

# Energy Efficiency in the European Union: General Trends and the Role of Buildings

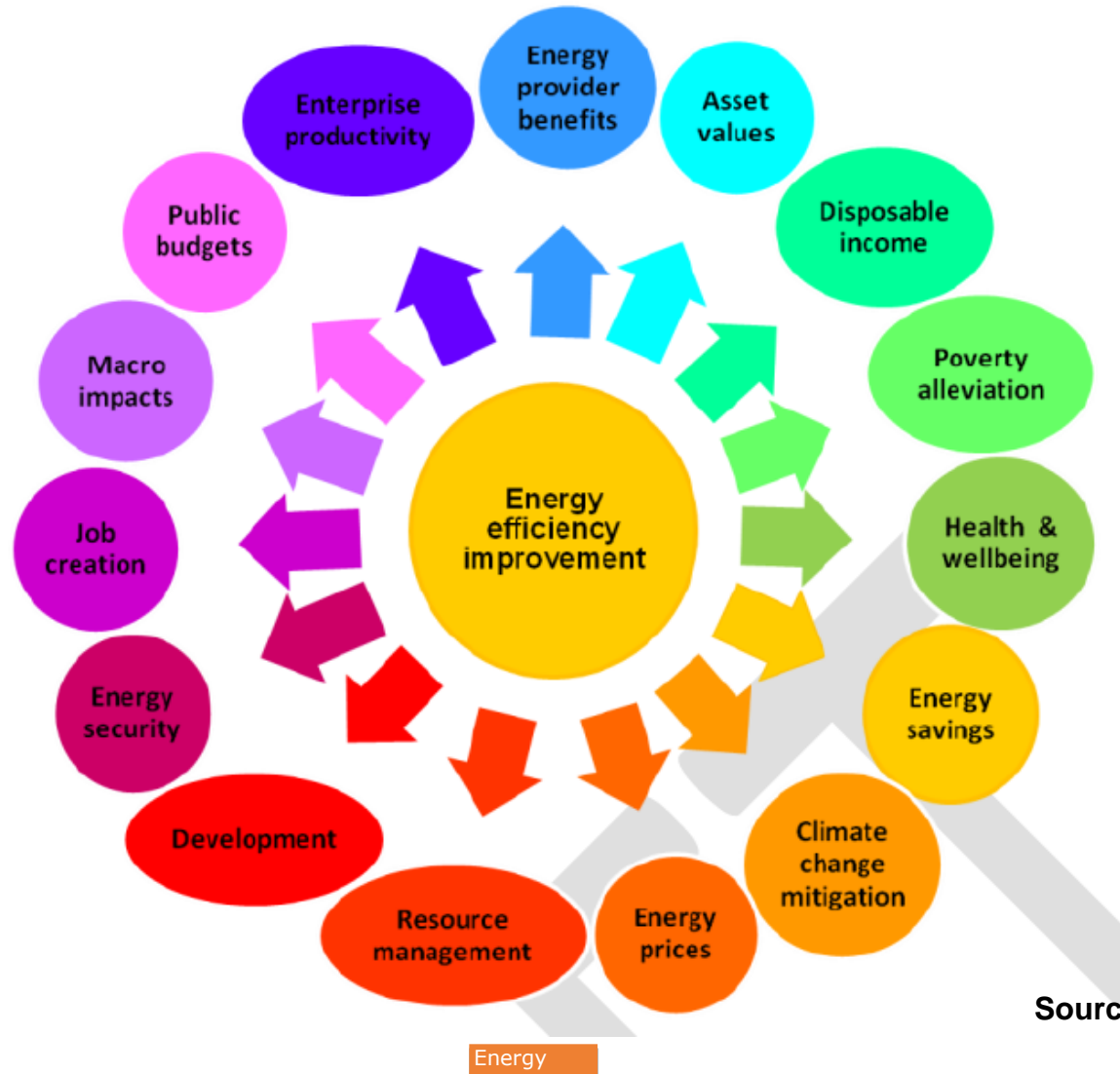
**National Conference on Energy  
Efficiency in Buildings**

