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COMMISSION STAFF WORKING DOCUMENT

Accompanying document to the Draft Commission Regulation implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to small, medium and large power transformers

{C(20XX) yyy final}
{SEC(20XX) yyy}

EXECUTIVE SUMMARY OF THE IMPACT ASSESSMENT

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EXECUTIVE SUMMARY OF THE IMPACT ASSESSMENT

1. PROBLEM DEFINITION

The main challenge in the transformers' market is that cost-efficient technical solutions to reduce their energy consumption exist, but the market penetration of more efficient transformers is relatively low. The two main reasons for this low market penetration are an emphasis on initial purchase cost, to the detriment of lifecycle costs, and the fact that distribution losses (of which transformers are responsible for half) are ultimately charged to end-users by network operators. These two market deficiencies mutually reinforce each other over time.

Transformers are procured by professional buyers who follow total cost of ownership (TCO) considerations to inform the required design specifications. This is almost always the case with large power transformers and often the case for distribution transformers. However, there is a large margin for discretion in the valuation of network losses (which are a component of all TCO formulas) done by electricity companies and industrial users, which may result in the calculations not reflecting the true cost of these losses to society.

A number of national regulatory regimes¹ for electricity markets offer incentives to electricity companies for network loss reduction, but the targets are based on average losses calculated over a period of time, not on the real marginal losses which are actually avoided through more efficient equipment. The situation with such incentives is very patchy across the EU, with various types of heterogeneous schemes co-existing. The proposed Ecodesign regulation should reinforce existing incentive schemes in national regulatory regimes, stimulate their introduction in those Member States where they are still not present and foster their overall convergence.

The experience from other countries in regulating transformers shows that establishing minimum performance or efficiency requirements is likely to have a beneficial transformational effect on the market and achieve desirable policy objectives of energy conservation, reduction of greenhouse emissions and stimulation of technological innovation.

2. ANALYSIS OF SUBSIDIARITY

The proposed Ecodesign Regulation, together with the relevant EN standard under development, will help consolidate the internal market for transformers and achieve efficiencies through larger production volumes. In the absence of an EU Regulation, manufacturers and utilities might be confronted with a proliferation of national regulations establishing disparate minimum performance requirements and increasing compliance costs.

A number of other jurisdictions around the world have been adopting MEPS (Minimum Energy Performance Standards) requirements for transformers in recent years (US, Japan, Australia, China). Action at EU level is justified to bring the EU's market in line with the most progressive jurisdictions and also to reduce the burden of testing and product development on manufacturers compared with a situation where separate measures in different Member States proliferate.

The envisaged regulation is fully coherent with other EU policies, and in particular it is to be seen as a contribution to decoupling economic growth from the use of resources, and in

¹ See for instance the RIIO model in the UK <http://www.ofgem.gov.uk/Media/FactSheets/Documents1/re-wiringbritainfs.pdf>

particular energy, an objective set out in the Europe 2020 strategy (COM(2010) 2020)² under the Resource efficient Europe flagship initiative.

3. OBJECTIVES

The general objective is to develop a policy which corrects the identified market failures, and which:

reduces energy consumption and related CO₂ emissions.

promotes energy efficiency hence encouraging innovation and reducing energy dependence and contributing to the EU objective of saving 20% of the EU's energy consumption by 2020.

These should be achieved while maintaining a functioning internal market with a level playing field for producers and importers.

The specific objectives are:

to facilitate removal of the poorest performing products from the market, where their life cycle cost disadvantages have proven insufficient to drive this.

to set incentives for producers to further develop and market energy efficient technology and products.

to complement existing national regulatory incentives for reducing distribution losses and stimulate their introduction where they are not present.

to generate cost savings for end-users over the product's lifecycle.

The operational objectives are:

to mobilize CENELEC to complete by 2013 appropriate measurement standards for energy performance and efficiency that complement the Regulation.

to create, in the case of large power transformers, a framework for gathering information about energy efficiency that can reinforce the economic rationale for the minimum energy efficiency requirements envisaged for Tier 2.

to achieve the objectives listed above without having a significant negative impact on functionality, safety, affordability of the product, nor on the industry's competitiveness and the administrative burden imposed on it as provided in Art. 15 of the Directive.

4. POLICY OPTIONS

The following policy options have been considered:

A – No EU action

B – Adoption of existing foreign policy

C – Self-regulation

D – Energy Labelling only

E1 - Strict Minimum Energy Performance Standards (MEPS)

E2 - Intermediate Minimum Energy Performance Standards (MEPS)

² Available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:2020:FIN:EN:PDF>

Options A (as baseline), E1 and E2 were retained for the quantitative assessment. The preferred choice is option E2 as it presents the best profile in terms of effectiveness, efficiency and coherence.

5. ASSESSMENT OF IMPACTS

The table below summarises the economic and environmental impacts for which it was possible to perform quantification. The full text of the impact assessment report includes a qualitative discussion on other possible economic and social impacts, including competitiveness.

