



**COUNCIL OF  
THE EUROPEAN UNION**

**Brussels, 31 January 2013**

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**COVER NOTE**

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from: Secretary-General of the European Commission,  
signed by Mr Jordi AYET PUIGARNAU, Director

date of receipt: 29 January 2013

to: Mr Uwe CORSEPIUS, Secretary-General of the Council of the European  
Union

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No Cion doc.: SWD(2013) 14 final

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Subject: Commission Staff Working Document  
Executive Summary of the Impact Assessment  
*Accompanying the document*

- Report from the Commission to the European Parliament and the Council  
on the voluntary ecodesign scheme for imaging equipment

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Delegations will find attached Commission document SWD(2013) 14 final.

Encl.: SWD(2013) 14 final



Brussels, 29.1.2013  
SWD(2013) 14 final

**COMMISSION STAFF WORKING DOCUMENT**  
**EXECUTIVE SUMMARY OF THE IMPACT ASSESSMENT**

*Accompanying the document*

**REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND  
THE COUNCIL**

**on the voluntary ecodesign scheme for imaging equipment**

{COM(2013) 23 final}  
{SWD(2013) 15 final}

# COMMISSION STAFF WORKING DOCUMENT

## EXECUTIVE SUMMARY OF THE IMPACT ASSESSMENT

### *Accompanying the document*

## REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL

### on the voluntary ecodesign scheme for imaging equipment

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**Lead DG: ENER**

**Associated DG: ENTR**

**Other involved services: SG, LS, CLIMA, CNECT, COMP, ECFIN, EMPL, ENV, JRC, JUST, MARKT, SANCO, TAXUD, TRADE, RTD**

### EXECUTIVE SUMMARY

Imaging equipment are energy-related products covered by the Ecodesign Directive 2009/125/EC.

The Ecodesign Directive establishes a framework for laying down ecodesign requirements for energy-related products. Ecodesign requirements for products constitute an important instrument for meeting the policy objectives under the ‘Resource-Efficient Europe — Flagship Initiative’<sup>1</sup>, the ‘Energy 2020’<sup>2</sup> strategy paper and the Commission’s ‘Energy Efficiency Plan 2011’<sup>3</sup>.

This document and the impact assessment report consider whether ecodesign requirements for imaging equipment should be adopted under the Ecodesign Directive to reduce the environmental impact of imaging equipment, in particular its energy consumption.

### 1. PROBLEM DEFINITION

Compared to the situation with most other products considered for measures, there is no major ecodesign problem for imaging equipment, as energy efficiency improvements and paper savings through duplexing are advancing rapidly, driven by voluntary policy instruments.

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<sup>1</sup> A Resource-Efficient Europe — Flagship initiative under the Europe 2020 strategy, EC, 26.1.2011, COM(2011) 21.

<sup>2</sup> Energy 2020, A strategy for competitive, sustainable and secure energy, EC, 10.11.2010, COM(2010) 639 final.

<sup>3</sup> Energy Efficiency Plan 2011, EC, 8.3.2011, COM(2011) 109 final.

The fact that the full technical savings potential is not being fully exploited is mainly due to the dynamics of the sector, which has achieved efficiency improvement rates of over 6% annually and electricity savings of as much as 87% over the last 15 years.

A concern is that there is no guarantee that the current positive trend in energy efficiency improvements will continue and that current horizontal legislation only covers selected environmental aspects.

## 2. OBJECTIVES

The preparatory study<sup>4</sup> and the 2012 research<sup>5</sup> found that there is a cost-effective potential for reducing the energy consumption of imaging equipment, including paper consumption, and that the full potential is currently not being exploited.

The objective is therefore to develop an ecodesign measure, including self-regulation, to help achieve current policy objectives, i.e. 20% energy savings and a 20% reduction in greenhouse gas emissions over the 1990-2020 period as well as the promotion of (non-energy) material resource efficiency through e.g. material reduction (e.g. paper), recycling (e.g. of larger plastic parts, electronics, metals) and reuse (e.g. toner cartridges).

