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COMMISSION STAFF WORKING DOCUMENT

Accompanying document to the

Commission Regulation implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for fluorescent lamps without integrated ballast, for high intensity discharge lamps, and for ballasts and luminaires able to operate such lamps, and repealing Directive 2000/55/EC of the European Parliament and of the Council

FULL IMPACT ASSESSMENT

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FULL IMPACT ASSESSMENT

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

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EXECUTIVE SUMMARY

The Ecodesign Framework Directive 2005/32/EC[1] ("Ecodesign Directive") lists products which have been identified by the Council and the European Parliament as priorities for the Commission for implementation, including "lighting in both the domestic and tertiary sectors" (Article 16). The Spring Council 2007 called for thorough and rapid implementation of the five priorities[2] set by the Energy Council on 23 November 2006[3], based on the Commission's Action Plan on Energy Efficiency. It also explicitly invited the Commission to "rapidly submit proposals to enable increased energy efficiency requirements on **office and street lighting** to be adopted by 2008". The emphasis on lighting was further supported by the European Parliament.[4]

"Tertiary sector lighting products" is a common name for the following product groups that would be addressed by the different requirements in the measure: fluorescent lighting products, high intensity discharge lighting products, public street lighting products and office lighting products.

Approach for setting ecodesign requirements

The approach for developing the regulation on tertiary sector lighting products and this impact assessment was structured in the following steps

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1 Directive 2005/32/EC of the European Parliament and of the Council of 6 July 2005 establishing a framework for the setting of ecodesign requirements for energy-using products and amending Council Directive 92/42/EEC and Directives 96/57/EC and 2000/55/EC, OJ L 191, 22.7.2005, p. 29., **amended by** Directive 2008/28/EC of the European Parliament and of the Council of 11 March 2008 amending Directive 2005/32/EC establishing a framework for the setting of ecodesign requirements for energy-using products, as well as Council Directive 92/42/EEC and Directives 96/57/EC and 2000/55/EC, as regards the implementing powers conferred on the Commission, OJ L 81, 20.3.2008, p. 48

2 Brussels European Council 8/9 March 2007, Presidency Conclusions, 7224/07.

3 TTE (Energy) Council on 23 November 2006, 15210/06.

4 European Parliament resolution of 31 January 2008 on an Action Plan for Energy Efficiency

Step 1: assessment of the criteria for ecodesign implementing measure as set out in Article 15(2a)-15(2c) of the Ecodesign Directive, taking into account the ecodesign parameters identified in Annex I of the Directive;

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

Step 4: environmental, economic and social assessment of the impacts, with a view to the criteria on implementing measures set out in Article 15(5) of the Directive.

Summary of the results

Step 1

In order to assess the criteria for ecodesign implementing measures as set out in Article 15(2) of the Ecodesign Directive, the Commission has carried out technical, environmental and economic studies for office lighting and public street lighting products, which follow the provisions of Article 15(4a) and Annex II of the Ecodesign Directive. Two separate "preparatory studies" covering “public street lighting products” on the one hand and “office lighting products” on the other hand were carried out. After completion of the studies, for reasons explained in section 1, it was decided to integrate the work on public street lighting and high-intensity discharge lighting products and on fluorescent and office lighting products as they are the main technologies used in those applications into one single discussion on “tertiary” sector lighting products.

With regard to the criteria set out in Article 15(2) of the Ecodesign Directive, the preparatory studies have established the following results for the EU for tertiary sector lighting products:

Article 15 (2a):	Annual sales volume in the Community:	Fluorescent and high intensity discharge lamps, ballasts and luminaires are each sold in several million units a year in the EU (see tables in Annex I)
Article 15 (2b):	Environmental impact of installed base in 2005 a.) use phase energy consumption: b.) mercury content of lamps:	 a.) 200 TWh b.) 12.6 tons of mercury
Article 15 (2c):	Improvement potential of installed base in 2020 compared to Business As Usual: a.) use phase energy consumption (applying cost effective existing technology in new products): b.) mercury content of lamps:	 a.) Over 44 TWh less consumption per year (Up to 54 TWh less if new installations would be set at the level of the identified benchmarks) b.) 14 tons of mercury less in the installed base [5]

The improvement potential is due to the fact that technical solutions exist which

– reduce the electricity consumption in tertiary sector lighting products, compared to the market average, while providing the same functionality;

– reduce the life-cycle cost for the end-users;

– lead to wide disparities of electricity consumption of the tertiary sector lighting products available on the market.

The mercury content of lamps is also greatly varied, and the variation is not always dependent on additional features of a particular lamp type compared to others, therefore we can consider that there is potential to reduce the mercury content without affecting product functionality.

The electricity consumption and the improvement potential are of the order of the total electricity consumption of Spain and Romania, respectively, and are therefore considered to be significant. The potential of reducing the mercury content of the installed base of lamps by 75% is also considered to be significant.

[5] The baseline 2020 scenario shows an increase to 18,6 tons if nothing is done. Therefore it is possible to save 14 tons, which is more than the total current mercury content.

Step 2

As set out in Articles 15(2) and 15(4c) of the Ecodesign Directive, relevant Community and national environmental legislation are considered, and related voluntary initiatives both on Community and Member State level are taken into account.

The preparatory studies identified Directives 98/11/EC (Energy labelling of household lamps) and 2000/55/EC (Efficiency requirements on ballasts for fluorescent lamps) as relevant to the use phase energy consumption of tertiary sector lighting products. However, these directives do not sufficiently address the market failure in the case of the targeted products because of their limited scope and outdated content.

Directive 2002/95/EC (RoHS) contains provisions on the mercury content of fluorescent and high-intensity discharge lamps. As these provisions (currently under review) cover more lamp types than the ones used in general lighting and targeted by the planned Ecodesign implementing regulation, it is considered appropriate by the concerned Commission services and the affected stakeholders to leave the setting of mercury content requirements to Directive 2002/95/EC. Nevertheless, mercury content benchmarks are identified for the lamp types covered by the Ecodesign implementing regulation also as an input for the review of the RoHS.

No relevant Member States legislation or voluntary initiatives at the national or Community level were identified by the preparatory studies or the consultation process.

For electricity consumption, overall cost savings over the product's life cycle should already motivate a market switch to more efficient lighting products. However, due to the structure of the professional lighting market, where building/infrastructure planners and installers also have a role to play in selecting the products to be installed in tertiary lighting, and because of split incentives (the entity deciding on lighting design is often not the one paying for the lighting installation's electricity bill), there is insufficient market drive towards more efficient lighting products. Consequently the improvement potentials are not realized. This is further detailed in Section 2.

Conclusion of Step 1 and Step 2

Electricity consumption and mercury content of tertiary sector lighting products, sold in large quantities on the Community market, are significant, and cost effective improvement potentials exist, which are linked to a wide disparity of the environmental performance of the equipment on the market with identical functionality.

Mercury content is addressed by other relevant Community legislation which needs update. Market forces do not address properly the electricity consumption of tertiary sector lighting products.

It is concluded that the criteria for ecodesign implementing measures as set out in Article 15(2) of the Ecodesign Directive are met, and tertiary sector lighting products should be covered by an ecodesign implementing measure pursuant to Article 15(1) of the Ecodesign Directive as regards electricity consumption.

Step 3

Further to Annex II of the Ecodesign Directive, the level of ambition for improving the electricity consumption of tertiary sector lighting products is determined on the basis of an analysis of the least life cycle cost for the end-user. In addition, benchmarks for technologies yielding best performance, as developed in the preparatory study and the discussions with stakeholders during the meetings of the Ecodesign Consultation Forum on 22 June and 18 December 2007, are considered. The results are reflected in the objectives that the implementing measure aims to achieve.

The impact assessment looked into several options to trigger the market transformation that would realise most of the improvement potentials:

- the repeal of existing legislation,
- no EU action, self regulation,
- labelling (energy label, ecolabel),
- minimum requirements set out in an Ecodesign implementing regulation, and benchmarks for products manufactured for public street lighting or office lighting.

Their appropriateness to achieve the objectives was analysed. However, due to the clear mandate of the Legislator for establishing ecodesign requirements for tertiary sector lighting products, the depth of the analysis for options other than an ecodesign implementing measure is proportionate for an implementing legal act, and the focus is on the assessment of key elements taking into account the preparatory study and the input from stakeholders.

Step 4

An assessment of the proposed implementing measure is carried out. In particular, sub-options for the intensity of the measure, e.g. the timing of ecodesign requirements in several stages are analysed, taking into account the criteria set out in Article 15(5) of the Ecodesign Directive and the impacts on manufacturers including SMEs.

