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COMMISSION STAFF WORKING DOCUMENT

EXECUTIVE SUMMARY OF THE IMPACT ASSESSMENT

Accompanying the document

Commission Regulation implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for vacuum cleaners and

Commission Delegated Regulation supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of vacuum cleaners

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1. INTRODUCTION

Vacuum cleaners are mass market energy related products, covered by the scope of both the Ecodesign Directive 2009/125/EC and the Energy Labelling Directive 2010/30/EC.

This document and the impact assessment report consider whether implementing measures under those Directives should be adopted to reduce their environmental impact, in particular their energy consumption. The Directives lays down a framework for the Commission, (for Ecodesign assisted by a Regulatory Committee), to set eco-design and energy labelling requirements for energy-related products. These measures are an important instrument for the policy objectives under the 'Resource-efficient Europe - Flagship Initiative'[1] and the 'Energy 2020'[2] strategy paper. In the Commission's 'Energy Efficiency Plan 2011'[3] ecodesign measures and energy labelling play an important role. Domestic appliances, including vacuum cleaners, are listed as priority products in Directive 2009/125/EC.

2. PROBLEM DEFINITION

The products in scope (hereafter 'vacuum cleaners') are dry, domestic and non-domestic electric vacuum cleaners of all types -- upright, cylinder, stick-- and characteristics, i.e. with or without bag, active nozzle, etc.. This is the most important category in terms of sales and environmental impact. Wet, wet&dry, industrial, central, robot and battery driven vacuum cleaners represent relatively smaller segments with limited environmental impact and are excluded.

The main ecodesign problem related to vacuum cleaners is the lack of consumer information on energy use and cleaning performance. As a result, most consumers take the electric power input (in W) as a proxy for cleaning performance.

Over the past decades this has led to low price, high-power but low-performance vacuum cleaners, mainly from China, flooding the EU market and more than doubling the societal energy consumption of this appliance. The vacuum cleaner has now become, from a position

[1] A resource-efficient Europe – Flagship initiative under the Europe 2020 strategy, EC, 26.1.2011, COM (2011)21.

[2] Energy 2020, A strategy for competitive, sustainable and secure energy, EC, 10.11.2010, COM(2010) 639 final

[3] Energy Efficiency Plan 2011, EC, 8.3.2011, COM (2011) 109 final.

of a relatively minor energy-user, a significant contributor to household's energy consumption and a candidate for ecodesign measures.

In figures: The power consumption of vacuum cleaners has been rising from 1275 W in 1990 to around 1500 W in 2005 and is expected to reach 2300 W in 2020 (without measures). The electricity consumption of an average domestic vacuum cleaner (usually operated 1 hour/week) will grow from 60 kWh/year in 1990 to 120 kWh/year in 2020, i.e. an energy consumption level similar to washing machines and dishwashers. Non-domestic 'professional' vacuum cleaners are more efficient (30% less power for a better performance) but still there is potential for saving.

3. OBJECTIVES

Relevant generic objectives are given by the legal basis of the Ecodesign and Energy Labelling, i.e. article 114 of the TFEU ('internal market') and 194 ('security of energy supply', 'promoting energy efficiency and energy saving') of the Treaty on the Functioning of the European Union. Operational objectives are, amongst others, given aims to reach 20% energy saving and greenhouse gas abatement in 2020 as well as by other environmental and resources-saving objectives regarding e.g. noise and dust re-emission.

4. CRITERIA FOR ECODESIGN (AND ENERGY LABELLING) MEASURES

The approach to decide whether and how the above objectives can be met with Ecodesign (and Energy Labelling) measures for vacuum cleaners and assessing their impact assessment has been structured in four steps.