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**Claudia Canevari**  
*Deputy Head of Unit*

**Unit C3, Energy Efficiency**  
**Directorate General for Energy**

# Energy Efficiency



Source: IEA



## Energy Efficiency Communication

**Communication on Energy Efficiency and Its Contribution to Energy Security and the 2030 Framework for Climate and Energy Policies, 23 July 2014**

## 2020 (EED)

*"By June 2014, the Commission shall assess progress achieved and whether the Union is likely to achieve energy consumption of no more than 1474 Mtoe [...] in 2020".*

*"The Commission shall submit the assessment [...] to the EP and the Council, accompanied, if necessary, by proposals for further measures".*

## 2030 Communication

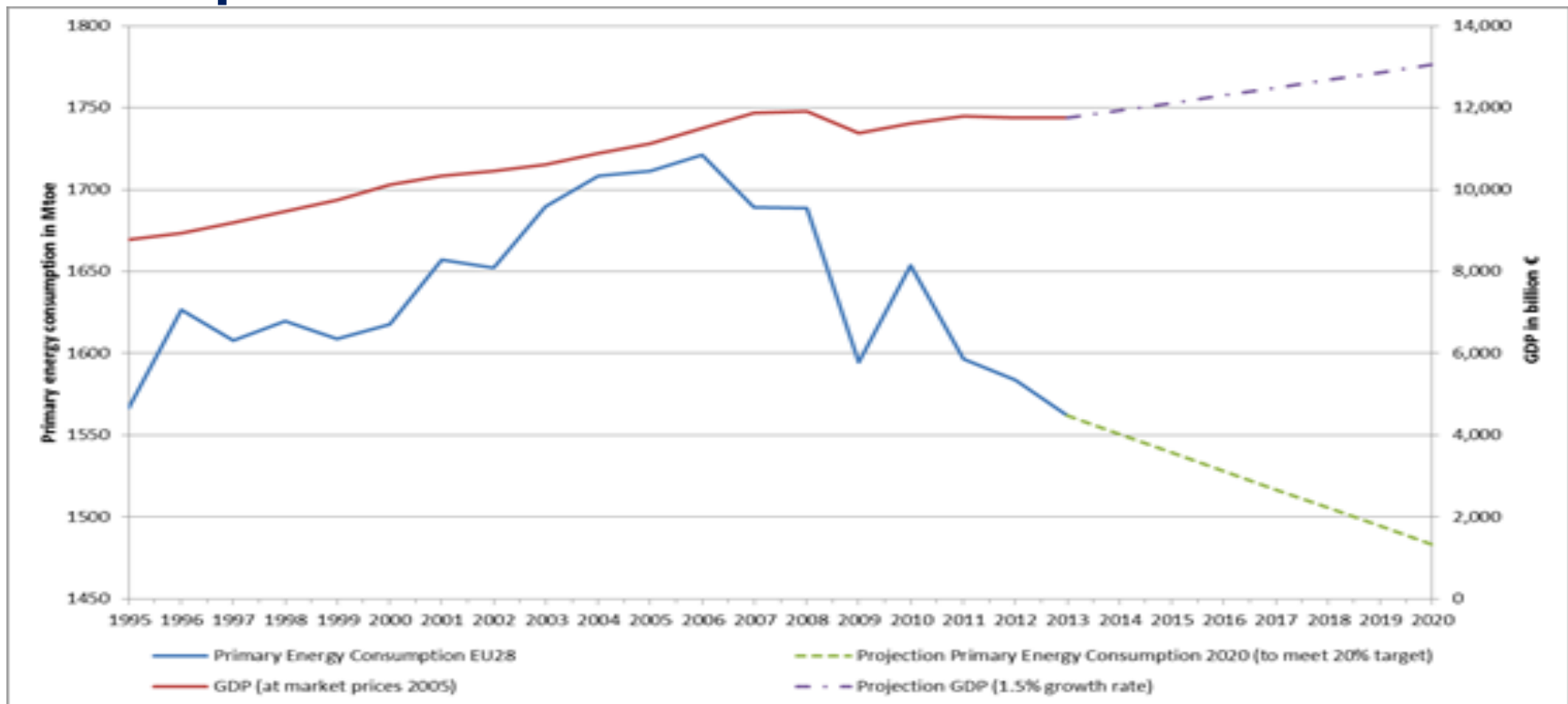
*The mid-2014 review shall also: "[...] establish the exact ambition of future energy savings policy and the measures necessary to deliver it [...]"*

