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COMMISSION STAFF WORKING DOCUMENT

accompanying the

**PROPOSAL FOR A COMMISSION REGULATION
implementing Directive 2005/32/EC with regard to household refrigerating appliances**

SUMMARY IMPACT ASSESSMENT

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SUMMARY IMPACT ASSESSMENT

Lead DG: TREN

Associated DG: ENTR

Other involved services: COMP, ECFIN, ENV, INFSO, LS, MARKT, RTD, SANCO, SG, TRADE

Agenda planning or WP reference: 2009/TREN/025

EXECUTIVE SUMMARY

Household refrigerating appliances are covered by Directive 96/57/EC of the European Parliament and of the Council on energy efficiency requirements for household electric refrigerators, freezers and combinations thereof. These requirements, which became applicable in 1999 (three years after the entry into force of the Directive), have long been overtaken by recent innovations and can be considered obsolete.

Directive 2005/32/EC of the European Parliament and of the Council (the Ecodesign Framework Directive), adopted in the meantime, lays down a framework for the Commission, assisted by a Regulatory Committee, to set new ecodesign requirements for energy-using products. Refrigerating appliances were identified in the European Economic Recovery Plan, COM(2008) 800, as one of the priority product groups for which an update of the ecodesign requirements is needed.

The approach to developing the proposed ecodesign implementing measure for refrigerating appliances and conducting the impact assessment followed four steps:

Step 1: assessment against the criteria for an ecodesign implementing measure set out in Article 15(2) of the Ecodesign Framework Directive, taking into account the parameters listed in Annex I and the method for setting specific requirements laid down in Annex II of the Ecodesign Framework Directive;

Step 2: consideration of relevant Community initiatives, market forces and disparities in the environmental performance of equipment on the market with equivalent functionality, as laid down in Article 15(2) of the Ecodesign Framework Directive;

Step 3: setting policy objectives including the desirable level of ambition, the policy options for achieving the objectives, and the key components of the ecodesign implementing measure as required by Annex VII of the Ecodesign Framework Directive;

Step 4: impact assessment on environment, consumers and industry, with a view to the criteria on implementing measures set out in Article 15(5) of the Ecodesign Framework Directive.

Step 1: Legal base for an implementing measure: compliance with the Ecodesign Framework Directive, Article 15

In order to assess the criteria for ecodesign implementing measures as set out in Article 15(2) of the Ecodesign Framework Directive, the Commission carried out a technical, environmental and economic preparatory study on household refrigerating appliances¹ pursuant to Article 15(4)(a) and Annexes I and Annex II of the Ecodesign Framework Directive. The study has shown, as illustrated in Table 1, that (1) household refrigerating appliances are placed on the EU market in large quantities, (2) the environmental impact related to the life cycle electricity consumption of these products, despite significant energy improvements, remains significant, and (3) there is a wide disparity in the environmental impacts of appliances currently on the market, and technical, cost-effective solutions exist that could lead to significant improvements. The study demonstrated that the greatest environmental impact of household refrigerating appliances is energy consumption in use.

Table 1: Total household refrigerating appliances in EU-27 in 2005

Article 15(2)(a):	Annual sales volume in the Community	Compressor-type appliances: 20 million units Absorption-type appliances: 250 000-300 000 units Wine appliances: 300 000 units ²
Article 15(2)(b):	Environmental impact: electricity consumption of appliances (BaU)	In 2005: 122 TWh ³ and 56 Mt CO ₂ equivalent In 2020: 83 TWh and 38 Mt CO ₂ equivalent
Article 15(2)(c):	Improvement potential of household refrigerating appliances (applying existing cost-effective technology)	Between 3 and 6 TWh depending on the sub-options in 2020 compared to the BaU scenario ⁴ (in 2025, the potential for energy savings increases up to 14 TWh compared to the BaU scenario)

Step 2: Existing initiatives and the capacity of market forces to address the issue

¹ 'Preparatory studies for ecodesign requirements — Lot 13 on domestic refrigerators and freezers'. Available on: www.ecocold-domestic.org.

