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**COMMISSION STAFF WORKING PAPER**

**EXECUTIVE SUMMARY OF THE IMPACT ASSESSMENT**

*Accompanying the document*

**DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL  
on energy efficiency and amending and subsequently repealing Directives 2004/8/EC  
and 2006/32/EC**

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Europe can reduce its primary energy use by 20% in 2020 simply by applying cost-effective energy savings measures. This would make the EU's economy more competitive and create jobs and new business opportunities. Energy efficiency also means better use of energy resources and reduced import dependency. It means less CO<sub>2</sub> and other harmful emissions, less impact on the ecosystem and better quality of life for citizens. Achieving the 20% energy savings objective would in addition help to realize the EU's 2050 vision as outlined in the Low Carbon Roadmap 2050<sup>1</sup>.

## 1. INTRODUCTION AND POLICY CONTEXT

EU leaders have committed to reach the **objective of 20% primary energy savings in 2020** compared to a baseline<sup>2</sup>. This translates into a saving of 368 million tons of oil equivalent (Mtoe) of primary energy (gross inland consumption minus non-energy uses) by 2020 compared to projected consumption in that year of 1842 Mtoe.

The Energy Efficiency Action Plan (EEAP) of 2006<sup>3</sup> was an **important first step towards reaching** the 20% objective but did not aim at realizing the full economic potential. Despite the progress made in its implementation a new impetus is needed to intensify the uptake of the remaining potential. To this end a new Energy Efficiency Plan (EEP)<sup>4</sup> was adopted in 2011.

Some of the measures outlined in the EEP **need to be implemented through new legislative proposal(s)**. These include the setting of clear political objectives; development of the energy services market; increasing the role of the public sector; improving consumers' awareness of their energy consumption; and increased efficiency in energy supply. **These measures are closely related to the scope of two existing legal instruments:** the Energy Services Directive (ESD) and Cogeneration Directive (CHP Directive)<sup>5</sup>. However, the Directives' mid-term evaluation shows that in their current form these will not be sufficient to reach the policy objective and thus their revision is required. **The purpose of this impact assessment (IA) is to provide analytical input for the preparation of the Directives' revision.**

## 2. WHAT IS THE PROBLEM?

The EU's 20% policy objective for energy savings will not be met with present policies - and thus the related benefits will not be realised. There is a remaining economic potential in each sector (from energy transformation to energy use) but important challenges still remain such as insufficient political commitment and underdeveloped markets for energy efficiency improvements, low awareness of the possibilities and insufficient of incentives for uptake of energy efficiency improvements at demand and supply side.

## 3. THE EU HAS AN IMPORTANT ROLE

The EU's right to act as regards energy efficiency and savings is instituted in the Treaty on the Functioning of the European Union, Article 194(1). Although much responsibility rests with Member States, the EU's right to act has been established because of the importance of energy efficiency and savings for realizing the EU's climate change, security of energy supply, competitiveness and environmental protection objectives. Tackling these objectives requires coordinated action and coherent energy efficiency and savings policy.

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<sup>1</sup> COM(2011) 112

<sup>2</sup> 7224/1/07, REV 1, the baseline is PRIMES 2007

<sup>3</sup> COM(2006)545

<sup>4</sup> COM(2011) 109

<sup>5</sup> 2006/32/EC and 2004/8/EC respectively

#### 4. MAIN POLICY OBJECTIVES

The **general EU policy objective** on energy efficiency is to save 20% of the EU's primary energy consumption, compared to projections for 2020. Because progress towards this objective is not satisfactory, the **main objective of this IA is to contribute to the closing of the gap by exploring measures in all sectors with a remaining economic potential.**

#### 5. ANALYTICAL APPROACH

To establish the baseline for each policy area the PRIMES general equilibrium model was used. To analyse the detailed economic, social and environmental impact of the shortlisted policy options the E3ME model was used. A variety of studies were used as sources for the input data and assumptions used in modelling the individual energy efficiency options.

In cases where modelling was not possible bottom-up assessments and individual studies were used to establish the possible impact of the options.

The selection of the best options was based on the progress achieved by the existing policies and on evaluation of the remaining barriers, the EU value added, possible impact, effectiveness, efficiency and coherence.

#### 6. OPTIONS ANALYZED

Three levels of policy options were considered in the analysis. The first level related to the need for and form of national energy efficiency targets. A second level of analysis related to the nature and impact of individual policy measures. Finally, as a third level, the alternative legislative approaches were reviewed.