Option	Total energy consumption (2025, TWh)	Total energy savings (2025, TWh)	Total CO2 savings (Mton, 2025)	Costs for producers
Option A: No EU action	123,4	0	0	n/a
Option E1: Strict MEPS	104,7	18,7	4,3	Could not be quantified
Option E2: Intermediate MEPS	107,2	16,2	3,7	Could not be quantified

The minimum requirements to be introduced by the preferred Option E2 are likely to have an effect on the initial purchasing price of transformers. Making transformers more energy efficient requires more raw materials and labour and almost inevitably results in increasing their price. A precise assessment of the expected price increase has not been possible as manufacturers were not in a position to share key data, which was considered to be commercially sensitive. An estimate of price increases allowed calculating a payback period of less than 9 years for a typical distribution transformer fulfilling the minimum requirements proposed in Option E2 in Tier 1 (2015).

Some retraining in manufacturing facilities may be expected as manufacturers adapt their production lines to the minimum requirements set out for Tier1 (2015) and Tier 2 (2020).

6. COMPARISON OF OPTIONS

Each option has been scored according to the anticipated impacts of the policy, using three criteria: effectiveness, efficiency and coherence

Both Options E1 and E2 score well in terms of coherence with other neighbouring policies, such as the Energy Efficiency Directive and climate change policies. Option A is not expected to achieve any of the objectives associated with the proposed regulation.

In terms of effectiveness, both Options E1 and E2 score well, as they are expected to gradually transform the market towards more efficient models and generate substantial energy and CO2 savings. In the long term, their effect is nearly indistinguishable, as they are proposing the same MEPS from 2020 onwards.

Option E2 scores slightly higher than Option E1 in terms of efficiency. The reason for this is the smoother introduction of MEPS in Tiers 1 and 2. The stricter Option E1 could have some disruptive effect in the market, as purchasers of transformers are likely to frontload orders ahead of the coming into force of the regulation, thus straining manufacturers' production capacity and their supply chains for raw materials.

Option E2 is therefore expected to have a more gradual market transformation effect, but without the risks that could be associated with the more stringent Option E1.

Overall, Option E2 presents the better profile in terms of effectiveness, efficiency and coherence and therefore it is the retained option.

Timing and structure of the implementing measure

After consultation with the different stakeholders, the following dates have been considered for implementation of the regulation:

Ecodesign information requirements from July 2015

Tier 1 requirements from July 2015

Tier 2 requirements from July 2021

Review of the regulation in January 2018

The different product information requirements and minimum energy performance requirements are summarised in the table below.

Overview of the different requirements in Tier 1 and Tier 2

	Tier 1 (2015)	Review (2018)	Tier 2 (2020)
Small power transformers (< 1kV)	Information requirement on losses	Consideration of introducing minimum requirements for Tier 2 (MEPS or efficiency (%))	Possibly MEPS or minimum efficiency (%) requirements
Medium-power transformers (distribution) (< 36 kV)	Information requirement on losses MEPS (Minimum Energy Performance Standards) or minimum efficiency requirements	Consideration of switching from MEPS to minimum efficiency (%) for Tier 2 Validation of requirements for Tier 2	Information requirement on losses Stricter MEPS or minimum efficiency (%) requirements
Special category pole-mounted transformers	Regulatory concessions due to weight limitations	Consider if regulatory concessions are still appropriate	Regulatory concessions due to weight limitations
Large power transformers (> 36 kV)	Information requirement on energy efficiency Minimum efficiency requirements	Validation of requirements for Tier 2	Information requirement on energy efficiency Stricter minimum efficiency requirements

7. MONITORING AND EVALUATION

The main monitoring element will be the tests carried out for new product conformity. Products placed on the Community market have to comply with the requirements set by the proposed regulation, as expressed by the CE marking. Monitoring of the impacts is mainly done by market surveillance carried out by Member State authorities ensuring that the requirements are met.

The appropriateness of scope, definitions and concepts will be monitored by the ongoing dialogue with stakeholders and Member States at the Ecodesign Consultation Forum.

The main issues for consideration for the proposed mid-term review of the regulation include:

The appropriateness of the levels for the specific Ecodesign requirements in Tier 2

The possibility to switch minimum requirements from maximum levels of losses to efficiency levels (%) at a specific load factor, which would incorporate load and no-losses, thus providing more flexibility in the design.

Look into the availability of materials necessary to meet the requirements set out for Tier 2.

Consider the appropriateness of establishing minimum efficiency requirements for small transformers.

Verify whether regulatory concessions made for pole-mounted transformers and for special combinations of winding voltages in the implementing measure are still appropriate.

The possibility to cover other environmental impacts than energy in the use phase.

Taking into account the time necessary for collecting, analysing and complementing the data and experiences in order to properly assess technological progress, a review could be presented to the Consultation Forum no later than three years after entry into force of the regulation (as laid down in the implementing measure).