² This is only an estimated figure since no precise data are available on the sales of wine appliances.

³ This represents 4.4% of the total EU electricity consumption of about 2760 TWh in 2005.

⁴ Compared to the 2005 level, i.e. including the savings achieved in the BaU scenario, the savings will amount to 39-46 TWh (depending on policy options).

Further to Articles 15(2) and 15(4)(c) of the Ecodesign Framework Directive, relevant Community and national environmental legislation were considered. Related (voluntary) initiatives both at Community and Member State level were taken into account, and barriers preventing the market take-up of technologies with improved environmental performance (leading to market failures) were analysed.

Unlike other product groups considered under the Ecodesign Framework Directive, refrigerating appliances have long been addressed by legislative initiatives.

Regulated by energy labelling⁵ and minimum efficiency requirements⁶ since 1994 and 1996, domestic refrigerators and freezers are one of the success stories of Community energy efficiency policy. Over the last 12-13 years, an energy efficiency improvement of almost 30% has been achieved and the EU Energy Label has become one of the most important market drivers. Despite stock growth of 15% over the period, the absolute energy consumption of domestic 'cold appliances' is currently 15% lower than in 1990. In the same period, the industry has practically phased out CFCs and HCFCs and replaced them with hydrocarbons, thus diminishing the ozone depletion potential (ODP) and greenhouse gas (GHG) impact of the refrigerant and foaming agents.

In the meantime, however, the minimum energy efficiency requirements have long been surpassed and the industry (CECED) introduced a voluntary commitment banning the least efficient appliances from the market. However, partly as a consequence of enlargement but mainly because the market has become too scattered for proper and fair implementation, the industry has decided not to table a new voluntary agreement. In addition to minimum requirements, an energy labelling scheme was in force. The labelling for the energy efficiency classes, revised in 2003 by adding two classes A+ and A++, is proving to be no longer sufficient to drive innovation, so that stakeholders, including the industry and consumer organisations, are unanimously asking for a combined revision of both the Ecodesign and Labelling Directives on refrigerating appliances⁷.

Therefore, given the lack of voluntary initiatives by the sector, this impact assessment pays particular attention to the rationale for developing tighter measures under the Ecodesign and the Labelling Framework Directives as a means to providing consumers with meaningful product information on energy efficiency and giving European manufacturers the long-term security they need to invest in innovative technology. The aim is to maintain the trend towards efficiency improvements and support the global competitiveness of the EU-27 industry.

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From the first two steps, it was concluded that the criteria for ecodesign implementing measures as set out in Article 15(2) of the Ecodesign Framework Directive are met, and

⁵ Commission Directive 2003/66/EC amending Commission Directive 94/2/EC implementing Directive 92/75/EEC with regard to energy labelling of household electric refrigerators, freezers and their combinations.

⁶ Directive 1996/57/EC of the European Parliament and of the Council on energy efficiency requirements for household electric refrigerators, freezers and combinations thereof.

⁷ Member States have, in the past, initiated fiscal incentives programmes to foster the market take-up of energy-efficient appliances but the uncertainty about the future of the energy efficiency classes prevents them from starting up new support programmes. Furthermore, the Ecodesign Framework Directive implies that legislative action on domestic appliances cannot be taken at Member State level.

refrigerating appliances should be covered by a measure pursuant to Article 15(1) of the Ecodesign Framework Directive complemented by an upgraded energy labelling scheme.

Step 3: Policy objectives and levels of ambition

Annex II to the Ecodesign Framework Directive provides that the level of ambition for improving the environmental performance and electricity consumption be determined by an analysis of the least life cycle cost for the user of equipment. Furthermore, benchmarks for technologies yielding best performance, as developed in the preparatory study and the discussions with stakeholders during the meeting of the Ecodesign Consultation Forum⁸ on 5 December 2008, are considered. The minutes of the meeting are attached in Annex 1. The results are reflected in the objectives that the proposed regulation aims to achieve.

