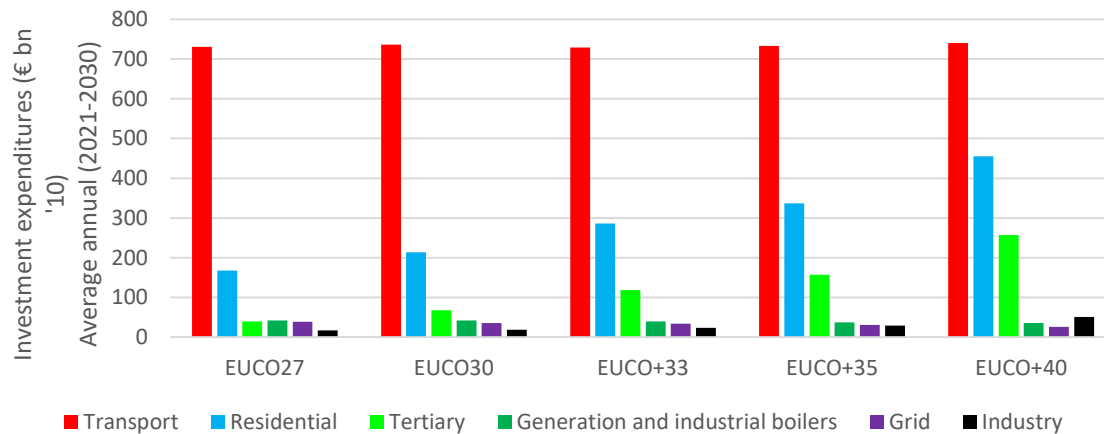
% change in average real income compared to EUCO27 (E3ME)		All HH	Lowest quintile	2nd quintile	3rd quintile	4th quintile	5th quintile
		No crowding out	EUCO30	0,10%	0,16%	0,18%	0,15%
	EUCO33	0,71%	1,05%	0,99%	0,85%	0,68%	0,44%
Partial crowding out	EUCO30	0,10%	0,15%	0,17%	0,15%	0,12%	0,03%
	EUCO33	0,62%	0,93%	0,87%	0,75%	0,61%	0,37%