Conclusion on Step 3 and 4

A comparison of the options shows that the appropriate policy option for realising cost-effective improvement potentials is a regulation setting ecodesign requirements for tertiary sector lighting products, becoming effective in four stages, one year / three years / six years / eight years respectively after the regulation has entered into force, including the identification of benchmarks. This approach ensures:

– that cost-effective potentials to improve the efficiency of tertiary sector lighting products are quickly realized, leading to important electricity and CO_2 savings, while reducing the life cycle costs;

– that by 2020 the annual electricity consumption will be reduced by at least 38 TWh compared to a baseline scenario (up to 46.5 TWh less if new installations were set at the level of the identified benchmarks); [6]

[6] We can also compare that to the theoretical improvement potential of 44 TWh (which assumes that all requirements come into force simultaneously in 1 year).

– accumulated electricity savings/electricity cost savings/CO2 emission savings of 193 TWh / 26 billion € / 77 Mt until 2020;

– a clear legal framework that provides a level playing field for manufacturers, ensuring fair competition;

– the requirements on tertiary sector lighting products are harmonised in the Community, leading to a minimization of administrative burdens and costs for the economic operators;

– that no disproportionate burdens for manufacturers are created through transitional periods which take into account re-design cycles to the extent possible;

Furthermore, if the benchmark lamp mercury content limits were adopted under Directive 2002/95/EC and if new installations only took products identified as benchmarks:

– mercury content in the already installed tertiary sector lighting products would be reduced by 14 tons [7]

– the so-called "light pollution"[8] from public street lighting products would be reduced.

Monitoring of the impacts will mainly be 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. Further data (in particular regarding public street lighting) will be provided by the Member States as part of their legal obligation under the 2006/32/EC Directive to report on their national energy efficiency plans and achievements.

SECTION 1: PROCEDURAL ISSUES AND CONSULTATION OF INTERESTED PARTIES

Organisation and timing

This implementing measure is one of the priorities of the Action Plan on Energy Efficiency[9], and is part of the 2008 Catalogue of actions to be adopted by the Commission for the year 2008.[10]

The implementing measure is based on Directive 2005/32/EC establishing a framework for the Commission, assisted by a regulatory committee to set ecodesign requirements for energy-using products[11]("Ecodesign Directive"). An energy-using product (EuP), or a group of EuPs, shall be covered by ecodesign implementing measures, or by self-regulation (cf. criteria in Article 17), if the EuP represents significant sales volumes, while having a significant environmental impact and significant improvement potential (Article 15). The structure and

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7 As lamp lifetime is 3 to 5 years, it is safe to assume that by 2020 all lamps will be replaced.

8 Light pollution is defined as adverse effects of artificial light in as much as they have an impact on the environment, including the direct impact of outdoor lighting and the brightening of the night sky that results from the reflection of radiation (sky glow).

9 COM(2006)545 final.

10 COM(2008)11 final.

11 Directive 2005/32/EC of the European Parliament and of the Council of 6 July 2005 establishing a framework for the setting of ecodesign requirements for energy-using products and amending Council Directive 92/42/EEC and Directives 96/57/EC and 2000/55/EC, OJ L 191, 22.7.2005, p. 29.

content of an ecodesign implementing measure shall follow the provisions of the Ecodesign Directive (Annex VII).

Consultation of stakeholders is based on the Ecodesign Consultation Forum as foreseen in Article 18 of the Directive (see next section for details).

Article 19 of the Directive 2005/32/EC foresees a regulatory procedure with scrutiny for the adoption of implementing measures. Subject to qualified majority support in the regulatory committee and after scrutiny of the European Parliament, the adoption of the measure by the Commission is planned by the very end of 2008.

Two background impact assessment studies were carried out from autumn 2007 till spring 2008 in order to assist the Commission in analysing the likely impacts of the planned measures.[12]

As already mentioned above and following up to Member States and stakeholder comments (see below), considering that eco-design requirements apply to products put on the market irrespective of where they are used, it was decided to integrate the requirements on public street lighting and high-intensity discharge lighting products and on fluorescent and office lighting products into a single draft measure on tertiary sector lighting products.

There is a parallel preparatory process for an implementing measure on general lighting products (launched as "domestic lighting") planned for adoption in 2009.

Impact Assessment Board

Preliminary versions of this impact assessment were discussed in two opinions of the Commission's Impact Assessment Board on 7 May 2008 and 28 July 2008. The final opinion of the Board made the following main observations:

– The impact assessment responds well to the requirements of the Ecodesign Directive.

– The impact assessment sought appropriate input from a wide spectrum of stakeholders.

– The baseline scenario needs to be clarified as regards savings in mercury use, taking into account the RoHS and WEEE directives.

– The analysis of the costs and benefits needs to be improved

– The impact on SMEs deserves further analysis.

– Policy options such as self-standing lighting legislation and use of existing instruments need more consideration.

– The market share of the affected lamp types should be indicated and the timing of the requirements should be substantiated.

– The impact assessment should be a self-standing document, and key assumptions from background studies and reports from the stakeholder consultation should be annexed.

[12] By Price Waterhouse Coopers for public street lighting, and by EcoRys for office lighting.

The present version of the impact assessment has been redrafted to take these recommendations into account as follows.

– The baseline scenario was clarified as regards savings in mercury use, taking into account the RoHS and WEEE directives.

– The analysis of the costs and benefits includes the assessment of the changes to the costs at the different moments of the life-cycle, and also a sensitivity analysis of electricity prices.

– The impact on SMEs of the different sub-options was described in more detail.

– The market share of the affected lamp types are indicated in Annex IV and the timing of the requirements is substantiated all through the analysis in Section 4 and 5.

Transparency of the consultation process

External expertise on tertiary sector lighting products was gathered in particular in the framework of two studies providing a technical, environmental and economic analysis (in the following called "preparatory study") carried out by consortia of external consultants[13] on behalf of the Commission's Directorate General for Energy and Transport (DG TREN). The preparatory studies followed the structure of the "MEEuP" ecodesign methodology[14] developed for the Commission's Directorate General for Enterprise and Industry (DG ENTR). MEEuP has been endorsed by stakeholders and is used by all ecodesign preparatory studies. The tertiary sector lighting products preparatory studies were developed in an open process, taking into account input from relevant stakeholders including manufacturers and their associations, environmental NGOs, consumer organizations, and EU Member State experts. The preparatory studies provided a dedicated website[15] where interim results and further relevant materials were published regularly for timely stakeholder consultation and input. The websites were promoted on the ecodesign-specific websites of DG TREN and DG ENTR. Open consultation meetings for directly affected stakeholders were organised at the Commission's premises in Brussels on 18 December 2006 and on 2nd April 2007 for discussing and validating the preliminary results of the studies.

Further to Article 18 of the 2005/32/EC Directive, formal consultation of stakeholders is to be carried out throughout the Ecodesign Consultation Forum consisting of a "balanced participation of Member States' representatives and all interested parties concerned with the product group in question ".

On 22 June 2007 and 18 December 2007, meetings of the Ecodesign Consultation Forum were held, respectively on public street lighting and high-intensity discharge lighting products and on fluorescent and office lighting products. Building on the results of the preparatory studies, the Commission services presented working documents suggesting ecodesign

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13 EuP preparatory studies "Lot 8: Office lighting", by VITO, final report of April 2007; "Lot 9: Public street lighting", by VITO, final report of January 2007, documentation available on the ecodesign website of the Commission's Directorate General Energy and Transport http://ec.europa.eu/energy/demand/legislation/eco_design_en.htm.

14 "Methodology for the Ecodesign of Energy Using Products", Methodology Report, final of 28 November 2005, VHK, available on DG TREN and DG ENTR ecodesign websites: http://ec.europa.eu/energy/demand/legislation/eco_design_en.htm http://ec.europa.eu/enterprise/eco_design/index_en.htm

15 www.eup4light.net

requirements related to the above-mentioned tertiary sector lighting products. About one month before each meeting, the working documents were sent to the members of the Consultation Forum, and to the secretariats of the ENVI (Environment, Public Health and Food Safety) and ITRE (Industry, Research and Energy) Committees of the European Parliament for information. The working documents were published on DG TREN's ecodesign website, and they were included in the Commission's CIRCA system alongside the stakeholder comments received in writing before and after the meetings.

Outcome of the consultation process

The stakeholders' views, as expressed before, during and after the Consultation Forum meetings on 22 June 2007 and 18 December 2007 as a reaction to the Commission services' working documents can be summarised as follows.

The **Member States** largely support ecodesign legislation on tertiary sector lighting products. The suggested levels for the requirements and the staged timing were in general considered appropriate with some concerns on the level of dynamism of the requirements, revision dates, and the interaction and coverage of the requirements across the different lighting implementing measures. Further points were raised advocating an as far as possible technology independent approach in the requirements, for setting proper tolerance values in market surveillance, for phasing out mercury in lamps without compromising energy efficiency, on the way product information should be provided, on available measurement methods, on the dimmability of ballasts, on the relation to existing waste legislation (RoHS, WEEE) and on the levels of some of the more specific requirements. There is general support to give the measure the form of a directly applicable decision or regulation.