*"[...] consider whether energy intensity improvements of the economy and economic sectors, or absolute energy savings or a hybrid of the two represents a better benchmark upon which to frame a 2030 objective."*

# ENERGY EFFICIENCY TOWARDS 2020

# Trends

**Energy efficiency of the EU economy is steadily increasing.  
Economic growth is being decoupled from energy consumption.**



# Energy efficiency progress: across all sectors



Between 1995 and 2010 the average consumption of new cars in the EU decreased by 27%.



New dwellings built today consume on average 40% less than dwellings built 20 years ago.



The share of refrigerators meeting the highest energy efficiency labelling classes (A and above) increased from less than 5% in 1995 to more than 90% 15 years later.



EU industry improved its energy intensity by almost 19% between 2001 and 2011, compared with 9% in the US.

# There is progress in setting the right legislative framework

- NEEAPs point to a **strengthening of current Member States policies and the setting in place of new ones.**
- The number of Member States applying **energy efficiency obligation schemes** for utilities is expected to rise from five to sixteen.
- **Financing mechanisms** under the European Structural and Investment Funds are being diversified, with greater use of financial instruments.

## At the same time in several cases the transposition and enforcement of relevant rules is delayed:

- Only six Member States have so far notified full **transposition of the EED**.
- At the moment, there are nine Member States that still have not completed the **transposition process of the EPBD** (deadline July 2012).
- Only a handful of Member States are conducting a proper **market surveillance** of products covered by efficiency requirements.