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

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

Step 3: establishing policy objectives including the desirable level of ambition, the policy options to achieve them, and the key elements of the ecodesign implementing measure as required by Annex VII by the Ecodesign Directive;

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

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

In accordance with Article 15(4a) and Annexes I and II of the Ecodesign Directive the Commission has carried out a technical, environmental and economic preparatory study to assess criteria for Ecodesign implementing measures on vacuum cleaners. The study has shown (see table 1) that these criteria are met as:

– vacuum cleaners are placed on the EU market in large quantities;

– the environmental impact related to the life cycle electricity consumption of vacuum cleaners is significant;

– there is a considerable disparity in the environmental impacts of vacuum cleaners currently on the market. Technical cost-effective solutions exist that could lead to significant improvements.

The study and the stakeholder consultation showed that dust re-emission, sound power levels and durability of vacuum cleaners are also significant environmental parameters. They also suggested that, to avoid promotion of non-functional vacuum cleaners there is also a need for requirements on performance (dust pick-up).

Table 1: Criteria of Article 15(2) of the Ecodesign Directive applied on vacuum cleaners

Article 15 (2a)	**Annual EU sales volume**	**2005 54 million** **2020 92 million** **2025 101 million**
Article 15 (2b)	**Environmental impact: annual energy consumption of vacuum cleaners (BAU)**	**2005 18 TWh/a (7 Mt/a CO_2)** **2020 34 TWh/a (11 Mt/a CO_2)** **2025 42 TWh/a (14 Mt/a CO_2)**
Article 15 (2c)	**Improvement potential (annual) (applying existing cost-effective technology, sub-option 3)**	**2020 19 TWh/a (6 Mt/a CO_2)** **2025 27 TWh/a (7 Mt/a CO_2)**

(CO_2 = CO_2 equivalent)

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

Articles 15(2) and 15(4c) of the Ecodesign Directive require relevant EU and national environmental legislation to be considered. Vacuum cleaners have not been subject to any relevant mandatory measures. Other mandatory measures do not address the issue, and voluntary initiatives have finished, and had little effect.

An important reason for the market and regulatory failure to tackle the negative trend mentioned in section 1 is the lack of (consensus on) an appropriate test and calculation method for cleaning performance and thereby energy efficiency, i.e. the ratio between functional performance and energy use. Without proper methods, any mandatory energy-related measures will always have the risk of a negative impact on cleaning performance ('dust pick-up'). The voluntary ecolabels[4], the mandatory ecodesign regulations on motors[5] and fans, as well as the horizontal measures on waste (recycling), hazardous substances and packaging are insufficient to make a substantial ecological impact.[6]

However, incentivated by the preparation for ecodesign measures in recent years, progress was made in this field, allowing for the first time to effectively address the lack of consumer information.

It is concluded from the first two steps that the criteria for ecodesign implementing measures are met, and vacuum cleaners should be covered by an ecodesign implementing measure complemented by an energy label.

Step 3: Policy objectives and levels of ambition

The general objective is to realize energy saving and abatement of carbon emissions by addressing the market and regulatory failures through setting ecodesign minimum requirements and providing relevant information through energy labels.

4 There has been a voluntary Ecolabel for vacuum cleaners during the 2003-2008 (probably discontinued due to low industry interest); Also other ecolabel schemes such as Bleu Angel (DE) and Nordic Swan (Scandinavia) have not proven to be popular with industy.

5 Commission Regulation 640/2009 on motors does not address the typical motor types for vacuum cleaners. In Commission Regulation 327/2011 on fans the vacuum cleaner fans are explicitly exempted.

6 Vacuum cleaners are subject to recycling objectives under WEEE and stipulations of the Packaging Directive. Batteries in battery-powered 'active nozzles' are subject to the Battery directive. RoHS and REACH apply to e.g. certain flame retardants

The options considered are self-regulation, energy labelling only, ecodesign requirements only and a combination of an ecodesign and energy labelling measure. Industry has said it prefers regulatory measures to voluntary agreements ('self-regulation'). Energy labelling or minimum ecodesign requirements were judged by most stakeholders not to be as effective as the combination of the two. Stakeholders, including the industry and consumer organisations, have asked unanimously for a combined introduction of ecodesign requirements and a labelling scheme for vacuum cleaners.