The general approach to set mandatory minimum requirements in the framework of ecodesign is largely supported by **Industry**[16] associations. This is also the case of the European lighting industry's associations when it comes to requirements on tertiary sector lighting products. Industry repeatedly called for a merge of the fluorescent/office lighting and HIDs/street lighting implementing measures into a tertiary sector lighting products measure. They find product information requirements to be excessive and would prefer providing it only in catalogues and websites, not with the products themselves. On minimum levels related to lamps and luminaires, industry's detailed comments ask for a fine-tuning of the requirements. They are firmly opposed to changing the voluntary energy efficiency indexing system introduced by CELMA[17] for fluorescent ballasts (apart from making it mandatory) and also to raising the minimum efficiency requirements on ballasts so as to phase out magnetic ballasts. They would like to set requirements on the optical efficiency of the luminaires already in this implementing measure. They underline the necessity of improving existing market surveillance. The lighting industry advocates EU-level "lighting design" legislation in addition to the Ecodesign measures as according to them there would be large improvement potentials in regulating the energy efficiency of entire lighting systems through installation and replacement requirements (it should be noted that Member States may have strong views

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16 See e.g. contributions of ORGALIME and CECED to the consultation of Directive 92/75/EEC, available on http://ec.europa.eu/energy/demand/legislation/domestic_en.htm#consultation; "CECED vision on Energy Efficiency" of 1st July 2007, available on www.ceced.eu; letter of EICTA to DG TREN of 28 March 2007 related to the termination of the industry self-commitment of consumer electronics (cf. footnote …).

17 Federation of National Manufacturers Associations for Luminaires and Electrotechnical Components for Luminaires

on such obligations regarding in particular public street lighting). Industry is firmly opposed to a voluntary statement by the manufacturers on suitability for particular applications, as proposed in the Commission's working document.

Environmental NGOs considered fluorescent and HID lighting products as transitional solutions until even more efficient lighting is obtained with LEDs (light emitting diodes), while acknowledging that the latter are very new technology not yet largely available for general lighting purposes. They also raised concerns about the complexity of the measure for market surveillance, and about the rationale behind some of the exemptions proposed in the measure and the technology dependance of the requirements. They insisted on the necessity of advanced control features for luminaires and of limiting mercury emissions during the production phase of the lamps. Requirements on waste should be precise and based on lifespan of lamps and design for recyclability for luminaires. The implementation of the WEEE directive should be enhanced. They support the recommendation for complementary installation requirements at Member State or local level building on a voluntary statement on suitability by the manufacturers, as proposed in the Commission's working document.

SECTION 2: PROBLEM DEFINITION

The underlying problem can be summarised in the following way: environmentally better performing tertiary sector lighting products (also representing life cycle cost savings for the users) exist on the market, but are not used as widely as they could be (details on the improvement potential are available below under "Level of ambition and benchmarks").

As requested by Article 15 of the Ecodesign Directive, the preparatory studies identified the environmental aspects in relation to tertiary sector lighting products:

– that have a significant environmental impact within the Community

– that present significant potential for improvement without entailing excessive costs

– that are not addressed properly by market forces

– that are not addressed by other relevant Community legislation.

These identified environmental aspects are energy consumption (in particular during the use phase) and mercury content.

The significance of the so-called "light pollution" could not be properly assessed in the preparatory study on street lighting, because internationally agreed scientific methods for measuring its environmental impact are in an early stage of development. Therefore, although light pollution is considered to have some environmental impact, it cannot be quantified in this assessment.

Although the preparatory study did not identify waste to be a significant environmental impact of the products in question, it was considered useful – as provided for in Annex I Part 1 of the Eco-design Directive - to introduce a provision on design for recycling in the working documents in order to facilitate the implementation of the WEEE Directive (2002/96/EC), leaving to standardisation to define how to implement this provision. Stakeholder reactions were rather sceptical and further analysis has shown that other planned requirements on product lifetime are already achieving a substantial reduction of waste at end of life, and also

that the WEEE Directive itself has specific and stringent requirements on recovery levels of discharge lamps (including fluorescent lamps without integrated ballast and HIDs). Therefore it was considered disproportionate to keep the provision on waste in the planned measure.

Existing legislation

The energy consumption of tertiary sector lighting products is in general not addressed by Community legislation, except for the following products:

- ballasts for fluorescent lamps, for which minimum energy efficiency requirements were set in Directive 2000/55/EC (now an implementing measure of the Ecodesign Directive). This directive has an ongoing effect on the installed ballast base, as due to long luminaire and magnetic ballast lifetimes (about 20 years) it will have fully exercised its impact only by 2025. However, the preparatory study on office lighting has shown that there is further improvement potential, and that more demanding minimum energy efficiency requirements as compared to Directive 2000/55/EC would be appropriate.

- fluorescent lamps without integrated ballast, for which both mandatory energy labelling (Directive 98/11/EC) and voluntary ecolabelling criteria (Regulation N°2002/747/EC) exist. However, since nearly all available fluorescent lamps belong to the class A of the energy label (the remainder are in class B), and the ecolabel refers to the energy label, there is no product differentiation that could achieve the improvement potential of switching from less efficient fluorescent lamps to the more efficient ones. The preparatory study on office lighting has shown that there is further improvement potential by setting minimum energy efficiency requirements or revising the energy label to split the A class in order to reward the more efficient fluorescent lamps.

The Energy Performance of Buildings Directive (2002/91/EC) requires the Member States to set minimum energy performance requirements for new buildings or for major renovations of large buildings (at least 1000m2). Lighting is mentioned as one of the applications that have to be included in building energy use calculation.

However, the effect of this directive on tertiary sector lighting products is likely to be limited because of the following reasons:

a.) There are no lighting-specific requirements in the Directive and it is left to the Member States, or failing that, to the building planners themselves to use or not the potential of energy efficient lighting systems in complying with the requirements.

b.) As the requirement only concerns large buildings that are new or undergoing major renovation, it only affects a limited portion of products installed in indoor lighting,

c.) Outdoor (public street) lighting is out of scope,

d.) The Directive targets entire buildings and not individual products. System efficiency improvements may be achieved through other means than incorporating more efficient products.

At the time of drafting this document, the outcome of the ongoing revision of Directive 2002/91/EC was unknown, but it is unlikely that it will bring changes to these conditions (with the exception of the threshold for major renovations).

The Energy End-use Efficiency and Energy Services Directive (2006/32/EC) requires the Member States to adopt national energy efficiency action plans and public procurement rules for increased efficiency. For both, lighting is a recommended but not mandatory area of action, which may target both indoor and outdoor lighting, set system level requirements or promote energy efficient products. The effect of system requirements on tertiary sector lighting products is limited, as system efficiency improvements may be achieved through other means than incorporating more efficient products. At the product level, Member States have little possibility to set minimum efficiency requirements in national legislation due to internal market rules. The implementing measures of the Ecodesign Directive are meant to create a framework of such product requirements harmonised across the EU. Other possible actions on products, such as public procurement rules, fiscal incentives, voluntary agreements with retailers, promotional campaigns are eligible but have been announced so far in the national energy efficiency action plans of a few Member States only.[18] Some improvement could also be expected due to the development of Energy Services Companies as a result of the Directive, but it is uncertain to what extent that would affect lighting systems and more particularly the installed lighting products themselves, without further supporting measures. At the time of drafting of this document, the effect of Directive 2006/32/EC on tertiary sector lighting products looked likely to be limited and difficult to quantify.

In any case, both Directive 2002/91/EC and 2006/32/EC would actually benefit from product level minimum efficiency and information requirements on tertiary sector lighting products, as they are the building blocks of the more efficient lighting systems promoted by both directives. And even if the latter were implemented to their full potential, there would be still additional improvements to be made through product minimum efficiency requirements.

The mercury content of lamps typically used in tertiary sector lighting (fluorescent lamps without integrated ballast and high-intensity discharge lamps) is regulated by the Directive on the Restriction of Hazardous Substances (RoHS, 2002/95/EC). The Directive generally forbids the use of mercury in electronic equipment, however in the Annex on exemptions, mercury is tolerated in fluorescent lamps up to a certain limit, while special purpose fluorescents not used in general lighting and "other lamps" (including high-intensity discharge lamps) are totally exempted. Mercury content of fluorescent lamps without integrated ballast is further limited in the requirements for the voluntary ecolabelling (Regulation N° 2002/747/EC). The preparatory studies have shown that high-pressure mercury vapour lamps and halophosphate fluorescent lamps have the highest mercury content, therefore adopting energy efficiency requirements that would phase them out would also have a beneficial impact on the mercury content of the lamp stock. However, as the exemptions (currently under review) of Directive 2002/95/EC cover more lamp types than the ones used in general lighting and targeted by the planned Ecodesign implementing regulation, it is considered appropriate to leave the setting of specific mercury content requirements to the ongoing review of exemptions under Directive 2002/95/EC. Nevertheless, mercury content benchmarks are proposed to be identified for the lamp types covered by the Ecodesign implementing regulation and are a concrete input for the revision of the RoHS.

