

Energy efficiency

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Environmental (climate) dimension of EEP

- Climate change – EU aims to develop a low-carbon economy.
- Measures primarily to reduce GHG emissions
 - EU ETS – covers 40% of EU emissions.
 - individual targets of MS for the non-EU ETS sectors (housing, agriculture, transport, waste) – cover 60% of EU emissions.
 - CCS.
- Measures to transform the energy sectors
 - RES
 - Energy Efficiency
 - Research and development, new technologies.

Energy efficiency

Energy and climate package 2009 (2020 targets): an energy consumption is to be cut by 20% by 2020 relative to the BAU scenario, (only) non-binding target (cap of 1483 Mtoe in 2020).

- Restriction on consumption of energy + increased energy efficiency.
 - The only one that the EU is struggling to meet (18-19% by 2020).
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- Energy efficiency.
 - Energy savings.
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- Why to invest in EE?

Energy efficiency instruments

- EU instruments:
 - Products (energy labeling, eco-design).
 - Transport (measures to cut vehicle and air transportation emissions).
 - Buildings (40% of all energy in the EU is consumed in building. Energy performance standards on new- esp. public - building).
 - Public procurement (energy efficiency a criteria when govts buy goods and services).
- National instruments:
 - National plans with national measures.

Impacts in 2020 of EE measures under the Ecodesign Directive

Implemented measures	Regulation number	Emission reduction (MtCO ₂)	Energy saved (PJ)	Cost saved (billion €/yr)
Non-directional household lamps	244/2009	11	122	3.1
Office & street lighting: fluorescent lamps	245/2009	15	137	2.5
Electric motors	640/2009	64	500	16.8
Televisions	642/2009	17	169	2.3
Complex set top boxes	Voluntary Agreement	2	16	0.6
Simple set top boxes	107/2009	2	17	0.7
External power supplies & battery charges	278/2009	4	118	0.5
Standby & off modus losses	1275/2008	11	128	2.1
Domestic refrigerators & freezers	643/2009	1	14	0.5
Circulators pumps for heating	641/2009 & 622/2009	12	96	3.9
Domestic dish washers	1016/2010 & 1015/2010	1	7	-0.1
Domestic washing machines	1016/2010 & 1015/2010	1	5	-0.1
Industrial fans	327/2011	25	487	7.1
Room air conditioners	206/2012	4	41	0.7
Water pumps	547/2012	1	10	0.3
Household tumble driers	932/2012	2	12	0.2
Directional lamps & LED lamps	1194/2012	10	89	1.3
Computers and servers	617/2013	9	74	2.3
Vacuum cleaners	666/2013	6	68	2.8
Standby and off mode power of equipment	801/2013	11	128	2.8
Space & combination heaters	813/2013	109	1884	25.4
Water heaters	814/2013	26	453	4.4
Imaging Equipment	Voluntary Agreement	4	15	9.2
Domestic cooking appliances	66/2014	1	27	-0.6
SUM		348	4617	88.9
Of which electricity		198	2099	56

Energy efficiency in the EU

- Limited achievements only due to:
 - Relatively cheap energy (IEM).
 - Limited impact of (sometimes expensive) measures.
 - Rebound effect.
 - EE not interesting politically (Brussels more important than national governments here).