The objective is to trigger a market shift that would enable the potential for improvement to be achieved. Several policy options were considered, including self-regulation, mandatory energy labelling and mandatory minimum energy performance requirements. Considering the strong interrelationship between the energy labelling scheme and the ecodesign requirements, and the demand from Member States, the industry, consumer organisations and environmental NGOs for a coordinated revision of the existing legislation, this impact assessment also considers, in sections 5 and 6, the combined impact of both measures.

Step 4: Environmental, economic and social impact assessment

An assessment of the proposed implementing measure is carried out. Considering that the most significant environmental impact of household refrigerating appliances is their energy consumption in use, sub-options for gradual ecodesign requirements together with revised energy efficiency classes were analysed in section 6. The sub-options considered for compressor-type appliances are as follows:

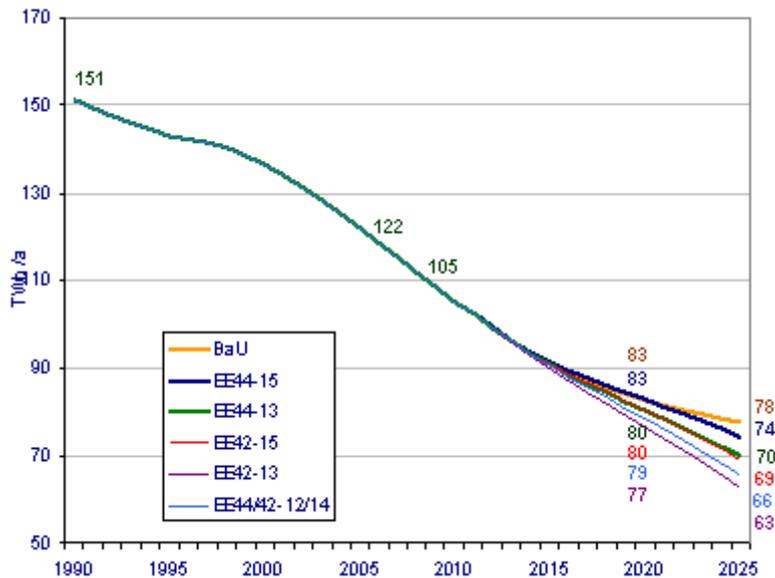
- **BAU:** Business-as-usual scenario, i.e. continuation of current Community policy measures (current labelling scheme only) and no further action at EU level;
- **Sub-option EE44-15:** EEI⁹<55 in 2010, EEI<44 in 2015;
- **Sub-option EE44-13:** EEI<55 in 2010, EEI<44 in 2013;
- **Sub-option EE42-15:** EEI<55 in 2010, EEI<42 in 2015;
- **Sub-option EE42-13:** EEI<55 in 2010, EEI<42 in 2013.
- **Sub-option EE44/42-12/14:** EEI<55 in 2010, EEI<44 in 2012 and EEI<42 in 2014.

The following graph illustrates the savings achieved for each scenario.

⁸ The Consultation Forum is composed of representatives of the Member States and of interested parties such as the industry, consumer and environmental NGOs called to express their views.

⁹ EEI refers to the energy efficiency index, an algorithm defined in the current Directives 96/57/EC and 94/2/EC, which takes into account the effects of the volume and other features of cold appliances in order to allow a fair comparison between products.

Figure 1: EU-27 total electricity consumption of compressor-type refrigerating appliances according to sub-options 1 to 5 in TWh/year (electric) (EU-27 demand 2005: 3106 TWh, including energy sector)



Source: Input to this Impact Assessment by VHK

Compared with 1990 — the reference year for the climate change policy — the annual energy consumption and carbon emissions of household refrigerating appliances in 2020 will be 50-60% lower, saving around 75 TWh electricity and 25 Mt CO₂ equivalent per year (1990: 153 TWh; 2020: 77-83 TWh, depending on the scenario). In 2025, savings are projected to be around 90 TWh and 40 Mt CO₂ per year (compared to 1990).