The Directive on Waste Electric and Electronic Equipement (WEEE, 2002/96/EC) regulates the way products (including lighting equipment) should be handled when they are discarded at end of life. In the current implementation of the WEEE Directive, product design is not directly affected by requirements. Since it is the mercury content of the installed lamp base

[18] Examples include national energy effiency action plans of the United Kingdom, Italy and Romania.

that is examined in this impact asssessment (and not the amount of discarded mercury), the WEEE Directive is not considered to have an impact on the baseline scenario. On the other hand, ecodesign requirements may have a beneficial effect on the amount of discarded lamps per year through lifetime requirements.

There is no Community legislation on the so-called "light pollution".

The preparatory studies did not identify relevant product legislation at national level, apart from regional laws in Italy[19] and a national law in Slovenia[20], both aiming at the reduction of light pollution.

Market failure

Market forces have little impact on product environmental improvements not accompanied by cost savings over the product's life cycle, such as reducing their mercury content or their light pollution.[21]

For energy use, the major categories of market barriers that are hindering the achievement of the cost-effective potential of energy-efficient lighting could be described as follow:

Higher initial costs

Energy-efficient lighting is usually more expensive at the moment of purchase, but implies significant cost savings potential over the life cycle.[22] However, the benefits are often irrelevant to the person making the purchasing decision, for the reasons outlined below.

Principal-agent problem

When it comes to buildings, the deployment of more energy efficient lighting infrastructures in the commercial and industrial sectors is impaired by the fact that industrial or commercial buildings are generally built by construction companies with the sole purpose to be lent or sold, i.e. the costs for operating the building, including the electricity costs for lighting, are not paid by the investor. For buildings to be successfully placed on the market, their price is to be competitive and, unless prospective tenants or buyers explicitly require the building to be equipped with the most energy efficient lighting infrastructures, the installation of more energy efficient lighting systems will not be a priority.

Short term versus long term – payback on investment and political visibility

The division of an administration in charge of tendering/purchase of equipment is almost never the same as the one paying for the running costs. An investment aimed at installing

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19 E.g. in Lombardy: LR17/00, amended by LR38/04

20 00719-36/2007/17, published in issue 81 of the Slovenian official journal on 07/09/2007, pages 11082-11088

21 Although they go largely hand in hand, there is a point beyond which light pollution reduction could go against the efforts to increase energy efficiency of street lighting luminaires (see the Street lighting preparatory study's Chapter 6.1.4)

22 In section 8.1.3.2. of the street lighting preparatory study, it is demonstrated that a public street lighting pole fitted for the more energy efficient type of HID can bring between 229 and 375 € of savings in life cycle costs (down from 1015 € with a less efficient HID), even though the purchase price of the luminaire increases from 176 to 243 €.

more energy efficient street lighting infrastructures could be discouraged by the consideration that the resulting benefits are likely to be reaped by the next administration due to longer return on investment periods. This is a problem that could arise also when the introduction of more energy efficient lighting infrastructures does not involve any disbursement by Local Authorities. Local decision makers often have the alternative of bringing light (quality of life, security…) to more people versus efficient lighting only for some.

These market failures lead to electricity consumption and related costs being (much) higher than necessary, therefore (additional) measures have to be taken in order to realize the significant cost effective improvement potentials.

Baseline scenario for the environmental impact related to tertiary sector lighting products

In order to carry out a technical, environmental and economic analysis the preparatory studies have considered typical tertiary sector lighting products, with a detailed analysis of representative models of each concerned product (lamp, ballast, luminaire). In particular the studies have, amongst others, provided the following key elements:

– a set of definitions (functional unit for measuring performance, relevant product parameters);

– technical analysis of the environmental performance and typical usage patterns;

– the installed base ("stock"), the annual sales, and the typical life time;

– technologies yielding improved environmental performance and the additional costs for applying them compared to the current "market average"

– potential trade offs between environmental impacts related to the different improvement options

The structure of the methodology of the technical, environmental and economic analysis is contained in Annex II.

Environmental impact of tertiary sector lighting products in 2005

Although the electricity consumption of a *single* product is usually small, the large number of lighting products installed in the tertiary sector leads to important overall electricity consumption. For the year 2005 the impact assessment background studies estimated that a total of 1.6 bln lighting points installed in tertiary sector lighting leads to an annual electricity consumption of 200 TWh per year in the EU-27. This corresponds to an annual spending of 27.2 bln Euro[23], and annual 79.9 mln tons of CO2 emissions.[24]

The total mercury content of the lamps installed in tertiary sector lighting amounts to approximately 12.6 tons.

As pointed out above, the impact of light pollution remains unquantifiable.

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[23] average electricity price in the EU 2005: of 0.136 €/kWh

[24] average specific EU emissions in 2003: 400g CO2 per kWh (EURELECTRIC, Environmental Statistics of the European Electricity Industry, Trends in Environmental Performance 2003-2004); this figure is higher if e.g. mining related effects are taken into account (MEEuP: plus 10%)

Environmental impact of tertiary sector lighting products in 2020

Building on the technical, environmental and economic analysis, the baseline scenario for estimating the future evolution of the environmental impact related to tertiary sector lighting products until the year 2020 has been developed under the following conditions:

– The likely limited impact of Directives 2002/91/EC and 2006/32/EC on the efficiency of tertiary sector lighting products was described in Section 1 under "Existing legislation". Their impact is impossible to quantify at this stage, but has been estimated to be equivalent to a 5 % reduction in environmental impact compared to Business As Usual in 2020. Some of this impact is overlapping with the switch to electronic ballasts (described below), so the assumption will be a net 3% reduction.

– The ongoing impact of Directive 2000/55/EC causes a gradual phaseout of the most inefficient magnetic ballasts until 2025. However, this trend is difficult to separate from the trend described in the next point, as in many cases the switch will be directly to electronic ballasts rather than the still allowed more efficient magnetic ones.

– Because of rising copper and steel prices, there is a market trend to switch from magnetic to electronic ballasts for fluorescent lamps, which entails also efficiency gains for the lamp-ballast circuits. Projections on the likely continuation of the market trend are difficult to make, because of its dependance on raw material prices and future technological developments related to electronic ballasts.

For the baseline scenario, we have assumed that the Directive and these external factors would result in a decrease in electricity consumption of the installed base of 5% (2%+3%) compared to Business as Usual in 2020.

The preparatory studies and the impact assessment background studies were taking into account the impacts described above when calculating a Baseline scenario in 2020 of 260.3 TWh electricity consumption and 18.,6 tons of mercury content of the installed base.

The main reason for the huge increase from 2005 is that the number of lighting points in tertiary sector lighting is expected to increase to 2.3 bln due to infrastructural development (new buildings and roads) and due to a demand for more light in existing infrastructures.[25]

The RoHS Directive (2002/95/EC) has been in place since 2002, therefore it has already exercised its full impact on the mercury content of the lamp stock installed in tertiary sector lighting (all lamps have been replaced since the application of the Directive). Although further tightening of the requirements is likely in the framework of the ongoing review of the exemptions, the outcome of the review is uncertain, so it has been ignored for the calculation of the baseline scenario. The WEEE Directive (2002/96/EC) does not have an impact on the mercury content of the installed base, which is the environmental parameter examined here.

As pointed out above, the environmental impact of light pollution remains unquantifiable.

[25] See section 2.2.2. and 3.3.8. of the street lighting preparatory study and section 2.2.9. of the office lighting preparatory study for a description of this expansion.

Structure of the industry sectors manufacturing tertiary sector lighting products

There is a marked difference in the structure of the lighting industry according to the product group they manufacture (lamps or ballasts/luminaires). Lamp producers are usually large companies: the European Lamp Companies' Federation has 7 members (including multinationals such as Philips, OSRAM and GE) and covers 95% of the European production with a turnover of 5 billion € a year and 50.000 employees. Although some of them also produce ballasts and luminaires, in those product groups the market is much more fragmented and is largely constituted of SMEs. CELMA is the European federation of national luminaire and ballast manufacturers' associations. It has 18 member associations in 13 Member States, representing 1000 companies employing 60.000 people with a turnover of 12 billion €, which is only part of the EU-27 market. It can be derived from Prodcom statistics that in total the luminaire and ballast manufacturers in EU-27 have a total of 18 billion € turnover and employ about 108.000 people.