# The cost-effectiveness argument is irrelevant

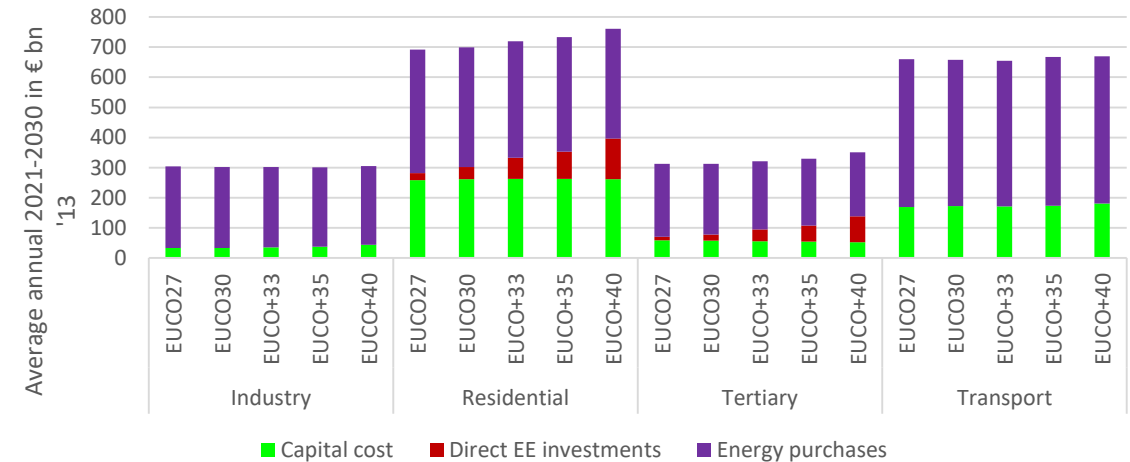


## Investment expenditures in EUCO scenarios



***Transport sector has the highest investment expenditures***

## Energy system costs in EUCO scenarios

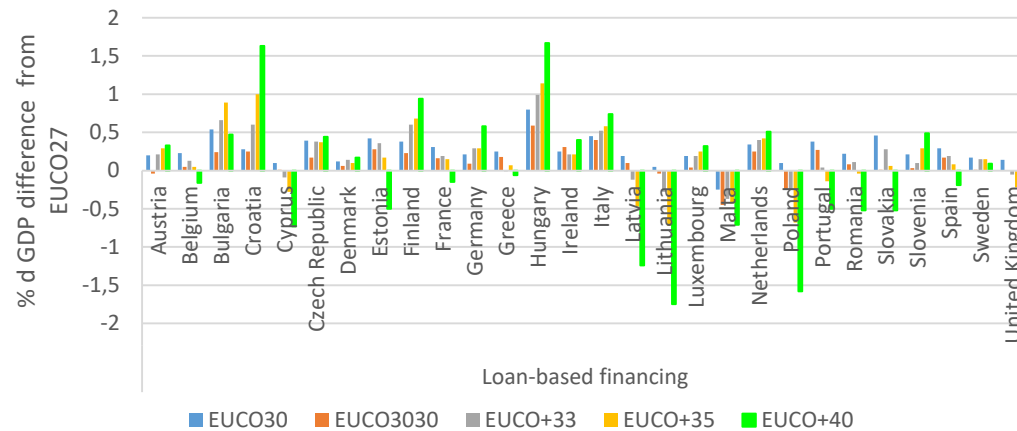


***EE direct investment costs are unknown except for insulation***

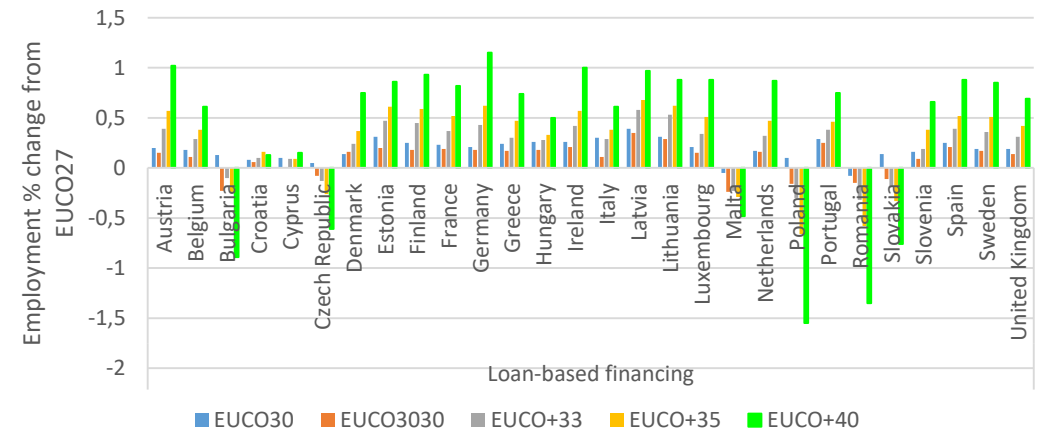
# Additional policy action might be needed in some Member States



## GDP impacts in the EUCO scenarios at Member State level in 2030 using GEM-E3



## Employment impacts in the EUCO scenarios at Member State level in 2030 using GEM-E3

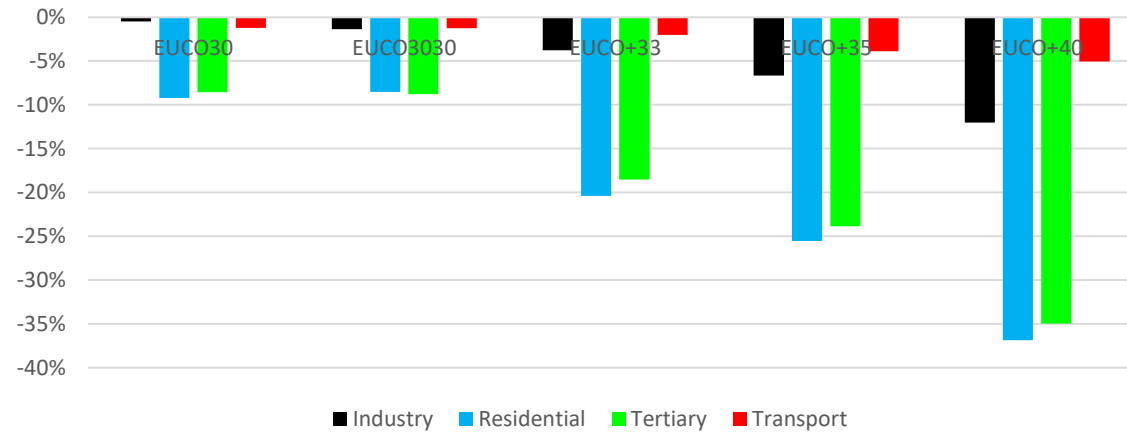


***Assumptions used for the macro-economic models need to be disclosed to understand the negative impact of high ambition on GDP and employment in some Member States***