The 2012 research indicated that, despite the considerable savings already achieved, the target levels for 2020 could still be ambitious and could aim for 60% energy savings and a 90% duplexing rate for typical office equipment over the 2012-2020 period.

In line with recitals 18 and 19 and Article 15(6) of the Ecodesign Directive, self-regulation should be explored as the preferred option.

## 3. CRITERIA FOR ECODESIGN MEASURES

The approach to developing the proposed measure and its impact assessment was structured in four steps.

### **Step 1: Legal basis: compliance with the Ecodesign Directive, Article 15**

In accordance with Article 15(4a) and Annexes I and II to the Ecodesign Directive, the Commission has carried out a technical, environmental and economic preparatory study to assess the criteria for ecodesign implementing measures for imaging equipment<sup>6</sup>.

The study has shown that these criteria are met, as (1) imaging equipment is placed on the EU market in large quantities, (2) the environmental impact of the life-cycle electricity consumption of imaging equipment is significant, (3) there is a considerable disparity in the environmental impacts of imaging equipment currently on the market. Cost-effective technical solutions exist that could lead to significant improvements.

### **Table 1: Criteria of Article 15(2) of the Ecodesign Directive applied to imaging equipment**

<sup>4</sup> EuP Preparatory study on Imaging Equipment compiled by Fraunhofer IZM.

<sup>5</sup> Research of the EU-ENERGY STAR database performed by consultants (van Holsteijn en Kemna VHK) in 2012 ('2012 research').

<sup>6</sup> <http://www.ecoimaging.org/>.

Art. 15(2a)	Annual EU sales volume (units)	2010 31 million 2020 37 million 2030 41 million
Art. 15(2b)	Environmental impact: direct electricity consumption of imaging equipment, in TWh electricity and Mt CO2 equivalent per year <sup>[1]</sup>	direct (electricity) 2010 8.7 TWh (3.6 Mt CO2) 2020 9.1 TWh (3.5 Mt CO2) 2030 10.4 TWh (3.6 Mt CO2)
	Environmental impact: indirect energy for production of paper consumed by imaging equipment, in TWh electricity equivalent and Mt CO2 equivalent per year <sup>[2]</sup>	indirect (paper) 2010 38.8 TWh (5.8 Mt CO2) 2020 42.8 TWh (6.4 Mt CO2) 2030 47.0 TWh (7.0 Mt CO2)
Art. 15(2c)	Improvement potential versus BAU in the same year (applying existing cost-effective technology, Voluntary sub-option ), expressed in units as above.	direct energy (efficiency improvement) 2020 7.9 TWh (4.1 Mt CO2) 2030 9.1 TWh (4.3 Mt CO2)  indirect energy (duplexing and N-printing) 2020 7.1 TWh (1.1 Mt CO2) 2030 7.8 TWh (1.1 Mt CO2)

<sup>[1]</sup> Conversion from TWh electricity to Mt CO2 equivalent takes into account improvements in CO2 emissions of power plants over the 2010-2030 period (source MEErP 2011)

<sup>[2]</sup> Office paper production: primary energy 40 MJ/kg paper, conversion to electricity equivalent using primary energy factor 2.5 (40 MJ primary= 16 MJ electric = 4.44 kWh electric), greenhouse gas emissions 0.6 kg/kg paper (source MEErP 2011). Paper consumption has been calculated according to ENERGY STAR duty cycles.

The criteria are fully met by monochrome or colour output imaging equipment with ink-jet (IJ), electro-photographic (EP/‘laser’) and solid-ink (SI, included in the EP category) marking technologies. EP equipment comprises copiers, printers, multifunctional devices (MFDs) and facsimile machines and IJ equipment is categorised into multi- and single-function devices.

Legacy marking technology such as thermal transfer (TT), direct thermal (DT) and dye sublimation (DT) is excluded as it is sold in small numbers and predominantly used in special applications such as the printing of receipts, labels and textiles. For the same reasons, large-size printers, e.g. for technical drawings, are also excluded. Finally, high-speed printers for e.g. professional print shops are excluded because cost considerations in this market segment drive buyers to purchase only the most energy-efficient models.

