

Background information for the discussion on the proposal for a directive on energy efficiency

The EU Energy goals and targets

In January 2007 the European Commission adopted a communication proposing an energy policy for Europe, with the goal to combat climate change and boost the EU energy security and competitiveness. This set out the need for the EU to draw up a new energy path towards a more secure, sustainable and low-carbon economy, for the benefit of all users. One aim is to give energy users greater choice, and another is to spur investment in energy infrastructure. Based on the European Commission's proposal, in March 2007 the Council endorsed the following targets (European Commission, 2008):

- reducing greenhouse gas emissions by at least 20 % (compared with 1990 levels) by 2020 (binding target);
- improving energy efficiency by 20 % by 2020 expressed as a 20% saving in primary energy consumption;
- raising the share of renewable energy to 20 % by 2020 (binding target);
- increasing the level of biofuels in transport fuel to 10 % by 2020.

The use of renewable energy sources is seen as a key element in energy policy, reducing the dependence on fuel from non-member countries, reducing emissions from carbon sources, and decoupling energy costs from oil prices. The second key element is constraining demand, by promoting energy efficiency both within the energy sector itself and at end-use.

Primary production and end use of energy

In the vocabulary used within the EU, the expressions primary energy consumption and final energy consumption are used. Primary energy consumption is defined as primary production + import. Final energy consumption is defined as the energy delivered to the consumer's door. For 2010 the primary energy consumption was 1759 Mtoe (Million ton oil equivalents). For 2010 the final energy consumption was 1153 Mtoe. It should be noted that the primary energy consumption is 50% higher than the final energy consumption.

Towards a binding energy efficiency target

The European Commission has proposed a Directive on energy efficiency (European Commission, 2011). In its passage through the European Parliament, the Industry, Research and Energy (ITRE) Committee has proposed to strengthen the provisions of the Directive by making binding, the non-binding national energy saving targets set out in a draft Directive (ITRE, 2012). The EU-27 maximum primary energy consumption in 2020 would have to be limited to 1 474 Mtoe (17 142 TWh) with a minimum reduction 2020 by 368 Mtoe (4 294 TWh) with respect to the projected values 2020 without saving. This EU-27 ceiling of 1 474 Mtoe (17 142 TWh) should be compared with the 2010 consumption of 1759 Mtoe (20 456 TWh). More details how the 20% reduction is allocated on individual countries are given in the draft report's page 10. These are exhibited in the Table.

It is pointed out in the draft directive that it would also reduce CO₂ emissions, since 80% of the primary energy and 70% of the electricity production originates from fossil fuels. The EU has set itself the task of achieving 20% primary energy savings in 2020 (currently a non-binding target), but the Commission estimates that if no measures are taken, the EU will only achieve half of that by 2020. (European Commission, 2011). Since energy efficiency has proved to be least successful of the EU energy strategies, the ITRE committee in its meeting on February 28 decided to approve the draft directive in which binding national primary energy efficiency targets are recommended. (ITRE 2012b).

EU nations have until 2013 to get efficiency programmes back on track to meet the 2020 target, after which the Commission will reconsider introducing legally binding targets.

Background

Since 2007, the EU has had three key targets in its energy strategy to mitigate climate change: to reduce greenhouse gas levels by 20%, increase the share of renewables to 20%, and reduce energy consumption by 20% (European Commission, 2008). The targets on reducing greenhouse gas emissions and increasing the share of renewables are binding, whereas the target on reducing energy consumption is not. Analysis has indicated that the EU is on track to achieve the targets on greenhouse gas reductions and renewables, but will only achieve half of the energy reduction target by 2020 (European Commission, 2011).

In respect of efficiency in energy supply (articles 10-12 in the Draft directive, (ITRE, 2012)), the focus is on promoting co-generation/combined heat and power for thermal electricity generation installations (though with exemption provisions based on cost-benefits analysis and availability of heat load), and to ensure consideration of efficiency in the operation of gas and electricity transmission infrastructures.

The ITRE has adopted a wide range of proposed amendments to the draft Directive (ITRE, 2012b) and sanctioned the Rapporteur, Claude Turmes, to negotiate on them with the Commission and Council. As well as introducing the binding energy saving target, the Committee's proposed amendments generally seek to strengthen the provisions of the Directive.

Conversely, European Council in its preliminary position on the position adopted by ITRE (Council of the European Union, 2012) and its scoping document for its negotiation with Parliament (Council of the European Union, 2012b) has watered down the provisions of the Directive (to the consternation of the Commission in its 'non-paper' (European Commission, 2012)). In particular, Council's position is that national energy saving targets should be 'indicative', not 'binding'.

Also, for example (European Commission, 2012), "Article 10 on cogeneration has become an obligation to carry out cost benefit analysis rather than an obligation, in appropriate circumstances, to develop cogeneration." The 'non-paper' concludes, "The Council's version of the Directive is thus estimated to reduce primary energy consumption by about **58.1 Mtoe** while the Commission's proposal would deliver a saving of **151.5 Mtoe**, which is needed to close the gap (along with measures in the transport sector) to achieve the 20% target."

Analysis

It is mentioned by the author to the ITRE draft directive report that better isolation in the building sector is an important efficiency measure. In fact any improvement in efficiency of end use of energy is important. However when including production and delivery of energy in the efficiency directive, unwanted effects may occur unless the accounting system is carefully designed.