Improvement potential, level of ambition and benchmarks

The preparatory studies and the impact assessment background studies have shown that existing cost effective technical solutions allow for the reduction of the environmental impact of tertiary sector lighting products over the life cycle. All of the identified solutions (detailed in Section 5), including those considered as benchmarks (Best Available Technology) remain cost-effective when considering life cycle costs. Increase in the purchase price of new products as a consequence of higher requirements is acceptable providing it does not impact significantly on consumers as regards affordability of the product.

Limitations on mercury content will be an indirect consequence of other requirements (e.g. phasing out of certain lamp types such as halophosphate lamps or high-pressure mercury vapour lamps). Future direct requirements should be set at levels that do not negatively affect other environmental aspects (such as the efficacy of fluorescent lamps).

Light pollution will be reduced to the extent it is tackled by requirements on the direction of light output from street lighting luminaires, meant to increase their energy efficiency.

The implementation of the proposed options would result in a reduction of 44 TWh in yearly electricity consumption and in a reduction of 14 tons of the mercury content of the installed tertiary sector lighting points compared to the baseline scenario above.

As mentioned above, during the consultation process the lighting industry advocated an EU-level “lighting design” legislation outside the Ecodesign Directive’s framework, as according to them there would be large improvement potentials in regulating the energy efficiency of entire lighting systems through installation and replacement requirements. The additional saving potential would indeed likely to be considerable if such obligations on installation and replacement were supported by the Member States. The office lighting impact assessment study estimated that in the case of installations using fluorescent lamps, installation requirements could almost double the savings achievable with the product level requirements (61.5 TWh/year by 2020 rather than 33.1 TWh/year[26]). A doubling of the potential savings could probably also be assumed for installations using HID lamps. Furthermore, the

[26] Office lighting impact assessment study, Policy Option 4, page 37-38

achievement of these savings could be accelerated by replacement requirements for existing installations.

However, it is not possible to impose installation or replacement requirements through ecodesign implementing measures, therefore, “lighting design” legislation does not constitute an option for this particular impact assessment. Nevertheless, ecodesign requirements at product level remain fully justified, because they ensure the environmental perfomance for the building blocks of lighting systems, they can trigger accelerated replacement of installations if spare lamps are removed from the market, and also potential future installation and replacement requirements can build on the product information requested in the ecodesign implementing measures.

Legal basis for EU action

The Ecodesign of Energy Using Products Directive (2005/32/EC), more specifically its Article 16 provides the legal basis for the Commission to adopt implementing measures on this particular product category.

SECTION 3: OBJECTIVES

As explained in Section 2 "Level of ambition and benchmarks", the preparatory studies have confirmed that large potentials exist to reduce the environmental impact of tertiary sector lighting products, including a cost effective potential for reducing their electricity consumption. This potential is not tapped due to market failure and absence of other relevant Community legislation, as outlined above. The general objective is to develop a policy which

– leads to significant improvement of the environmental performance of the affected equipment throughout the life cycle, including significant reductions in electricity consumption;

– ensures the free movement of affected products within the internal market.

The Ecodesign Directive, Article 15 (5), requires that ecodesign implementing measures meet the following criteria:

– a) there shall be no significant negative impacts on the functionality of the product, from the perspective of the user;

– b) health, safety and the environment shall not be adversely affected;

– c) there shall be no significant negative impact on consumers in particular as regards affordability and life cycle cost of the product;

– d) there shall be no significant negative impacts on industry's competitiveness;

– e) in principle, the setting of an ecodesign requirement shall not have the consequence of imposing proprietary technology on manufacturers;

– f) no excessive administrative burden shall be imposed on manufacturers.

SECTION 4: POLICY OPTIONS

Option 1: Repeal of existing legislation

Directive 2000/55/EC on the energy efficiency of ballasts for fluorescent lamps would be repealed. This option would have the following implications:

- The ballast market would be re-opened to low efficiency cheap products.
- Instead of environmental improvements, the efficiency of the ballast stock in place could decrease, at least temporarily. The market trend of switching from magnetic to electronic ballasts could be slowed down.
- No stakeholder has asked for this option, on the contrary there is a consensus that legislation on these products is necessary (cf. option 3).
- The market failure would persist, improvement potentials in the environmental performance of tertiary sector lighting products would not be realised.
- It is to be expected that some Member States would want to take individual, non-harmonized action on tertiary sector lighting products (as it has been already the case with some other energy-using products). This would hamper the functioning of the internal market and lead to high administrative burdens and costs for manufacturers, in contradiction to the goals of the ecodesign framework Directive.
- Competition would penalize in particular those manufacturers designing their products to good standards vis-à-vis competitors not using state of the art technology.
- The specific mandate of the Legislator would not be respected.

Therefore this option is discarded from further analysis.

Option 2: No EU action

Legislation currently in place would not be amended, no new legislation would be adopted.

This option would have the same implications as Option 1 (except the first two bullet points), therefore it is discarded from further analysis.

Option 3: Self regulation

Self-regulation put forward by industry and conforming to the requirements of Annex VIII of the Ecodesign Directive could be endorsed by the Commission after having heard the Consultation Forum, as a valid alternative to legislation.

However, Industry has called for a clear legal framework ("level playing field") ensuring fair competition, while voluntary agreements could lead to competitive advantages for free-riders and/or non-participants to the "self-commitment" (large share of the actors). For example, the voluntary energy efficiency index labelling for ballasts has been in place since 2000, however CELMA would prefer legislation to exclude free-riders. Also, no new initiative for self-regulation on tertiary sector lighting products has been brought forward by the sector.

– Therefore this is no longer an option for this impact assessment and can be discarded.

Option 4: Labelling targeting the environmental performance of tertiary sector lighting products (energy label, ecolabel) without accompanying minimum requirements

Implementing measures would be adopted and updated under the labelling schemes (e.g. pursuant to Energy Labelling Directive 92/75/EEC or to the Ecolabel Regulation N° 2000/1980/EC) affecting tertiary sector lighting products, but no other measures would be adopted.

This option as being the only policy option would have the following implications:

- Energy labelling or eco-labels may influence public purchasers, lighting designers or installers to some extent but cannot ensure that the potential savings are tapped, in particular considering the purchasing price difference. The experience with the 98/11/EC Directive on the energy label for domestic lamps could be considered as a precedent, since it has been the only EU legal instrument on lamp efficacy so far. Ten years after adoption of the label, class E, F and G incandescent lamps continue to catch the highest market share against the class A "energy saving lamps". This is due to the high difference in purchase price, while consumers do not compare the cost of running the product. Considering that the difference in efficacy between the various tertiary sector lighting products (high-intensity discharge lamps and fluorescent lamps without integrated ballast) is substantially smaller (they are all A or B-class today), it is reasonable to assume that a labelling system alone would not work either. Since the introduction of the eco-label, no tertiary lighting equipment was “Eco-labelled”.

- The specific mandate of the Legislator would not be respected.

Therefore this option is discarded from further analysis as the only policy option.

Option 5: Ecodesign implementing regulation on tertiary sector lighting products

This option aims at improving the environmental impact of tertiary sector lighting products through a regulation setting minimum levels on energy efficiency and certain performance parameters related to additional environmental aspects.

Although the preparatory studies concentrated on the characteristics of lighting equipment installed in offices and in public streets, they came to the conclusion that some of the recommended improvements were applicable to the concerned lighting products independently from their application area. Consequently, the measure would put forward ecodesign requirements applicable to all fluorescent lamps without integrated ballast, to all high-intensity discharge lamps, and to ballasts and luminaires used with such lamps. Where appropriate (e.g. with detailed product information requirements), the scope would be limited to products having a higher light output (typically used in professional applications).

Setting requirements on these types of lamps would mean that the majority of the general lighting products used in the non-domestic sector[27] would be covered, as these technologies

[27] Including shops, HORECA, cultural buildings, car parkings, industrial buildings etc., in addition to public street lighting and office lighting.

represent about three quarters of all lighting products in the sector. The requirements would also apply to the defined products when marketed for use in domestic applications.

The following aspects would be addressed by requirements:[28]

Lamps:

- energy efficiency
- lamp lumen maintenance factor (speed of aging)
- lamp survival factor (lifetime)
- product information

Ballasts:

- energy efficiency
- no-load consumption (standby)
- product information

Luminaires:

- product information
- compatibility with lamps and ballasts

In the case of lamps, the requirements would allow a phasing out of the least efficient high-pressure mercury vapour lamps and of the halophosphate fluorescent lamps. Ultimately magnetic ballasts would be phased out so that only efficient electronic ballasts would remain on the market (and logically only lamps and luminaires operating on electronic ballasts). Benchmarks would identify the lowest mercury content achievable in state-of-the-art lamps.