The graph shows that substantial savings will be achieved in the business as usual scenario. This is due to the fact that this market is already characterised by strong market demand for energy-efficient products, which is the outcome of 15 years of effective energy labelling. However, to prevent the slow-down in energy savings which is expected to occur from 2015, and to ensure that the cost-effective level is reached, an upgrade of the existing legal framework appears necessary.

The biggest threat to further energy improvements identified by the industry itself is in fact failure to put into place the legislative framework to support the market dynamics. The fact that the energy efficiency classes in the current labelling scheme are outdated will have several negative impacts: consumers will no longer be able to differentiate between products on the basis of their energy efficiency (all models will be in the same labelling class), retailers will lose interest in displaying the energy label, the authorities will no longer be able to promote the most efficient models and the industry will not be motivated to invest in energy efficiency but might instead invest in other features (mostly more energy-consuming) in order to differentiate their products from those of their competitors.

Sub-option EE42-13 (EEI<55 in 2010 and EEI<42 in 2013) is shown to deliver the most important savings without negative impacts on other functions of the appliances. However, in order to reduce the risks of a negative impact on industrial competitiveness minimum energy efficiency requirements in three stages would be more appropriate. This would leave enough

time to the industry to adapt to the reduction of tolerances for the measurement of energy consumption. In that scenario, it is suggested that the requirement is set at $EEI < 55$ in 2010, $EEI < 44$ in 2012 and $EEI < 42$ in 2014 (sub-option 'EEI44/42-12/14').

The analysis demonstrates that the best policy option for achieving the environmental improvement potential of refrigerating appliances is a combined revision of the ecodesign requirements and the labelling scheme in two stages (one year and four years after entry into force). This approach ensures that:

- ongoing energy improvements are maintained and fostered by setting a transparent legislative framework that will provide the industry with the long-term security it needs to invest in innovative technology;
- fair competition and product differentiation continues to operate on energy improvements by providing consumers with an effective and reliable tool to compare the energy consumption of products, in a context of strong market demand for energy-efficient appliances;
- by 2020, absolute electricity savings of 30-35% can be achieved against the reference year 2005 (due to the market inertia (i.e. full replacement of old models by new types takes about 15 years), the effects of the new measures will be very limited up to 2020 compared with the baseline scenario, but by 2025 the energy consumption of all installed domestic refrigerators and freezers could be half of the energy consumption in 2005);
- the cost-effective level of energy consumption is reached, with a savings potential of 4 TWh in 2020 compared to the BaU scenario, increasing to 12 TWh in 2025 if sub-option EE44/42-12/14 is implemented;
- more energy-consuming products are quickly removed from the market, securing electricity and CO₂ savings in the Community, while reducing the life cycle costs of these devices for consumers. Calculated in net present value (euro 2005), consumer expenditure - i.e. the annual purchase and running costs of the EU-27 stock — will drop by around €400 mln./a in 2025 compared to 2005;
- a level playing field for all manufacturers is guaranteed, ensuring fair competition and free movement of products;
- the burdens on manufacturers are not excessive, as the transition periods take redesign cycles into account.

In addition, the impact assessment has considered other issues to be addressed as part of the revision of the current Ecodesign and Labelling Directives, in particular extending their scope to include new types of appliances (e.g. absorption-type appliances and wine coolers), the addition of new generic requirements and the revision of the calculation methodology for the energy efficiency index.

Finally, SMEs are considered to represent 30% of manufacturers (mainly as OEMs, i.e. suppliers of components like thermostats, shelves, etc.) and 80% of retailers. The analysis shows that the policy options will have no negative impact on them. On the contrary, they would benefit from stronger demand for new technologies and higher turnover.

As set out in Section 7, the impacts of the legislation will be monitored mainly through market surveillance carried out by Member State authorities ensuring that its requirements are met, while the appropriateness of the scope, definitions and concepts in the legislation will be monitored through ongoing dialogue with stakeholders and Member States.