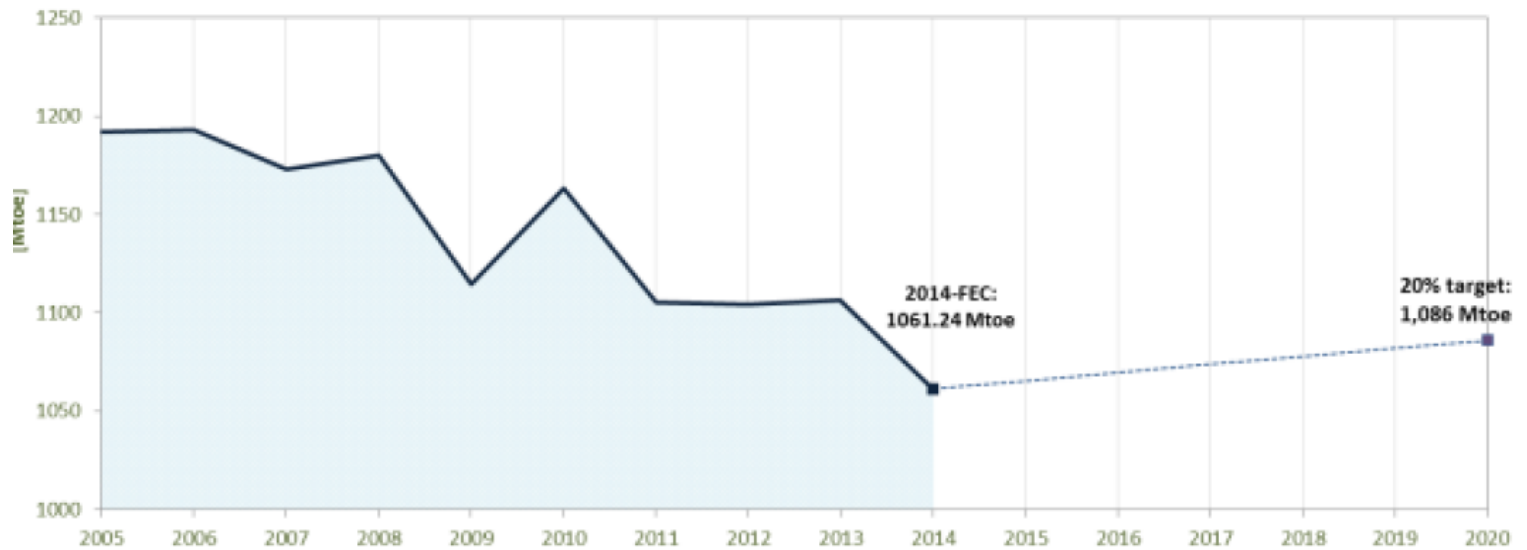
Energy Efficiency Directive 2012/27/EC

- Developed to reach 20% target savings.
- Binding measures, not binding targets.
- MS are required to:
 - Evaluate the situation in national heating and cooling systems, suggest some cost-effective measures to improve them (every 5 years).
 - The same for gas and electricity infrastructure.
 - Oblige energy providers to achieve cumulative end-use energy savings by 2020 equivalent to 1,5% of annual energy sales over the period of 2014-2020.

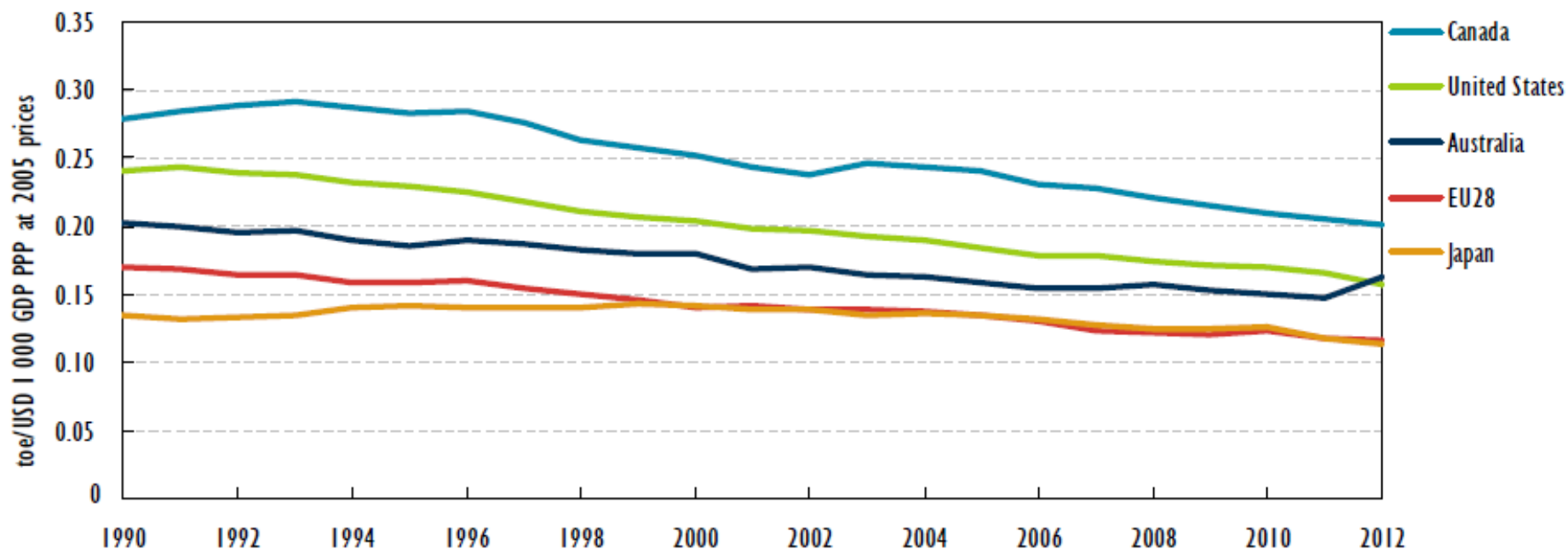
Energy Efficiency Directive 2012/27/EC

- Introduce the metering and billing of actual energy consumption in all sectors.
- Prepare public procurement rules ensuring that central governments purchase only high-efficiency products.
- Large industry enterprises to carry out an energy audits at least every four years. Audits for SME must be promoted by governments.
- Increasing attention given to appliances.
- Buildings – new buildings and buildings under renovation to be „nearly zero energy“ by the end of 2020. To improve the energy performance of 3% of the total floor area of heated and/or cooled buildings owned and occupied by the central government every year.

EU – final energy consumption



Energy intensity in the EU and in selected IEA MS



Sources: IEA (2014a), *Energy Balances of OECD Countries*, OECD/IEA, Paris; IEA (2014b), *Energy Statistics of Non-OECD Countries*, OECD/IEA, Paris.

Latest development in emission targets

- 2020 aims (Energy and climate package, 2009)
 - reduce greenhouse gases by at least 20%
 - increase the share of renewable energy in the EU's energy mix to at least 20% of consumption
 - improve energy efficiency by at least 20%
- 2030 aims (Climate and energy framework, 2014)
 - At least 40% cuts in greenhouse gas emissions (from 1990 levels). EU ETS to cut emissions by 43% (compared to 2005); Non EU ETS sector to cut emissions by 30 (compared to 2005). National targets range from 0% - 40%.
 - At least 27% share for renewable energy (updated to 32%).
 - At least 27% improvement in energy efficiency (updated to 32.5%).

Sources

- IEA (2014): Energy Policies of IEA Countries – The European Union
- Yeo, S.(2017): EU energy package: What it means for coal, renewables and efficiency