For luminaires, the requirements proposed at this stage are of preventive nature (by phasing out certain luminaires soon, they allow the gradual phaseout of inefficient lamp and ballast types used in those luminaires as replacement parts). The benchmarks for product information provision for luminaires have a preparatory role. Apart from providing useful information to installers, detailed product information would be also instrumental in making luminaire manufacturers used to measuring optical parameters of their luminaires, as those parameters could be targeted by requirements in further measures.

Timing and revision

Stage 1 (1 year after entry into force):

[28] Detailed in the recommendations of the preparatory studies, the two Commission working documents presented to the Ecodesign Consultation Forum and in the proposal for a draft implementing measure.

Setting efficiency requirements that would result in the phasing out of the T8 type halophosphate lamps (they can be replaced by other lamps in the same luminaires) and ensuring that no lamps can enter the market that are less efficient than the currently prevailing ones. The one year transition period after entry into force should allow industry to prepare for the implementation of the measure by reorganising their production.

Stage 2 (3 years after entry into force):

Setting efficiency requirements that would result in the phasing out of the T12 and T10 type halophosphate lamps (luminaire changes could be needed in some cases), and of the least efficient high pressure sodium and metal halide lamps (which does not affect the availability of replacement lamps). Setting luminaire requirements that would allow for a planned phasing out of magnetic ballasts and of inefficient replacement lamps.

Stage 3 (6 years after entry into force):

Setting efficiency requirements that would result in the phasing out of high-pressure mercury vapour lamps (luminaire changes could be needed in some cases). The 6-year transition period will allow municipalities to prepare for refurbishing their public street lighting where necessary, without disproportionate momentary burden on the public budget (savings are made over the life cycle in any case).

Stage 4 (8 years after entry into force):

Setting efficiency requirements that would result in the phasing out of inefficient replacement lamps and magnetic ballasts, even if the luminaires will have to be changed. This should leave sufficient time to lower the cost and increase the reliability of electronic ballasts that can replace magnetic ones in all circumstances, and while offering sufficient return on investment on luminaires that need to be changed after the replacement lamps are not available any more.

Due to the substantial changes likely to take place in the tertiary sector lighting products market with the advent of LED light sources, it is planned to examine the necessity to revise the measure at the latest 5 years after adoption.

The proposed timing is based on the assessment carried out in Section 5.

This option would respect the specific mandate of the Legislator, and is therefore retained for further impact analysis in Section 5.

Option 5a: Ecodesign implementing regulation on tertiary sector lighting products including benchmarks for products intended for office or public street lighting

– This option would include the elements of option 5 and would aim at further improving the environmental impact of tertiary sector lighting products meant to be installed in public street and office lighting by setting specific – non Community binding - benchmarks for those products. Installation measures taken at local or national level could refer to those benchmarks.

Some identified eco-design improvements for products used for office and public street lighting applications are not appropriate for the same product when used in other applications. Considering that under the Ecodesign Directive (legal base Article 95 of the Treaty), requirements apply to all products put on the market, complementary requirements on how

the products are installed and maintained should be set out in other regulatory instruments. In particular installation requirements for street lighting need to take into account specific (local) needs which are best known and regulated by (local) public authorities.

Benchmarks[29] on these products would be on the one hand on the same aspects as those applicable to all tertiary lighting sector products, but set at more ambitious levels. On the other hand, benchmarks on the following additional aspects would be introduced for luminaires:

- luminaire maintenance factor (how fast the optical system gets dirty and affects lighting performance)
- compatibility with intelligent control systems (presence detection, light responsive dimming etc.)

For public street lighting luminaires only:

- ingress protection rating of the optical system (protection against water and dust)
- light distribution requirements (determining how much light can be lost to the sky)

In addition to the likely achievements under option 5, this option would

- prepare harmonisation of product requirements in the public street and office lighting application areas;
- respect the specific mandate of the Legislator requiring the Commission to identify benchmarks.

Therefore this option is retained for further analysis in Section 5.

Option 5b: Ecodesign implementing regulation on tertiary sector lighting products with labelling targeting their environmental performance (energy label, ecolabel)

This option would include the elements of option 5. In addition, coordinated implementing measures would be adopted and updated under the labelling schemes (e.g. pursuant to Energy Labelling 92/75/EEC or to Ecolabel N° 2000/1980/EC) affecting tertiary sector lighting products. These measures would be properly coordinated in terms of levels with the parallel Ecodesign implementing measures setting minimum requirements, in order to achieve a simultaneous push-and-pull effect on the market, whereby the worst products would be banned by ecodesign and the best would be rewarded by labelling.

However, the following factors constitute obstacles to the implementation of this option:

– high-intensity discharge lamps and fluorescent lamps without integrated ballast used in tertiary sector lighting all belong to current energy classes A and B. It is planned to revise the energy label for lamps to better differentiate current class A and B products. However,

[29] Detailed in the recommendations of the preparatory studies, the two Commission working documents presented to the Ecodesign Consultation Forum and in the proposal for a draft implementing measure.

as the label is planned to be extended to cover all lamps types in general lighting (including the currently excluded reflector lamps and low voltage lamps), the revision cannot take place before the Commission has finished examining those lamp technologies, probably in 2010. In addition, the adoption of labelling requirements for tertiary products would need to wait for the adoption of the extension of the scope of the 92/75/EEC Directive which is currently under review (except for fluorescent lamps which are already covered by the household lamp energy labelling directive 98/11/EC).

– energy labelling of luminaires may also be a valid option, however it would only make sense if luminaires for all lamp technologies were covered by the same label. Therefore a new energy labelling implementing measure on luminaires cannot be adopted before the Commission has finished examining all luminaires used in general lighting, probably in 2010. For luminaires for tertiary sector lighting, the same limitation would apply as regards the scope of the 92/75/EEC Directive.

– ballasts for high-intensity discharge lamps and for fluorescent lamps without integrated ballast are products sold predominantly for professional applications. Therefore the same limitation would apply as regards the scope of the 92/75/EEC Directive.

– as for the sake of consistency, the ecolabel makes reference to levels set out in the energy label when it comes to energy efficiency, therefore revision or adoption of ecolabel implementing regulations would probably follow the adoption of energy labelling implementing measures.

Therefore, option 5b is discarded from further analysis.

SECTION 5: ANALYSIS OF IMPACTS OF THE PROPOSAL FOR AN ECODESIGN IMPLEMENTING REGULATION ON TERTIARY SECTOR LIGHTING PRODUCTS INCLUDING VOLUNTARY BENCHMARKS FOR PRODUCTS TO BE INSTALLED IN OFFICE OR PUBLIC STREET LIGHTING

Given that options 1-4 and 5b have been discarded already in Section 4, this section only looks into possible impacts of options 5 and 5a. To this end an assessment of possible sub-options as regards the "intensity" of the measure – the combination of the levels of requirements and the timing for the levels pursuant to Article 15(4f) of the Ecodesign Directive – is carried out.

The assessment is done with a view to the criteria set out in Article 15(5) of the Ecodesign Directive, and the impacts on manufacturers including SMEs. The aim is to find a balance between the quick realization for achieving the appropriate level of ambition and the associated benefits for the environment and the user (due to reduction of life cycle costs) on the one hand, and potential burdens related e.g. to unplanned redesign of equipment for achieving compliance with ecodesign requirements on the other hand, while avoiding negative impacts for the user, in particular as related to affordability and functionality.

A number of representative scenarios for the intensity of the measure are examined which take into account the complexity of the measure and the possibility of staged introduction.

The table below shows combinations of possible parameters of the intensity of the measure. The sub-options indicated in the table will be considered in the analysis.

Level / Timing → ↓	**All requirements after 1 year**	**All requirements after 3 years**	**Four stages: 1, 3, 6 and 8 years**
Lamp phase-out without luminaire replacement		Sub-option 1	
Lamp phase-out with luminaire replacement	Sub-option 3		Sub-option 2

Table 1: Selected sub-options in the matrix of possible measure intensity parameters

Luminaire replacement is discussed under Economic impacts below.