# EUCO scenarios are mainly based on energy renovation of existing buildings but



## Projected changes in final energy demand per sector compared to EUCO27



***Strengthening EPBD is a prerequisite for the success of the Clean Energy for All***



# Renovation rates in EED IA are higher from those of EPBD IA



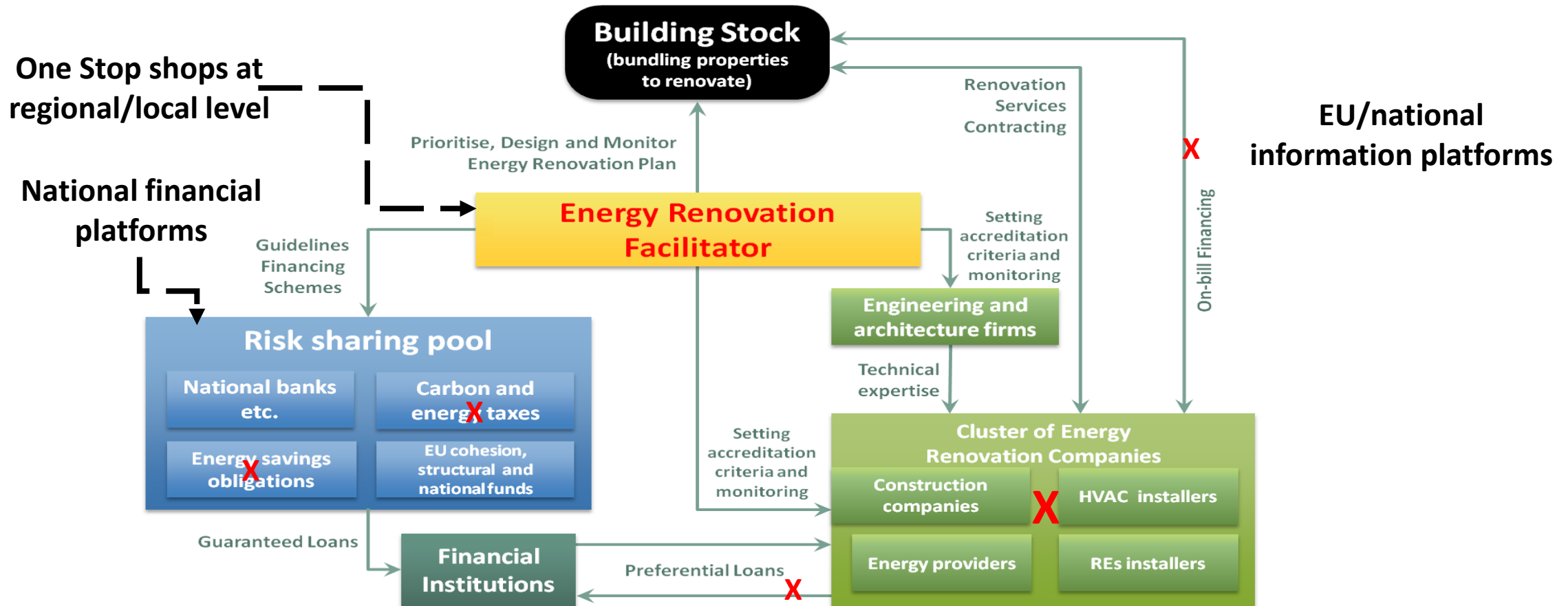
EED	EUCO27	EUCO30	EUCO3030	EUCO+33	EUCO+35	EUCO+40
2015-2020 Renovation rates	<b>1,5%</b>	<b>1,5%</b>	<b>1,5%</b>	<b>1,5%</b>	<b>1,5%</b>	<b>1,5%</b>
2021-2030 Renovation rates	<b>1,7%</b>	<b>2,1%</b>	<b>2,1%</b>	<b>2,7%</b>	<b>2,9%</b>	<b>3,1%</b>
Number of HH with electric heating (million)	<b>22</b>	<b>30</b>	<b>30</b>	<b>48</b>	<b>48</b>	<b>53</b>