## 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. Imaging equipment has not been subject to any product-specific mandatory measures, but certain aspects have been addressed by horizontal legislation on standby and off-mode electricity use<sup>7</sup>, chemicals<sup>8</sup>, and waste<sup>9</sup>. The energy use of imaging equipment in the non-residential sector is part of energy accounting under the Energy Performance of Buildings Directive<sup>10</sup> and the upcoming Energy Efficiency

<sup>7</sup> Regulation 1275/2008 on standby and off-mode electric power consumption of electrical and electronic household and office equipment.

<sup>8</sup> RoHS Directive 2011/65/EC (recast).

<sup>9</sup> WEEE Directive 2012/19/EU (recast).

<sup>10</sup> EPBD Directive 2010/31/EC (recast).

Directive<sup>11</sup>. It is also included indirectly in carbon accounting under the EU Emission Trading Scheme.

The energy efficiency and core environmental impacts of imaging equipment are addressed mainly by the voluntary EU ENERGY STAR programme, following EU-US Agreements since the year 2001. Further support via Green Public Procurement criteria (GPP) and the EU Ecolabel, which largely use ENERGY STAR requirements and formats, is planned for 2012.

Since 2008, meeting the ENERGY STAR criteria, which are updated every three to four years, has been mandatory for equipment procurement by EU institutions and central governments of Member States<sup>12</sup>. The response of the imaging equipment industry to the measures has been positive, with a high participation rate (>90% market coverage), a large share of compliant products (>90% of models under current requirements) and self-declaration at a satisfactory level of reliability<sup>13</sup>.

Where market and/or regulatory failures for imaging equipment exist, they concern mainly the low-volume equipment in the consumer market and less the professional office market, according to the preparatory study. They can arise because current electricity prices do not reflect environmental costs for society and thus play an insufficient role in the purchase decision (negative externality). Furthermore, most consumers base their choice of equipment on purchase price and other factors like availability, service and ‘trusted’ brand names, rather than energy costs, because of lack of adequate information (asymmetric information). In this context, it is relevant that the ENERGY STAR logo is well known in the office sector but much less among private consumers. Finally, cases of market failure occur where investment costs and running costs are borne by different parties, e.g. a company purchasing department may have a different financial perspective than the business unit actually using the equipment and paying for its running costs (split incentives).

### **Step 3: Policy objectives and levels of ambition**

The general objective is to address the market failures and externalities by taking appropriate ecodesign measures. The options considered for detailed impact analysis were: no EU action (business as usual, BAU), self-regulation (‘Voluntary’ option), and ecodesign requirements (‘Ecodesign’ option). The industry has expressed its preference for a voluntary agreement (‘self-regulation’) over a regulatory measure.

Annex II to the Ecodesign Directive provides that energy consumption requirements should normally be set at a level so as to minimise life-cycle costs (unless other factors make this too strict).

The starting point of the analysis was the preparatory study, which provided the basis for the BAU (Business-as-Usual) scenario. Sales data from the preparatory study are used in the stock model to calculate stock, electricity consumption and paper consumption for all the options.

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<sup>11</sup> Draft directive on energy efficiency and repealing Directives 2004/8/EC and 2006/32/EC [COM(2011) 370, 22/06/2011].

<sup>12</sup> See Article 16 of Regulation (EC) No 106/2008 of the European Parliament and of the Council of 15 January 2008 on a Community energy-efficiency labelling programme for office equipment (recast version), OJ 13.2.2008, L39, p. 1-7.

<sup>13</sup> Commission Communication COM(2011) 337 final on the implementation of the ENERGY STAR programme in the EU in the period 2006-2010. Brussels, 9.6.2011.