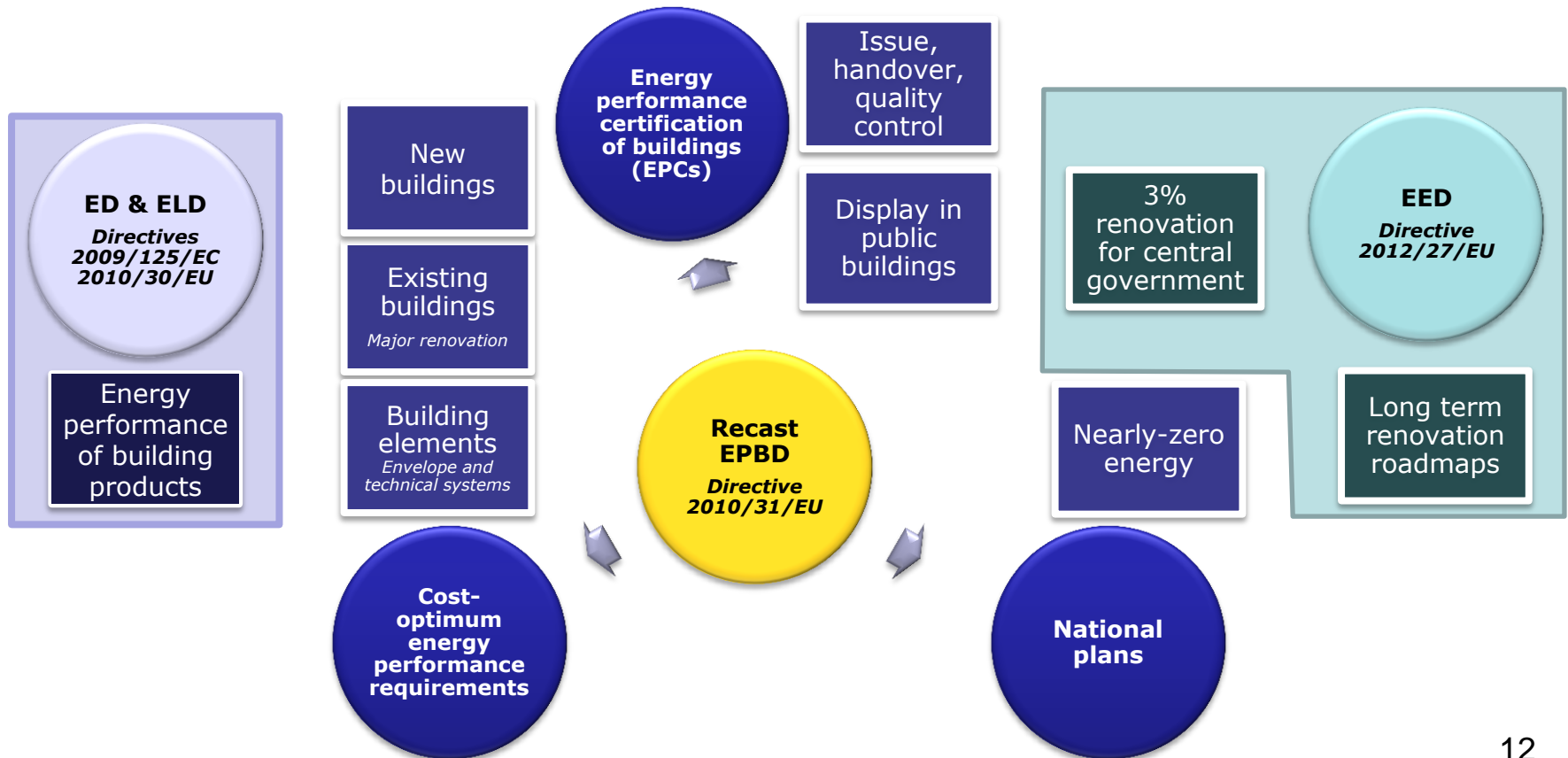
Based on an analysis of Member State actions and additional forecasts, the Commission estimates that **the EU will achieve energy savings of around 18-19% in 2020.**

In order to bridge the gap to the target efforts should be concentrated on the following elements:

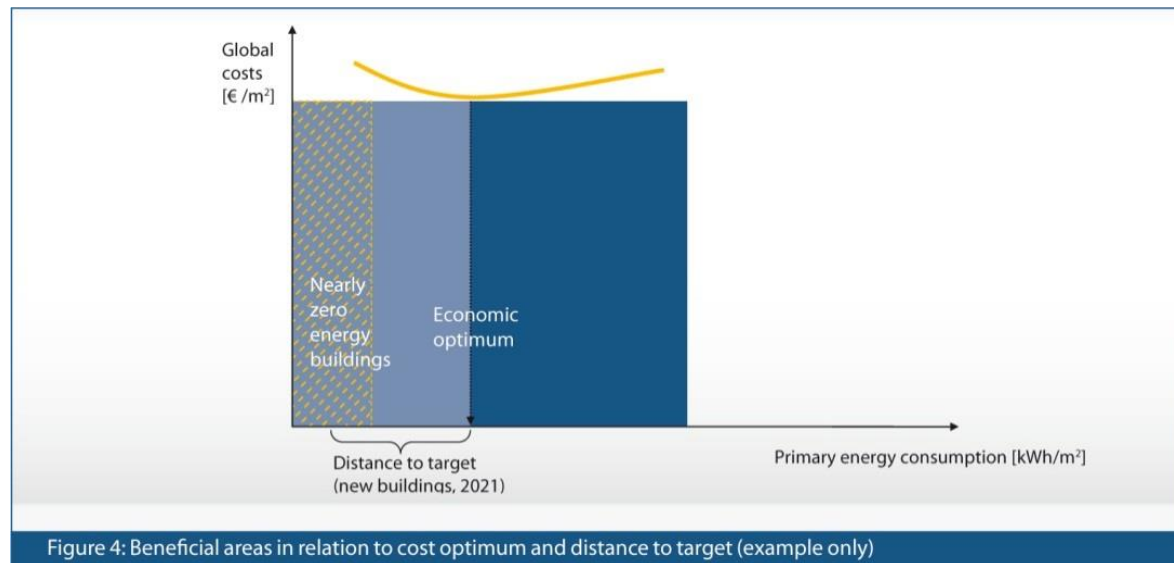
1. **Strengthening** local and regional verification of **national building codes** and accurately informing consumers of the energy performance of buildings for sale or rent;
2. Fully implicating **utilities** in working with their customers to obtain energy savings;
3. Strengthening **market surveillance** of the energy efficiency of products;
4. Make full use of available financing, in particular ESIF.