EPBD renovation rates (2015-2030)	Option I	Option II	Option III
Residential	<b>0,61%-1%</b>	<b>0,61%-1,6%</b>	
Non-residential	<b>0,70%-1,14%</b>	<b>0,70%-1,7%</b>	
Heating systems exchange rates	<b>3,6%-4,2%</b>		

***EPBD requirements should be aligned with the EED efficiency target***



# Smart Finance for Smart Buildings (SFSB) is a partial de-risking framework



***SFSB will deliver only if regulatory framework is strengthened***

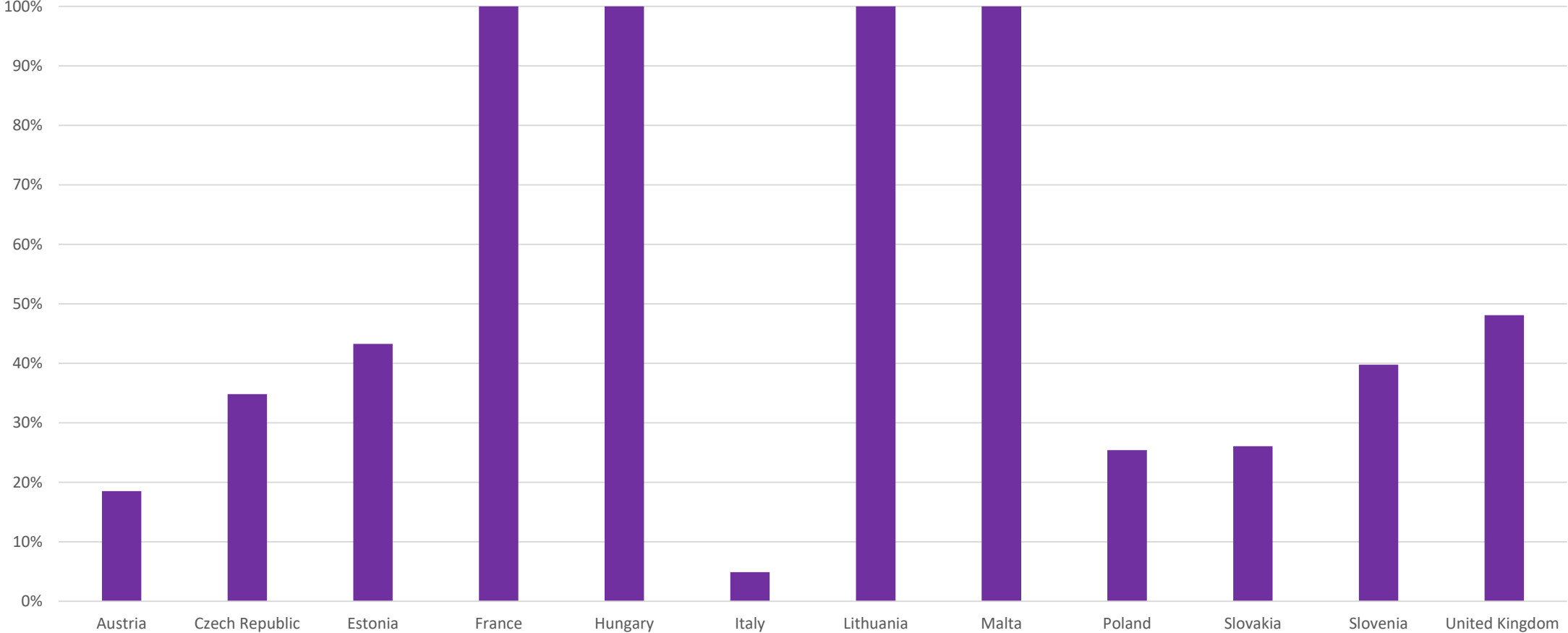




# SFSB does not bundle national funding (e.g. ETS) with EU ones



## Share of ETS revenues used for energy renovation in 2014



# Smart Finance for Smart Building initiative won't be enough to renovate Europe



## ***Strengths***

- Making energy renovation projects bankable
- Facilitating access to capital to local actors
- Scaling-up energy renovation projects

## ***Weaknesses***

- Weak energy requirements for renovation
- Bundling national and EU funds not tackled
- Investment gap not filled

## ***Smart Finance for Smart Building***

## ***Opportunities***

- Triggering technological innovation
- Modernising the construction sector
- Industrialisation of energy renovation

## ***Threats***

- EU funds availability unclear after 2020
- Lack of ambitious 2030 energy savings target
- Lack of technical capacity

***SFSB impacts should be considered in the EC modelling***