

Resource efficiency and low carbon economy

Energy efficiency



Indicator	EU indicator past trend	Selected objective to be met by 2020	Indicative outlook of the EU meeting the selected objective by 2020
Progress on energy efficiency in Europe		Improve energy efficiency by 20 % (compared with a business-as-usual scenario) — Energy Efficiency Directive	

The EU as a whole is currently on track to meet its energy efficiency target. This has been mainly due to the implementation of energy efficiency policies as well as the economic downturn. As economic growth returns, higher levels of ambition for some national targets and better implementation across the board will be required to keep Europe on track

The Seventh Environment Action Programme (7th EAP) requires that the EU meet its energy efficiency target of reducing primary energy consumption by 20 % by 2020 (compared with a business-as-usual scenario). Energy consumption (both primary and final) has decreased over the last decade at a rate that, if continued, means that the target will be met. In fact, the EU as a whole has already met its target in final energy consumption. In 2014, final energy consumption in the EU was 1 062 Mtoe (million tonnes of oil equivalent), which was already below the EU target for 2020 (1 086 Mtoe). Together with progress in implementing energy efficiency policies, the economic downturn, structural changes in industry, lower consumption in the transport sector and a warmer climate have contributed to this development. In 2014, the sum of all 2020 targets for primary energy consumption from 28 Member States amounted to 1 526 Mtoe, which was 3 % higher than the EU target (1 483 Mtoe). As economic growth returns, more intensive efforts will be necessary to implement energy efficiency policies at the national level to ensure that the 2020 target is met.

For further information on the scoreboard methodology please see Box I.1 in the [EEA Environmental indicator report 2016](#)

Setting the scene

The 7th EAP requires that the EU meet its 2020 climate and energy targets (EU, 2013), which are targets for greenhouse gas emissions, energy efficiency and renewable energy. This briefing addresses the issue of energy efficiency, with greenhouse gas emissions (AIRS_PO2.5, 2015)¹ and renewables (AIRS_PO2.6)² being considered in two other related briefings. Meeting the energy efficiency target requires a reduction in energy consumption. This should lead to a reduction in environmental pressures associated with the production and consumption of energy. It will also contribute to a reduction in dependence on energy imports and support the achievement of renewable energy and greenhouse gas targets.