# **EU LEGISLATION ON ENERGY EFFICIENCY IN BUILDINGS**

# Overview of existing legislation



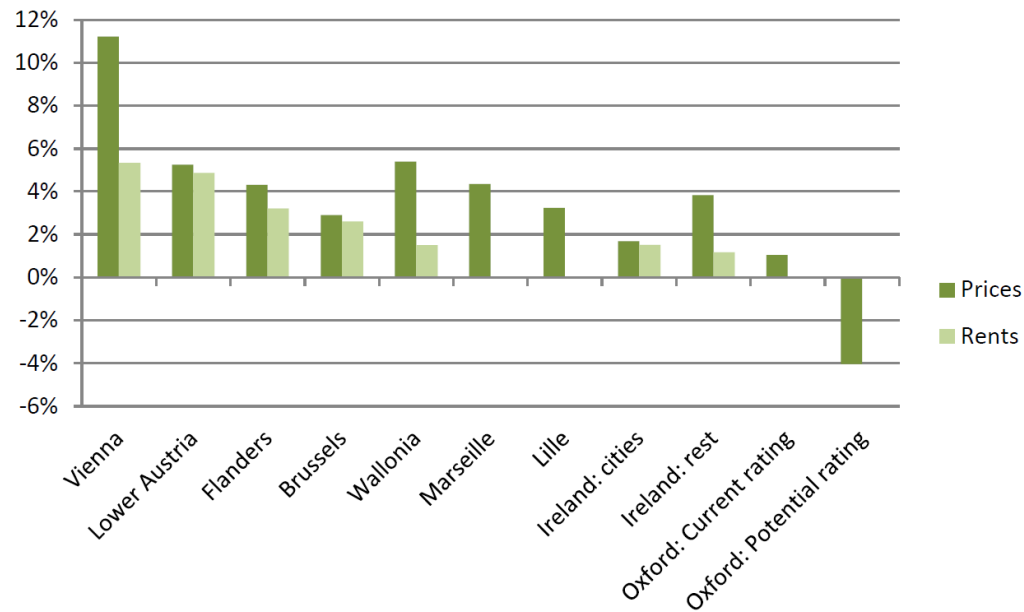
# Setting cost-optimal requirements



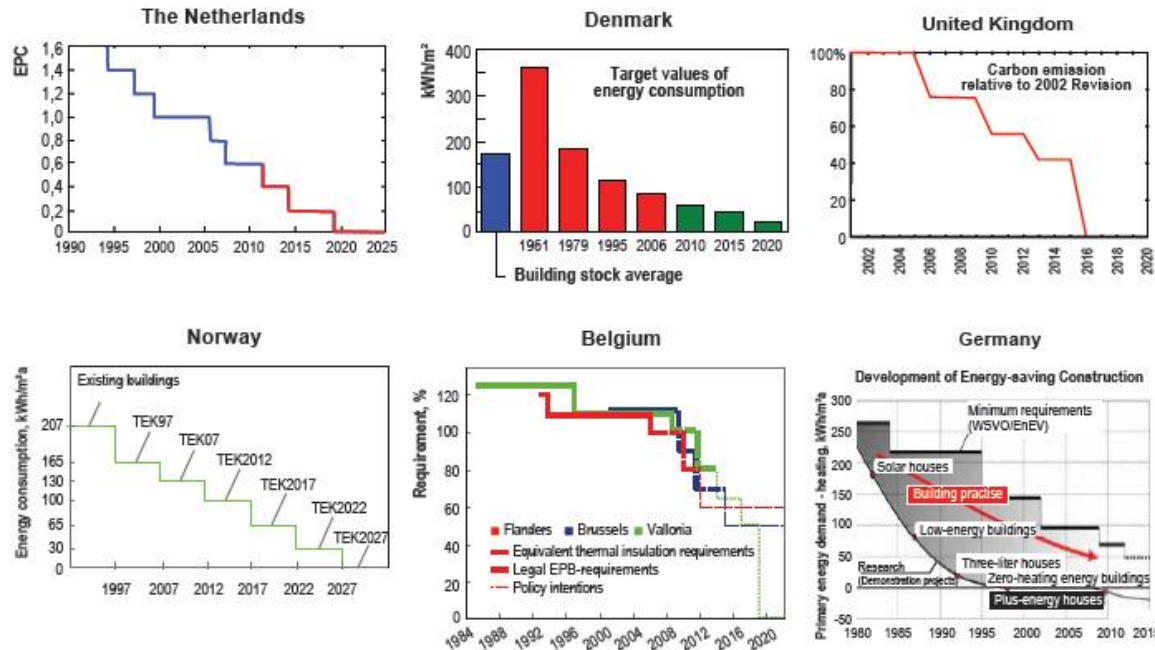
- Aimed at ensuring high ambition level in Member States.
- Reports from Member States due by March 2013.
- Current state: 27 reports received so far.
- Commission is checking and will report next year.

# Reliable energy performance certification schemes

Effect of one-letter or equivalent improvement in EPC rating  
across a selection of European property markets (see also notes in the main report)



# Nearly-zero energy buildings



- After 31 December 2020 all new buildings occupied are nearly zero energy buildings (31 December 2018 for public buildings).
- Updated progress report is available on DG ENER's website.

# **2030**

# **THE PROPOSED POLICY**

# **AMBITION AND DIRECTION**

## 2030 target

- 30% savings by 2030 (vs. 2007 reference) ensures broadly that the **current level of energy efficiency policy ambition is continued** (reducing consumption at a little over 17 Mtoe per year).
- While leading – on the same assumptions as the "2030" modelling – to **higher energy system costs** than savings below 30%, it results in **significant benefits** in terms of:
  1. Security of supply;
  2. Macro-economic (GDP, employment);
  3. Health and environment.

# Impact Assessment – Methodology

## Framework conditions

- PRIMES 2013 Reference.
- GHG 40%; split ETS/non-ETS maintained.
- RES 27%.

## Policy options (scenarios analysed)

- Stepwise increase of EE policy ambition: 27%, 28%, 29%, 30%, 35% and 40% savings in 2030 (vs 2007 PRIMES).
- No changes in policy mix (based on current); just intensity.

## Impacts assessed

- Energy system and security of supply.
- Economic impacts (system costs, investment expenditure, energy prices, GDP, employment).
- Competitiveness and affordability.
- Environmental impacts (CO<sub>2</sub>, pollutants, health).

# Energy system and security of supply impacts

- Fuel mix – Share of solids and nuclear fairly stable; oil declines with higher ambition; reductions in gas consumption are most pronounced.
- Security of supply – Every additional 1% in energy savings leads to a further reduction of about 2.6% in gas imports.