In order to assess the impact of these sub-options, the following factors are taken into account:

Economic impacts

Savings:

– annual electricity cost savings in 2020

– accumulated electricity cost savings

Costs:

– possible additional costs related to the improved technology, e.g. for additional and/or more expensive components

– re-design of products currently not compliant to the proposed requirements

– assessment of conformity with ecodesign requirements

– possible reorganization of the supply chain

Social impacts

– jobs related to the production of affected equipment

– affordability of equipment

Environmental impacts

– annual improvement of the environmental impact in 2020

– accumulated electricity savings and reductions of CO2 emissions

– possible trade-offs between lower electricity consumption in the use-phase and material–related environmental impacts

1. Economic impacts

Annual and accumulated electricity cost savings in 2020

The likely impact of the examined sub-options is summarised in the following table:

	Annual savings in 2020			**Accumulated savings by 2020**		
	Electricity (TWh)	Cost (billion €) [30]	CO2 emiss. (Mt) [31]	Electricity (TWh)	Cost (billion €)	CO2 emiss. (Mt)
Sub-option 1	25.5	3.5	10.2	151.4	20.6	60.6
Sub-option 2	38.1	5.2	15.3	193.2.	26.3	77.3
Sub-option 3	44.5	6	17.8	340.8	46.4	136.5

Table 2: Annual and accumulated savings due to the sub-options in 2020

The scenario analysis behind this table is presented in Annex II.

It is worth noting that substantial further reduction is to be expected after 2020 in Sub-option 1, because due to long luminaire life times, only part of the current lighting points will be renovated by 2020 with products respecting the proposed requirements (e.g. approx. 50% only in public street lighting). The other sub-options trigger luminaire replacement by removing replacement lamps and therefore have a faster impact, although the impact of stage 4 of sub-option 2 is not fully deployed until 2022.

The table shows that removing spare lamps from the market makes a substantial difference in savings. Removing them at a late stage (sub-option 2) is still much better than not removing them at all (sub-option 1). Removing them early (sub-option 3) would cause a minor increase in annual savings in 2020 and a large increase in accumulated savings by 2020, however it would also bring a sudden increase in purchase price, leading to problems detailed under the previous point.

If the benchmark product features described under option 5a are required by Member States or local authorities for the lighting products installed in 80% of the public street lighting and 50% office lighting applications in EU-27[32], it is estimated that additional electricity savings of 8.4 TWh could be achieved, corresponding to savings of electricity costs of approx. 1.1 bln €. However, the proportion of national and local authorities introducing requirements for the

[30] Average electricity price in 2005 in EU-25: 0,08 Cent/kWh for public street lighting, 13.6 Cent/kWh for other end uses. Because of this difference, the actual cost savings could be slightly lower in all sub-options.

[31] assuming the specific CO2 emissions of 2003 (see footnote 26) which, however, is expected to change e.g. due to the Community's strategy for promoting renewable energy sources.

[32] A lower rate of uptake of the requirement is assumed for office lighting, because public procurement guidelines do not affect private entities, so only national or local legislation could affect private office buildings.

benchmark product features into their legislation or public procurement is impossible to determine at this stage.

Life cycle cost and additional costs related to the improved technology

The proposed regulation leads to a reduction of the life cycle cost for the affected equipment from an end user[33] perspective, as demonstrated in the preparatory studies. Although the purchasing cost of equipment increases, the expected increase is outweighed by the savings made in operating costs.

The purchase price increase can be between 5-10 % when going from magnetic to electronic ballasts, but can also be a two to five-fold increase when switching from high-pressure mercury vapour lamps (HPM) to other lamp types. Maintenance costs can increase or decrease depending on the change (they increase with electronic ballasts that need to be changed twice as frequently as magnetic ones, but they decrease when switching from HPM lamps to longer-life alternatives). In all cases the overall life cycle costs are decreasing substantially, providing a return on investment in a range from around 3 years in case of simple lamp substitution to up to 10 years if a luminaire replacement is involved and the old luminaire was installed only recently.

This conclusion remains valid when a lower electricity price is assumed, i.e. the measure is cost-effective also in Member States with electricity prices lower than the average. Due to economy of scale effects it is to be expected that potential added purchasing costs, if any, will decrease after ecodesign requirements are introduced. Furthermore, electricity costs are likely to further increase, and the resulting cost savings will be higher. The growing availability of the services offered by Energy Service Companies (ESCOs) is also likely to attenuate the impact of the purchase price increase.[34]

However, in the case of requirements where the luminaire has to be replaced due to the lack of spare lamps, the purchase price increase could cause momentary financial difficulties to cost-sensitive end-users, such as some municipalities. This effect can be attenuated by introducing requirements leading to luminaire replacement only 6 to 8 years after the entry into force of the measure. This would allow sufficient time for the market to prepare for the upcoming phaseout through information campaigns and other means. Cost-sensitive end-users could then take the necessary precautions (e.g. contracting with an ESCo) in order to temper the financial impact of the luminaire replacement.

Costs - re-design of products currently not compliant to the proposed requirements

Qualitatively, the shorter the period for entry into force of requirements stage and the shorter the delay between the stages, the higher the potential costs related to unplanned re-design. On the other hand, the longer the period for entry into force of requirements, the better re-design can be integrated into planned re-design without additional costs.

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33 "End users" mean the entities covering the operating costs of the lighting equipment in question, i.e. local authorities for public street lighting, and businesses having the lighting equipment in their premises.

34 Energy Service Companies contracting with end users can take on the burden of the initial investment into the installation of energy efficient products, while end users keep on paying the same price for the energy using service as before. The price difference due to the savings is used to gradually reimburse the investment of the ESCo. The end user starts making savings on operating costs once the ESCo's initial investment is returned.

Typical redesign cycles for equipment covered by this proposal are 10 years for lamps and ballasts and 5 years for luminaires (although many products have been around on the market for 40 to 50 years). In order to keep an ambitious timing in face of the urgency of action on climate change, it was not possible to stage requirements in a way to fully respect redesign cycles. Thus for equipment not complying with the requirements, certain production lines may have to be adapted outside planned redesign cycles, even though the one year transition period and the four-stage requirements over 7 years would attenuate this effect.

The corresponding cost can be in the order of up to 50.000€-100.000€. According to CELMA (association of luminaries manufacturers), the cost of non-planned re-design may cause an additional increase in product price of up to 10%. This approach could also cause some competitive disadvantage for low volume producers (in particular SMEs) vis-à-vis high volume producers because it may require high upfront investments. However in reality, most manufacturers offer ranges of products, some would comply and other would not, so it would be more a question of transfer across production lines than complete change of production.

Costs - possible reorganization of the supply chain

Compliance with the proposed ecodesign requirements can be achieved by applying readily available non-proprietary technologies, and no risks for shortages in the supply chain, e.g. for certain components necessary to achieve compliance, leading possibly to unforeseen cost increases have been flagged by the stakeholders.

Cost – assessment of conformity with ecodesign requirements

The form of the proposed legislation is a regulation which is directly applicable in all Member States. This ensures no costs for national administrations for transposition of the implementing legislation into national legislation.

In general assessing the conformity to the ecodesign requirements implies costs for manufacturers. Furthermore, products not complying with ecodesign requirements need to be re-designed, which, in general, implies the need for re-assessing conformity with further requirements. The costs for assessing conformity are estimated to be in the order of several thousand Euros. On the other hand

– all manufacturers are affected by the need for a conformity assessment, because the proposed regulation creates a level playing field;

– possible costs for re-assessment due to re-design are occurring only once upon introduction of the regulation;

– costs for assessing conformity are much smaller than further cost factors, therefore competitiveness of SMEs vis-à-vis high volume producing manufacturers is not significantly affected;

– public street and office lighting product manufacturers may benefit from reduced administrative costs due to the possible harmonisation of national and local requirements on public street and office lighting products;

– manufacturers already now producing equipment complying with the requirements may have a, albeit very small, competitive, advantage.

The possible harmonisation of national or local rules relating to products installed in public street or office lighting based on benchmarks as proposed in Option 5a would lead to further decrease in costs for the manufacturers.

2. Social impacts

Jobs

As more than half of the EU production of tertiary sector lighting products is going to the EU market, the potential impact of the proposed requirements on European factories has to be examined. The lighting product manufacturers employ 157.000 people in EU-27 producing lamps, ballasts and luminaires for all application areas. Production facilities for the three lighting components tend to be separate. With the planned requirements, it is expected that lamp and luminaire manufacturers will be able to continue their production on existing production lines without substantial changes.

The proposed requirements would not lead to a decrease in demand for ballasts in general, just to a shift from magnetic to electronic ballasts. However, that shift (as a result of phase-out of spare lamps and direct requirements in the measure) would mean a shift from largely European-based production to outsourcing to third countries or to imports, according to CELMA. The order of magnitude of the jobs potentially directly affected is in the range of three thousand[35], spread across the following countries: Germany, France, Italy, Spain, Poland, Finland, Austria, Bulgaria, and to a lesser extent in Greece and Slovenia.

However, the following factors also have to be taken into consideration:

– The current trend is that the market share of magnetic ballasts is decreasing anyway because of rising copper and steel prices. European factories may have to adapt independently from the adoption of the proposed measure.

– The demand for magnetic ballasts outside the EU will not be affected by the proposed requirements.