Additional analysis was performed of the models registered in the EU ENERGY STAR database at [www.eu-energystar.org](http://www.eu-energystar.org). It found the electricity consumption and duplexing characteristics of all imaging equipment models placed on the EU market that were registered in the EU ENERGY STAR database in 2012 but also in preceding reference years back to 2009. This assessment showed not only the number of models compliant with ENERGY STAR requirements version 1.0, 1.1 (on which the current Voluntary Agreement (VA) is based) and the draft version 2.0 (to enter in force in 2013 and on which the next version of the VA will be based), but also revealed how much better these models scored with respect to the ENERGY STAR minimum requirements. The results of this assessment are shown for the Voluntary option. It was assumed under this option that a voluntary agreement would maintain the pace of improvements at levels above the ENERGY STAR requirements (as in previous years).

The Ecodesign option lays down minimum mandatory efficiency requirements for imaging equipment placed on the market. The disadvantage of a Regulation requiring 100% compliance by definition vis-à-vis an effective voluntary agreement aimed at 90% compliance is its lack of flexibility, so the ambition is usually considerably lower. At first sight, this may seem contradictory, but essentially, under Article 15(5) of the Ecodesign Directive ('no negative impact' on functionality and industry competitiveness), the ambition level for requirements under a Regulation is mainly determined by the weakest 10% of the market, consisting of special products or products made by financially weaker companies. In contrast, the ambition level of a voluntary agreement can focus on the 90% 'normal' products, produced by innovative, financially healthy manufacturers.

The Ecodesign option takes this into account: the first tier was set for 2014, assuming an efficiency target of 40% under the BAU level and the second tier was set for 2016 assuming a target 60% below BAU. For duplexing, it was assumed — optimistically — that, after formulation of a list of exemptions, requirements could be set at the same level as for the Voluntary option, i.e. for typical office printers a 75% (2014) and 85% (2016) duplexing rate would apply.

#### Step 4: Environmental, economic and social impact assessment

The analysis of sub-options found the savings shown in Table 2. The table and figure below show the direct electricity consumption of imaging equipment, the indirect energy consumption (calculated as electricity equivalent) needed to produce paper and the total energy consumption (direct + indirect) under BAU and the savings of the two other options compared to BAU.

**Table 2: Summary of the savings generated by imaging equipment in the EU-27 under different options compared to the baseline BAU for 2020 and 2030 (monetary savings are expressed in constant 2010 euros)**

Total savings (direct and indirect paper energy excl. toner) 2020						
Versus Baseline BAU	BAU (levels)		Voluntary		Ecodesign	
	2020	2030	2020	2030	2020	2030
<b>Energy consumption (TWh)</b>						
Direct	9.13	10.40	7.92	9.07	5.56	6.31
Indirect	42.75	49.99	7.12	7.83	6.54	7.83
<b>Total</b>	<b>51.88</b>	<b>57.39</b>	<b>15.04</b>	<b>16.91</b>	<b>12.10</b>	<b>14.15</b>

<b>CO2 emissions (Mt)</b>						
<b>Direct</b>	<b>3.47</b>	<b>3.54</b>	<b>2.99</b>	<b>3.09</b>	<b>2.10</b>	<b>2.15</b>
<b>Indirect</b>	<b>6.41</b>	<b>7.05</b>	<b>1.07</b>	<b>1.17</b>	<b>0.98</b>	<b>1.17</b>
<b>Total</b>	<b>9.88</b>	<b>10.59</b>	<b>4.06</b>	<b>4.26</b>	<b>3.08</b>	<b>3.32</b>
<b>Costs saving excl. toner (in bn euros)</b>						
<b>Direct</b>	<b>2.43</b>	<b>4.10</b>	<b>2.11</b>	<b>3.58</b>	<b>1.48</b>	<b>2.49</b>
<b>Indirect</b>	<b>42.75</b>	<b>46.99</b>	<b>7.12</b>	<b>7.83</b>	<b>6.54</b>	<b>7.83</b>
<b>Total</b>	<b>45.18</b>	<b>51.09</b>	<b>9.24</b>	<b>11.41</b>	<b>8.02</b>	<b>10.32</b>

Figure 1 shows that electricity consumption will grow if no measures are taken. The two options, Voluntary and Ecodesign, will substantially reduce the growth of electricity consumption.