Thus the combination of energy labelling and minimum requirements was the selected option. The Ecodesign Regulation is intended to remove the least efficient products from the market. Both measures should promote market take-up of more energy efficient vacuum cleaners and provide incentives for manufacturers to invest in appliances that combine good cleaning performance with low power consumption.

As regards the type and severity of these measures there were different views amongst interested parties and thus scenarios for three sub-options were elaborated. Considerations that played a role were the Ecodesign Directive Annex II, which indicates that targets should be set at minimum life cycle costs, and on the other hand the article 15(5) of the same directive stipulating that there should be no negative impact on functionality.

Sub-option 1 sets an absolute limit to electric power consumption of 1000 W in 2014, followed by a tier-two level of 750 W in 2017. This sub-option follows the preparatory study. It was initially supported by Green NGOs and a single UK manufacturer, but has no guarantee that there will not be a negative effect on cleaning performance and –although some upright vacuum cleaners would survive—such a measure would wipe out all current cylinder-type vacuum cleaners (i.e. with a hose) that are the most popular in continental Europe.

Suboption 2 uses a metric of cleaning performance and energy consumption that gives a very high importance to cleaning performance, i.e. allowing very high power consumption levels as long as the cleaning performance was good enough. This proposal was brought forward by industry at meetings of the Ecodesign Consultation Forum[7].

Sub-option 3 combines the two approaches above. It sets minimum ecodesign requirements based on energy label classes and power caps, but at a more moderate level, and it proposes an energy labelling scheme that takes into account the cleaning performance, but not to the extent as proposed by most of industry.

With all sub-options the 2nd tier also includes requirements on noise power (max. 80 dBA re1), on durability of the hose and the motor, on dust re-emission (1%), as well as minimum cleaning performance requirements for carpets (65% dust pick-up) and hard floors (95% dust pick-up).

Step 4: Environmental, economic and social impact assessment

The analysis of sub-options leads to savings versus the Business-as-Usual (BAU) as shown in table 2.

Table 2 Savings EU-27 for sub-options 1, 2 and 3 versus BAU in 2020 and 2025

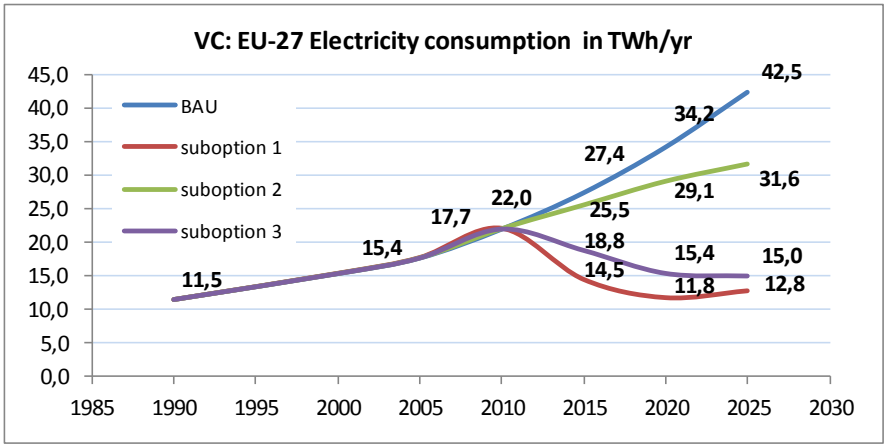
	Sub-option 1		**Sub-option 2**		**Sub-option 3**		***BAU (levels)***	
Versus Baseline BAU	**2020**	**2025**	**2020**	**2025**	**2020**	**2025**	***2020***	***2025***

[7] The Consultation Forum includes affected parties such as Member State representatives, industry, consumer and environmental NGOs. There were meetings in June 2010 and September 2011.(minutes attached as annexes A and B of the IA report).