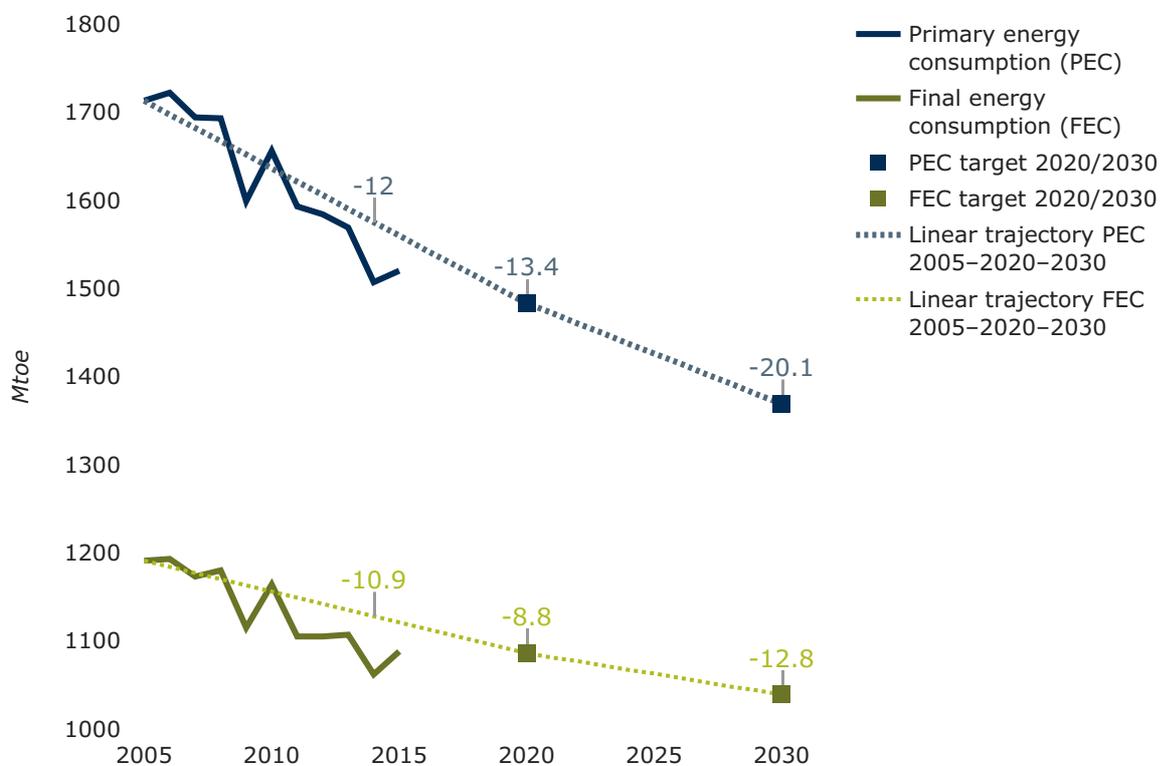
Policy targets and progress

The Energy Efficiency Directive (EED) (EU, 2012) has a target of increasing energy efficiency by 20 % by 2020 compared with a business-as-usual scenario (EC, 2011). The EED translates this into two separate 2020 reduction targets for the EU's primary and final energy consumption: a primary energy consumption of 1 483 Mtoe, representing a 13.4 % reduction compared with 2005 levels, and a final energy consumption of 1 086 Mtoe, representing an 8.8 % reduction compared with 2005 levels.

In 2014, the EU's primary energy consumption was 11.8 % lower than in 2005 (see Figure 1). According to preliminary estimates from the EEA, the EU's primary energy consumption increased slightly in 2015 (by 1 % compared with 2014), while still remaining below the indicative linear trajectory (EEA, 2016a).

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Figure 1. Primary and final energy consumption in the EU and targets for 2020 and 2030



Note:

PEC and FEC targets in the year 2014, 2020 and 2030 indicate the decline in % compared to year 2005

Data sources: European Commission. [Energy Efficiency and its contribution to energy security and the 2030 Framework for climate and energy policy](#)

In 2014, the EU has reduced its final energy consumption by 10.9 % compared with 2005, which was already below the target level set for 2020. The energy demand in 2014 was exceptionally low because of favourable climatic conditions in 2014 (warm winter), which limited the demand for energy for heating in the EU Member States.

Between 2005 and 2014, primary energy consumption in the EU-28 decreased by 12 %, particularly as a result of the reduction in final energy consumption observed during that period. The other factors contributing to this decrease included improved efficiency in the conversion of primary sources (e.g. coal and gas) into final energy and changes in the fuel mix to produce electricity and heat (higher penetration of renewable energy).

In the same period, final energy consumption in the EU-28 decreased by 10.9 % in all sectors, with the industry and household sectors registering the largest decrease of 16.5 % and 14.8 %, respectively.

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respectively, followed by transport (4.5 %) and services (1.7 %). This development was influenced by energy efficiency policies, structural changes in industry, the economic downturn and the warmer winter.

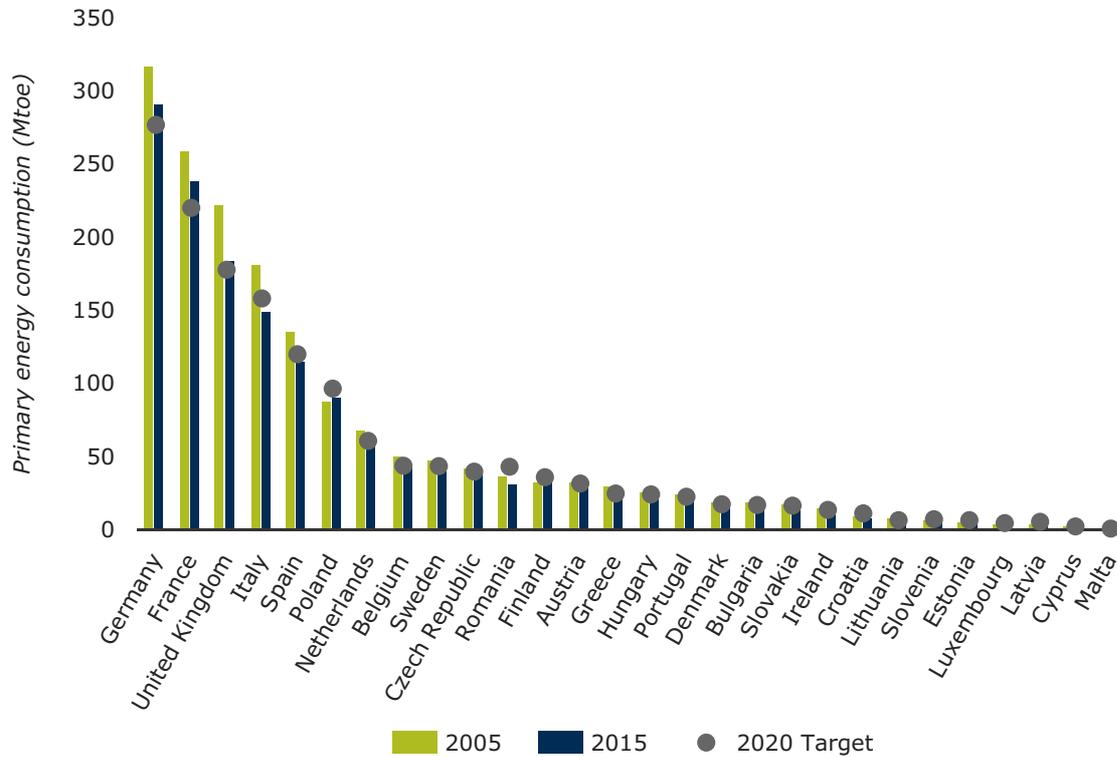
Apart from the EED, other policies and measures adopted at EU level are expected to contribute towards the 20 % reduction target. These include:

- The Energy Performance of Buildings Directive (EU, 2010a),
- Product regulations laying down minimum energy performance standards and requirements for energy labelling (the Eco-design Directive (EU, 2009) and the Labelling Directive (EU, 2010b),
- CO₂ performance standards for cars and vans,
- Increased financing through EU structural and investment funds, Horizon 2020 and dedicated facilities, such as European Local Energy Assistance (ELENA) and the European Energy Efficiency Fund,
- The EU Emissions Trading Scheme (ETS) and the Effort Sharing Decision for non-ETS sectors.

Almost half of the effort to reach the 2020 target at EU level should come from measures implemented under Article 7⁽¹⁾ of the EED. The use of exemptions by Member States to reduce this target, as well as the inclusion of measures that are not eligible, might limit the contribution of the commitments made under this requirement to fulfil national energy efficiency targets (Ricardo-AEA et al., 2015).

Country level information

Figure 2. Primary Energy consumption in 2005 and 2015 and estimated national target for 2020



Data sources: a. European Commission. [National energy efficiency targets 2020](#)
 b. Eurostat. [Energy statistics - Supply, transformation and consumption](#)

In 2014, 25 Member States reduced or limited their increase in primary energy consumption below the linear trajectories drawn between 2005 levels and the 2020 targets. Three Member States (Estonia, Malta and Sweden) had not achieved sufficient savings in primary energy consumption. According to preliminary data, the situation improved in 2015 for Estonia and Sweden, for which primary energy consumption levels fell below their respective linear trajectories. In contrast, in Bulgaria, France and Germany, primary energy consumption in 2015 was above their respective trajectories (EEA, 2016b).

Outlook beyond 2020

Continued improvements in energy efficiency will be needed well beyond 2020 if the 7th EAP's 2050 vision of Europe, in which 'low-carbon growth has long been decoupled from resource use', is to be achieved. In October 2014, the European Council endorsed an indicative energy efficiency target of a reduction of at least 27 % by 2030, in comparison with the EC's 2007 energy baseline scenario (EC, 2014). This target should be reviewed by 2020, having in mind a 30 % target.

About the indicator

Improving energy efficiency means using less energy for the same output or producing more with the same energy input. The 2020 target for energy efficiency has been interpreted to mean reductions in primary and final energy consumption. The indicator tracks levels of primary and final energy consumption in million tonnes of oil equivalents. Primary energy in this context covers the consumption of the energy sector itself, losses during the transformation (for example, from oil or gas into electricity) and distribution of energy, and final consumption by end users. It excludes energy carriers used for non-energy purposes (such as petroleum used for producing plastics). Final energy consumption is the total energy consumed by end users, such as households, industry, services, agriculture and fisheries. It is the energy that reaches the final consumer's door and excludes the energy used by the energy sector itself and in deliveries to the transformation sector.

Footnotes and references

(1) Article 7 of the EED is the energy efficiency obligation scheme which requires energy companies to achieve yearly energy savings of 1.5% of annual sales to final consumers, although Member States can choose alternative approaches.

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Ricardo-AEA, CE Delft and Regional Centre for Energy Policy Research, 2015, Study evaluating the national policy measures and methodologies to implement Article 7 of the Energy Efficiency Directive, searched on 30 June 2016.

AIRS briefings

1. AIRS_PO2.5, 2016, Greenhouse gas emissions, European Environment Agency .
2. AIRS_PO2.6, 2016, Renewable energies, European Environment Agency .

Environmental indicator report 2016 – In support to the monitoring of the 7th Environment Action Programme, EEA report No30/2016, European Environment Agency