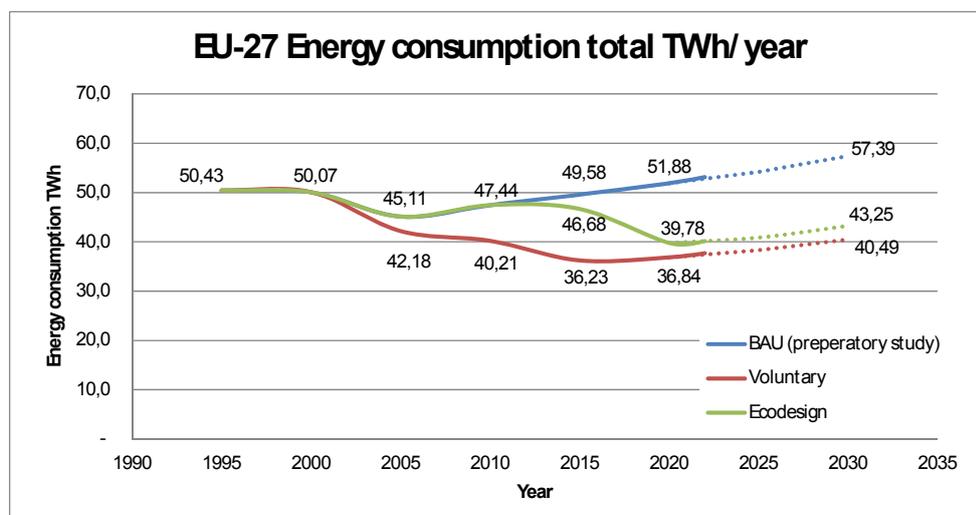


Figure 1: EU-27 Energy consumption total TWh/year

#### 4. CONCLUSIONS

The Voluntary option is the preferred choice. It contributes to solving the continuity problem with the current positive trend towards energy efficiency and paper saving (duplexing and N-printing) and addresses other resource-efficiency issues like recycling and reuse. In this dynamic product sector, it generates considerably higher savings than the alternative of mandatory ecodesign requirements, provides flexibility, enables quicker updating of target levels, and has a lower administrative burden. Unlike mandatory measures, it poses no risk of a negative impact on the effectiveness of current successful policy measures such as EU ENERGY STAR.

Specifically, the Voluntary option entails:

- a contribution to the ‘20-20-20’ target (1990-2020 period) of 25 TWh/a in direct electricity savings through efficiency improvements and the equivalent of

<sup>14</sup> Paper cost savings are calculated by multiplying the number of pages saved by €0.02 (price for 1 page, also calculated in chapter 2). Electricity rates are per kWh primary energy. For electricity, residential electricity rates in 2010 excluding taxes are used, i.e. €0.18/kWh, assuming an annual (long-term 2011-2030 average) electricity price rate increase of 4%.

approximately 4 TWh/a electricity savings through indirect paper resource savings, making a total of 29 TWh/a (equivalent to 1.1% of the EU's total electricity consumption in 2007);

- a contribution to the '20-20-20' target (1990-2020 period) in the form of direct reductions of 9.6 Mt CO<sub>2</sub> eq/a (electricity) and 0.6 Mt CO<sub>2</sub> eq/a (paper) in greenhouse gases, making a total of 10.2 Mt CO<sub>2</sub>/a (0.2% of EU greenhouse gas emissions);
- a contribution to non-energy resource efficiency of over 1 million tonnes (1 Mt) in reduced office paper consumption over the 1990-2020 period and a contribution to recycling and reuse;
- that the requirements of the Ecodesign Directive 2009/125/EC, in particular recitals 18 and 19, Article 15(6) and Annex VIII, are met,
- that the requirements will already have entered into force and are less costly than in the case of a Regulation,
- that there is compatibility and complementarity with the existing policy instruments,
- that there is no significant administrative burden for manufacturers or retailers,
- insignificant, if any, increase in purchasing cost, which would be largely offset by savings during the use-phase of the product,
- no significant impact on the competitiveness of industry and on employment, in particular in SMEs.