Indicator (2030/2050 )
Net Energy Imports Volume (2010=100)
- Solid
- Oil
- Gas
- Renewable Energy
Fossil Fuels Import Bill Savings

Ref	GHG40
96 / 101	89 / 56
77 / 49	68 / 42
93 / 96	90 / 41
<b>105 / 122</b>	<b>91 / 74</b>
492 / 601	505 / 1043
n.a	-190 / - <b>3404</b>

Decarbonisation Scenarios					
EE27	EE28	EE29	EE30	EE35	EE40
86 / 59	85 / 57	83 / 56	82 / 54	78 / 51	74 / 49
61 / 40	65 / 38	61 / 38	62 / 34	70 / 30	59 / 29
86 / 44	85 / 43	85 / 43	84 / 43	82 / 41	81 / 41
<b>88 / 82</b>	<b>84 / 78</b>	<b>81 / 74</b>	<b>78 / 69</b>	<b>67 / 65</b>	<b>60 / 59</b>
509 / 1002	500 / 972	493 / 947	482 / 924	458 / 875	433 / 852
-285 / -3349	-311 / -3490	-346 / -3637	-395 / - <b>3798</b>	-503 / -4145	-549 / -4360

## Energy system costs and investments

- Energy system costs - average annual costs (expressed as % of GDP) for the period 2011-2030 across all scenarios range between 0.01 and 0.79 percentage points of GDP **higher compared to the Reference** with a **shift from energy purchases to direct efficiency investments and capital costs**.
- Investments (av. annual 2011-2030) range between €851 bn and €1147 bn whereas in the Reference scenario they amount to €816 bn.
- Highest investment increase in the building sector.
- Capital investment leads to **increased amenity value** that could correspond to some 40% of the cost of investments in energy efficiency in the residential sector (according to a separate study).

## Economic impacts (I)

- Electricity price changes compared to Reference are very small in 2030 ranging from +0.85% to +3.34% in the year 2030.
- ETS prices vary significantly (in the long term to a lesser extent).
- International fuel prices decrease up to about 8% in the case of gas and up to about 3% in the case of oil (to be further analysed).

## Economic impacts (II)

- **GDP** decreases from -0,07% to -1.2% in 2030 if crowding-out is assumed (GEM-E3); increases from 0,49 to 4,45% if spare capacity in the economy is assumed (E3ME).
- **Employment** both models used show increases in employment from 0,5% to 2,96% (GEM-E3) and from 0,23% to 1,5% (E3ME) in 2030. Shift of labour from such sectors as Power and Oil to Construction, Metals and Transport Equipment.

## Proposed 2030 target

- **EU target: flexibility for Member States.**
- The target should continue to be based on **absolute primary energy** consumption.
- COM will also look at **additional indicators** (e.g. energy intensity). Progress will be reviewed in 2017.
- The **governance system** proposed by the 2030 Climate and Energy Framework Communication will provide the framework for evaluating the effectiveness of national and EU energy efficiency policies.

# Main challenges

## Putting in place the right policy framework

- Effective implementation of current framework.
- Revision in the short and mid-term of certain elements of the framework (e.g. Energy Labelling; Article 7 and other elements under the EED).