Electricity saving (TWh/yr)	22,4	29,6	5,2	10,8	18,8	27,4	*29,7*	*37,7*
Mt CO2 saving/yr	7,7	7,6	1,2	0,8	6,4	6,8	*11,3*	*13,6*
Electricity costs saving (bln. Euro/yr)	3,8	5,0	0,9	1,8	3,2	4,6	*5,8*	*7,1*
Extra purchase cost (bln. Euro)	4,1	4,5	1,4	2,0	4,1	4,5	*20,6*	*22,7*
Total extra expenditure (bln. Euro)	0,4	-0,4	0,5	0,9	1,0	-0,4	*29,0*	*32,6*

The figure below shows that without measures **electricity consumption** would grow rapidly. This growth would be slower under sub-option 2, while sub-options 1 and 3 would give substantial reductions with respect of not only the baseline, but also with respect of current electricity use.

With respect of the policy reference year 1990, the sub-options 1 and 3 would still give an 10-30% energy and carbon increase in absolute terms, but compared to the baseline this is still a considerable achievement.



5. CONCLUSIONS

The comparison of options and sub-options shows that the appropriate policy option for realizing the improvement potential of vacuum cleaners is sub-option 3 combining a Commission Regulation setting ecodesign requirements with an Energy Labelling delegated Regulation to guide customers towards the most efficient appliances. The scenario analysis shows that the saving for sub-option 3 is 16% less than for sub-option 1, but still substantial. At the same time sub-option 3 avoids the negative impact on functionality, affordability and competitiveness of sub-option 1, i.e. cutting out all current domestic cylinder models. Compared to sub-option 2, sub-option 3 yields substantially higher savings and is thus preferred.

This approach ensures that:

– the least energy efficient vacuum cleaners will be removed from the market, increasing competition on energy efficiency instead of price and additional features;

– on-going energy improvements are fostered by setting a transparent legislative framework that will provide the industry with the long-term security needed to invest in innovative technology;

– information on product differentiation provides consumers with an effective and reliable tool to compare energy consumption of products in an economic setting where there is demand for energy efficient appliances;

– cost-effective potentials to reduce the electricity consumption of vacuum cleaners are quickly realized leading to at least 60%[8] increase in average efficiency;

– by 2020, the annual electricity consumption and CO_2 emissions of vacuum cleaners will be reduced by 19 TWh and almost 6 Mtons of CO_2 compared to a business as usual scenario (2025 27 TWh and 10 Mtons CO_2);

– significant material savings and reductions in life cycle costs for consumers are achieved;

– a clear legal framework for product design leaves flexibility for manufacturers to achieve the efficiency levels; and gives them a level playing field, ensuring fair competition and free circulation of products;

– requirements for vacuum cleaners are harmonized in the EU, leading to a minimization of administrative burdens and costs for the economic operators;

– market failures are corrected and the internal market functions properly;

– the specific mandate of the Legislator is respected;

– a reduction in accumulated electricity consumption by 2020 amounts to 113 TWh electricity, 38 Mt of CO_2 at a reduction in electricity costs of € 3,2 billion/yr in 2020 versus the baseline. For 2025, at complete stock change after stage 2 of the measures, the accumulated savings are more than twice as high. The saving on electricity costs, at a higher rate than in the period before 2020, is also more than twice as high;[9]

– costs for re-design and re-assessment upon introduction of the regulation are limited in absolute terms and not significant in relative terms (per product); disproportionate burdens for manufacturers are avoided due to transitional periods which duly take into account redesign cycles;

– the measures have no significant impacts on the competitiveness of industry, and in particular SMEs.

– the measures have positive impact on employment, in particular for SMEs.

As laid out in Section 7 of the impact assessment, monitoring of the impacts will mainly be done by market surveillance carried out by Member State authorities ensuring that the requirements are met, whereas the appropriateness of scope, definitions and concepts will be monitored by the on-going dialogue with stakeholders and Member States.

[8] The average power input of domestic vacuum cleaners was about 1700W in 2010. Introduction of measures will boost reduce this to around 1050 W without affecting performance in the medium term (a 60% increase in efficiency)and higher savings on the long term.

[9] After 2010 an escalation rate of 4% is applied for electricity prices (see also www.meerp.eu)