If fossil electricity is replaced by less efficient biopower, or by nuclear or thermal solar power, the net result is that the primary energy consumption will increase. Similarly if a fossil motor fuel is replaced by a liquid biofuel, additional energy is needed for the manufacture of the fuel. In both cases, the replaced fossil energy will lead to anti-saving of the primary energy consumption. It will be important to ensure that the accounting framework for a primary energy target does not result in disincentives for low carbon technologies such as renewable and nuclear energy. The main overarching EU goal is to combat climate change.

At the more detailed level of the Directive's obligations on efficiency in energy supply (articles 10-12), the focus is on CHP/cogeneration from thermal plants and efficiency in energy transmission/distribution. They therefore have no bearing on PV, wind, wave, tidal etc renewables, though may point to the need to consider CHP for biomass-fired thermal plants, and possibly concentrating solar power. Reassuringly, European Council in summarising key principles on what it considers broad agreement exists indicates: "The same argument of cost-efficiency, not only from the point of view of the energy system, but also of the achievement of climate change, security of supply, and competitiveness objectives suggests that the promotion of CHP/DHC (ined Heat and Power/District Heating and Cooling) should be subject to the outcome of a cost-benefit analysis and does not create counterproductive effects on the development of energy from renewable sources."



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Table.

Primary energy consumption saving targets 2020 for EU countries according to an ITRE report. (ITRE= Committee on Industry, Research and Energy). In the report, *Ceiling 2020* and *Necessary reduction* of primary energy consumption are given. The unit is Mtoe = Million tonnes oil equivalents. (1 Mtoe = 11.63 TWh). The per cent reduction target is computed from *the Necessary reduction* with respect to a *Projected level 2020*. The values in the *Projected level* column are the sums of the values in columns 2 and 3. The data are taken from Amendment 85 of the ITRE-report:

<http://www.europarl.europa.eu/document/activities/cont/201203/20120309ATT40359/20120309ATT40359EN.pdf>

EU-country	Ceiling 2020	Necessary reduction	Projected level 2020	Reduction %
<i>Belgium</i>	<i>43.60</i>	<i>9.80</i>	<i>53.40</i>	<i>18.4%</i>
<i>Bulgaria</i>	<i>18.60</i>	<i>3.20</i>	<i>21.80</i>	<i>14.7%</i>
<i>Czech Republic</i>	<i>40.10</i>	<i>5.50</i>	<i>45.60</i>	<i>12.1%</i>
<i>Denmark</i>	<i>19.20</i>	<i>0.80</i>	<i>20.00</i>	<i>4.0%</i>
<i>Germany</i>	<i>241.20</i>	<i>58.70</i>	<i>299.90</i>	<i>19.6%</i>
<i>Estonia</i>	<i>5.40</i>	<i>0.20</i>	<i>5.60</i>	<i>3.6%</i>
<i>Ireland</i>	<i>15.90</i>	<i>2.80</i>	<i>18.70</i>	<i>15.0%</i>
<i>Greece</i>	<i>33.30</i>	<i>2.70</i>	<i>36.00</i>	<i>7.5%</i>
<i>Spain</i>	<i>131.70</i>	<i>31.10</i>	<i>162.80</i>	<i>19.1%</i>
<i>France</i>	<i>207.50</i>	<i>68.90</i>	<i>276.40</i>	<i>24.9%</i>
<i>Italy</i>	<i>159.80</i>	<i>49.00</i>	<i>208.80</i>	<i>23.5%</i>
<i>Cyprus</i>	<i>2.40</i>	<i>0.40</i>	<i>2.80</i>	<i>14.3%</i>
<i>Latvia</i>	<i>7.80</i>	<i>-1.00</i>	<i>6.80</i>	<i>-14.7%</i>
<i>Lithuania</i>	<i>8.60</i>	<i>1.10</i>	<i>9.70</i>	<i>11.3%</i>
<i>Luxembourg</i>	<i>4.70</i>	<i>0.90</i>	<i>5.60</i>	<i>16.1%</i>
<i>Hungary</i>	<i>26.70</i>	<i>2.90</i>	<i>29.60</i>	<i>9.8%</i>
<i>Malta</i>	<i>0.80</i>	<i>0.10</i>	<i>0.90</i>	<i>11.1%</i>
<i>Netherlands</i>	<i>58.00</i>	<i>17.70</i>	<i>75.70</i>	<i>23.4%</i>
<i>Austria</i>	<i>29.20</i>	<i>7.20</i>	<i>36.40</i>	<i>19.8%</i>
<i>Poland</i>	<i>90.10</i>	<i>19.70</i>	<i>109.80</i>	<i>17.9%</i>
<i>Portugal</i>	<i>24.00</i>	<i>6.00</i>	<i>30.00</i>	<i>20.0%</i>
<i>Romania</i>	<i>40.10</i>	<i>10.00</i>	<i>50.10</i>	<i>20.0%</i>
<i>Slovenia</i>	<i>7.00</i>	<i>1.80</i>	<i>8.80</i>	<i>20.5%</i>
<i>Slovak Republic</i>	<i>18.50</i>	<i>1.60</i>	<i>20.10</i>	<i>8.0%</i>
<i>Finland</i>	<i>33.20</i>	<i>4.20</i>	<i>37.40</i>	<i>11.2%</i>
<i>Sweden</i>	<i>41.40</i>	<i>14.40</i>	<i>55.80</i>	<i>25.8%</i>
<i>United Kingdom</i>	<i>165.40</i>	<i>48.10</i>	<i>213.50</i>	<i>22.5%</i>
EU total	1474.20	367.80	1842.00	20.0%

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