<b>First-level policy options</b>
<b>A: National targets/objectives</b>
A1: Retain the current approach
A2: Extend the indicative end use target of ESD to 2020
A3: Comprehensive indicative target for each Member State for 2020
A4: Binding target for each Member State for 2020
<b>Second-level policy options</b>
<b>B: Energy Savings Obligation</b>
B1: Retain the current approach
B2: Repeal the current ESD provisions without replacement
B3: Require all Member States to introduce energy saving obligations while leaving their design for determination by Member States
B4: As B3 but with harmonisation of key design features
<b>C: Further measures to realise potential at the end-use stage</b>
C1: Retain the current approach
C2: Energy saving measures for renovation of public buildings
C2a: Introduce 3% binding target for renovation of public buildings to cost-optimal levels
C2b: Introduce 3% binding target for renovation of public buildings to nearly zero energy levels
C2c: Establish a national financing and technical assistance infrastructure for renovation of public buildings.
C3: Obligatory use of energy efficiency as a criterion in public procurement
C4: Voluntary measures to promote energy efficiency via public procurement
C5: Enhanced obligations for smart metering and billing by energy companies

C6: Voluntary measures on metering and billing
C7: Mandatory energy audits and energy management systems for industry
C8: Voluntary systems to promote energy audits and the use of energy management systems in industry
C9: Obligations for Member States to promote energy service companies (ESCOs)
C10: Voluntary measures to promote ESCOs
<b>D: Measures to realise potential at the stage of energy transformation and distribution</b>
D1: Retain the current approach
D2: Removal of existing provisions
D3: Mandatory CHP and district heating/cooling requirement for new electricity and high-heat-demand industry installations
D4: Mandatory connection and priority access of high-efficiency cogeneration to the electricity grid
D5: Voluntary measures to promote CHP and district heating/cooling
D6: Minimum performance requirements for energy generation
D7: Energy efficiency obligation on energy network regulators
D8: Voluntary measures to increase the efficiency of energy transformation, transmission and distribution
<b>E: National reporting</b>
E1: Retain the current approach
E2: Require light form of reports
E3: Require detailed calculation of savings and evaluation of measures across the whole economy
E4: Reporting only in National Reform Programmes
E5: Combine reporting with other relevant instruments
<b>Third-level policy options</b>
1: Retain the two current Directives (ESD and CHP) as they stand today
2: Abolish the two current Directives without replacement
3: Propose two separate revised Directives and extend their scope
4: Merge the two Directives and extend the scope
5: Use Regulation legal instrument instead of Directive

## 7. CONCLUSIONS: PREFERRED NEW POLICY FRAMEWORK

### 7.1. Preferred Options

The analysis concluded that there is **no need to propose binding national targets at the present moment**. Even though such targets could signify the importance of energy efficiency and raise it high on political agendas, individual measures are the ones to make a real difference. Therefore, only **indicative targets**, set by Member States, are recommended (Option A3). However, progress needs to be monitored and evaluated. If an evaluation in 2013 shows that this approach endangers reaching the overall European 20% energy efficiency target, a move towards binding national targets needs to be made.

To replace the need for a binding target but ensure the same results the following measures could be brought forward.

The **energy savings obligation (Option B4)** is a key to increase the uptake of energy efficiency measures and support the development of energy services market. Thus it is

suggested that **national energy saving obligation schemes are introduced which will aim at an annual final energy reduction of 1.5%**. It is appropriate for the obligation to be placed by MS on their energy utilities (suppliers or distributors), since these entities dispose of information about the energy consumption of their clients. Certain key features of the obligation schemes should be harmonized at EU level (e.g. level of ambition and counting methods), but MS should have the possibility to adjust them to their national circumstances. This requirement will put a financial value on energy savings and link the profits of utilities to energy efficiency rather than solely to the volume of energy delivered. The expected savings are considerable (108-118 Mtoe of primary energy savings in 2020) while the costs per individual are negligible and evenly distributed amongst final energy consumers.

The **public sector could be an important actor** in stimulating market transformation towards more efficient products, buildings and services because of the high volume of public spending and two measures are proposed. First, 3% of the buildings owned by public bodies should be renovated annually to cost-optimal levels (Option C2a). This would not lead to especially high energy savings (approx. 9 Mtoe) but is taken forward as they have high visibility in public life. Even in cash terms, the benefits of this option will outweigh the costs: additional energy related investments of €1.6 bn per year between 2010 and 2020 will be offset by savings on energy bills of €1.92 bn. Second, public bodies purchasing high energy performance products and buildings based on the available energy labels and certificates (Option C3) will drive the market forward. This would lead to a direct impact of 9-18 Mtoe saved in 2020. It would require an initial investment increase but would decrease the overall costs for public organizations.

**Information on actual energy consumption** provided to households and companies on a frequent basis through their energy bills (Option C5) and **on the savings possibilities** for large companies through energy audits (Option C7) are both important for reducing the information gap that is one of the barriers to efficiency. The analysis has shown that in both options the burden for final consumers and companies would be relatively low compared to the benefits they will gain. The possible savings of the two options are also considerable and could reach up to some 90 Mtoe for Option C5 and up to 30 Mtoe for Option C7. However, the scale of savings would depend on individual reactions of consumers and the interaction between these measures and other national measures that would incentivise the consumers to make use of the information that will be made available to them.