## Mobilising investments

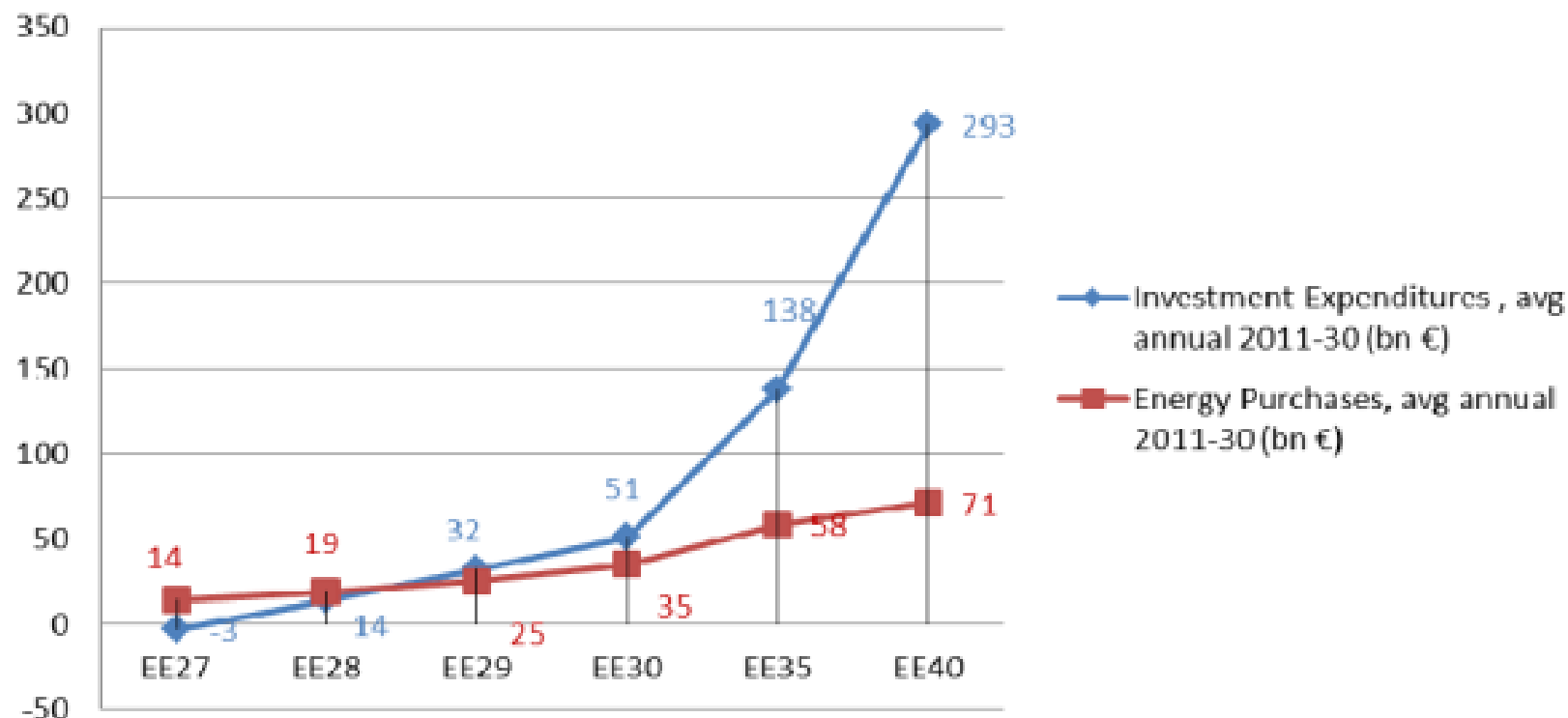
- Effective use of European Structural and Investment Funds and other funding (EIC, H2020, etc.).
- Work with the financial sector to create the right framework conditions for investment (e.g. development of the right standards).
- Stimulate demand (through a robust implementation of existing and future rules, e.g. on EPCs).



## European Council conclusions

- Indicative target of at least 27%.
- Review by 2020 having in mind an EU level of 30%.
- The Commission will propose priority sectors in which significant energy-efficiency gains can be reaped, and ways to address them at EU level.

**Comparison on investment and energy purchases to the 2030 IA GHG 40 scenario  
in average annual values for 2011-2030 in bn €'10**



## Next steps: 2030 Framework

<b>Review of the products framework</b>	<b>Early 2015</b>
Review of certain other elements of the legislative framework	2015-2016
<b>Work on implementation</b>	<b>Continuous</b>
Work on financing (ESIF, EIB financial sector)	Continuous

# Thank you for your attention

*For further information  
on energy efficiency  
please consult our website :*

<http://ec.europa.eu/energy/efficiency/>

[claudia.canevari@ec.europa.eu](mailto:claudia.canevari@ec.europa.eu)