**ESCOs are an important player** that could take some of the burden of the initial required investments in energy efficiency measures. However, even in well established ESCO markets, transaction costs are too high for potential customers to easily assess the available service offer. Therefore, it is suggested that MS establish structures to carry out market monitoring, providing lists of energy service offers and standard contracts (Option C9). To this end, Member States could use the agencies already established to follow energy efficiency policies and therefore this option would not pose a significant administrative burden for them.

To support **more efficient energy generation, transmission and distribution** it is proposed that a number of regulatory measures be brought forward. These include measures to ensure that surplus heat from power generation and industrial processes and other waste-to-energy sources are used first to satisfy heat demand in buildings and businesses and that primary energy fuel is used more efficiently. This would be achieved by requirements to equip new generation capacity and high-heat-demand industry installations with heat recovery (CHP) units and to ensure their connection to consumers via district heating/cooling networks (Option D3). Second, to reduce the administrative burden and create a level playing field, it is essential to establish clear connection rules and priority access to the electricity grid for high

efficiency cogeneration (Option D4). This would put CHP on equal footing with renewable energy technologies.

In addition, energy network regulators should be required to design tariffs and network regulations that would enable energy efficient solutions and technologies to be offered to consumers (Option D7). Since this would not bring additional tasks for regulators, but would instead put a clear mandate to prioritise energy efficiency among their tasks, the additional administrative burden would not be significant. It is also proposed that the Commission monitor progress as regards energy efficiency of electricity and heat generation and if it is not sufficient, further measures should be proposed after detailed analysis (Option D6bis).

To limit the administrative burden whilst ensuring that proper monitoring of progress is carried out, **a light form of reporting is suggested** (Option E2). This approach would reduce the administrative burden by eliminating the most expensive tasks: ex-ante and ex-post evaluations of single policy measures. It is estimated that it would reduce costs to about half their present level.

The analysis of the third-level policy options concluded that extending the scope of the ESD and CHP Directive would be beneficial. Merging them into one legislative text would provide for simplification and better coherence.

All the options proposed are **interlinked and mutually reinforcing**. Only if combined in one package can they bring the energy consumption reductions required at a socially acceptable cost.

## 7.2. Overall impact

The instrument mix put forward will contain a number of overlaps and interactions. The modelling of the whole package showed that primary energy demand in 2020 will be reduced by between 19.7% and 20.9% compared to the PRIMES 2007 baseline projection while final demand decreases by 15.6% to 19.5% in 2020. The sectors reducing demand most are transport and residential. Reductions are substantial in the tertiary sector, too, due to improved appliances and improved heating and cooling. Generation efficiency also improves and some of the measures to reduce final energy demand lead to lower electricity consumption and thus lower production.

Measures to achieve the 20% energy saving target in 2020 will support the greenhouse gas reduction target, in particular in non-ETS sectors. According to the Low Carbon Economy Roadmap 2050 the achievement of the 20% EE and RES targets enables a 25% greenhouse gas emission reduction. In this context, the Commission has said that it will monitor the impact of new measures to implement the 20% energy efficiency target on the ETS<sup>6</sup>.

Impacts on the ETS are presented in the overall 20% efficiency model runs, albeit results differ substantially depending on the model used. While both models project a further decrease in GHG emissions, they show different results regarding the impact on the ETS price: the E3ME model run projects a drop to zero of the ETS price in 2020 whereas the PRIMES scenarios project a much lower impact (a reduction from €16.5/t to €14.2/t in 2020). This lower ETS price impact until 2020 in PRIMES is explained among other things by a higher share of modelled measures with GHG reductions materialising in non-ETS sectors, the full market foresight assumed and an unlimited ETS banking flexibility until 2050 assumed. It is appropriate to monitor impacts of the proposed measures on the ETS.

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<sup>6</sup> COM(2011)112

Additional costs to the total energy system rise by between 2.6% and 4.7% compared to the reference scenario<sup>7</sup>. The increase in energy efficiency will tend to increase electricity prices in the short term from 141€/MWh to 146€/MWh due to the need to finance the fixed costs of energy efficiency measures<sup>8</sup>. However, in the long run, this increase pays off by stabilising electricity prices through a lower demand.

It can therefore be confirmed that the package of **policy package put forward is capable of reaching the 20% objective and reaping additional benefits that remain tangible beyond 2020**. The additional costs of achieving the overall 20% target through the set of measures proposed are proportionately small. The overall economic, social and environmental impacts of the options presented above will make a strong positive contribution to EU policies and serve as a pillar for the success of the Europe 2020 strategy.

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<sup>7</sup> PRIMES 20% reference scenario

<sup>8</sup> Ibid 7