– The European companies manufacturing magnetic ballasts are also selling electronic ballasts themselves (although often with part of the production outsourced to third countries).

– Electronic component manufacturers also exist in Europe and could take benefit of an increased demand in electronic ballasts, which could create job opportunities in the high-tech sector (as opposed to low-tech magnetic ballast production).

While the immediate ban on magnetic ballasts in Sub-option 3 is certain to cause major employment issues, Sub-option 2 provides for a transition period of 8 years in phasing out magnetic ballasts which should help ballast manufacturers in re-affecting their production lines. Another counterbalancing factor could be the positive impact of the measure on the demand for the services of the emerging Energy Service Companies in all Member States. Sub-option 1 does not phase out magnetic ballasts, therefore it has no impact on employment in this sector.

[35] Estimate by CELMA: 3000 directly and 2000 indirectly affected jobs.

Overall, the impact on jobs in EU-27 could be considered neutral, even though the precise outcome is difficult to predict.

Affordability of equipment

As shown above a purchase price increase is to be expected due to ecodesign requirements, however not affecting affordability in particular if sufficient time is given to prepare for the application of the requirements.

3. Environmental impacts

Annual improvement of the environmental impact in 2020

The electricity and CO_2 emissions saving potentials of the different sub-options were assessed in Table 2 above.

In addition to those savings, proportionate reductions of further electricity production related environmental impacts (e.g. SO_2, NOx, heavy metals) are to be expected, as demonstrated in the preparatory studies.

The total mercury content of the lamps installed in tertiary sector lighting would be reduced from approximately 18.6 tons to 4.6 tons in sub-option 3 by 2020 (see Annex III – Summary of the scenario analysis according to the impact assessment background studies).

In public street lighting, reductions in the levels of the so-called "light pollution" could be expected. However, the proportion of national and local authorities introducing requirements based on the level of benchmarks into their legislation or public procurement is impossible to estimate. In any case, the proposed requirements would probably lead to a wider use of the efficient high pressure sodium lamps. Their orange light would be advantageous both for astronomical observations (as it can be filtered out more easily) and for biodiversity (as it tends to attract fewer insects than white light).

The equipment covered by this regulation is also produced for the world market (e.g. 20% of EU production). Therefore the requirements set in this regulation may impact on the design of equipment shipped to markets other than the EU, and the resulting reductions of environmental impact are likely to be higher than those estimated for the EU alone. It is not possible to quantify this effect because market data for the equipment covered by this regulation could not be analysed for other parts of the world.

Possible trade-offs between lower electricity consumption in the use-phase and material–related environmental impacts

The preparatory studies have qualitatively assessed possible trade offs between reductions of tertiary sector lighting products power consumption, and material related impacts which possibly, but not necessarily, may be arising due to, e.g., additional integrated circuits. Even in this case trade-offs are not to be expected, because the reduction of the use phase power consumption environmental impact is larger than possible additional material-related environmental impacts.

Comparison of the sub-options and conclusion

The following table summarizes the considerations on the impacts of the sub-options and assesses them on a relative scale from 1 (bad) to 4 (good):

	Additional costs for manufacturers	Electricity / CO_2 / cost savings	Risk for job losses in SMEs	Affordability to the end-user
Sub 1	4	1	4	4
Sub 2	4	3	4	3
Sub 3	1	4	1	1

Table 3: summary and assessment of sub-options 1-3

In addition to the table, we can note a beneficial impact of the implementation of Option 5a (benchmarks for products to be installed in public street or office lighting) both on savings and on costs to the manufacturers.

It is concluded that sub-option 2 of Option 5 complemented with Option 5a achieves the appropriate balance between positive environmental impacts and electricity cost savings, and possible risks related to jobs in SMEs, additional costs and affordability to the end-user. Sub-option 3 would lead to a further increase of CO_2 savings, but would impose higher burdens on manufacturers and on end-users. On the other hand, sub-option 1 would impose lower burdens on manufacturers and end-users, while leading to lower accumulated electricity/electricity cost/CO_2 emission savings. In particular, introducing ecodesign requirements in four stages (one year/three years/six years/eight years) implies

– by 2020 annual electricity savings/electricity cost/CO_2 emission savings of 38.1 TWh / 5.2 billion € / 15.3 Mt;

– a clear legal framework for product design beyond re-design cycles which leaves flexibility for manufacturers to achieve the energy efficiency levels in one or several steps;

– a limited increase in purchase price of the affected products and sufficient time for end-users to prepare for the increase;

– costs for re-design and re-assessment upon introduction of the Regulation, which are limited in absolute terms, and not significant in relative terms (per product);

– fair competition by creation of a level playing field;

– a more limited impact on the competitiveness of industry including SMEs due to the smaller absolute costs related to product redesign and reassessment;

– a lower risk for having negative impacts employment, in particular in SMEs.

Impacts on trade

The process for establishing ecodesign requirements for tertiary sector lighting products has been transparent. Before the proposed regulation is adopted by the Commission a notification

under WTO-TBT will be issued. No competitive disadvantages for EU manufacturers exporting the affected products to third countries have been notified or are to be expected.

SECTION 6: CONCLUSION - COMPARING THE OPTIONS

Following the principle of proportionality in the analysis effort, policy options 1 to 4 and 5b were discarded at an earlier phase of the analysis.

It was also demonstrated that implementing option 5 in combination with option 5a would bring additional savings compared to option 5, without entailing substantial further costs.

Therefore, it is concluded that the proposed ecodesign implementing regulation on tertiary sector lighting products including voluntary Community benchmarks for products to be installed in office or public street lighting will best achieve the objectives as set out in Section 3, while fulfilling the criteria related to ecodesign implementing measures. In particular, the proposed regulation will ensure

– ensure the improvement of the environmental performance of tertiary sector lighting products, including cost-effective reduction of their electricity use;

– not entail significant administrative burdens for manufacturers or retailers;

– increase the purchasing cost to a limited and acceptable extent, taking into account that this would be overcompensated by savings during the use-phase of the products;

– that cost-effective potentials to improve the efficiency of tertiary sector lighting products are quickly realized, leading to important electricity and CO_2 savings, while reducing the life cycle costs;

– that mercury content in tertiary sector lighting products is reduced (if included in the revision of the RoHS Directive);

– a legal framework that provides a level playing field for manufacturers, ensuring fair competition and free circulation, leading to a minimization of administrative burdens and costs for the economic operators;

– that no disproportionate burdens for manufacturers are created through transitional periods which take into account re-design cycles to the extent possible;

– that the so-called "light pollution" from public street lighting products is reduced (if benchmarks for street lighting installations are applied).

SECTION 7: MONITORING AND EVALUATION

The appropriateness of scope, definitions and limits will be reviewed after maximum 5 years from the adoption of the measure (as required by Annex VII.9 of the framework Directive and laid down in the implementing measure). Account will be taken also of speed of technological developement and input from stakeholders and Member States. Compliance with the legal provisions will follow the usual process of "New Approach" regulations as expressed by the CE marking. Compliance is mainly checked by market surveillance carried out by Member

State authorities ensuring that the requirements are met. Further information from the field (e.g. complaints by consumer organisation or competititors) could alert on possible deviations from the provisions and/or of the need to take action.

Contributions are also expected from international cooperation as e.g. in the framework of the IEA Implementing Agreement for Energy Efficiency End-Use Equipment.

Annex I
Annual sales figures for the categories of products involved

(for the purposes of determining eligibility under Article 15.2.a of Directive 2005/32/EC)

	Millions of units sold in 2004 or 2005 in EU-25 (including new and replacement sales)	
	Fluorescent	HID
Lamps	406 [36]	23.4 [37]
Ballasts	167.5 [38]	3 [39]
Luminaires	115 [40]	2.1 [41]

Annex II
Simplified scenario analysis of the sub-options examined in Section 5

The impact assessment background studies and the preparatory studies only analysed the scenario according to sub-option 3. It was necessary to carry out a simplified scenario analysis to be able to compare sub-options 1 and 2 to sub-option 3. The analysis relies on key assumptions based on the findings of the preparatory studies and the impact assessment background studies, as compiled in Annexes III and IV.

36 Office lighting preparatory study, page 65

37 Public street lighting impact assessment study, page 15

38 Office lighting preparatory study, page 70

39 Assumption derived from the HID luminaires data. A magnetic ballast has usually the same lifetime as the luminaires, however the electronic ballasts last only half as long. In any case, the number of ballasts sold is larger than the number of luminaires sold.

40 Assumption derived from the fluorescent luminaires' typical lifetime (20 years) and their number in the installed base (see Annex II)

41 Public street lighting impact assessment study, page 70

Disclaimer:
The purpose of this table is to allow a comparison of the order of magnitude of the difference between sub-options, in support of decision making. It is not meant to provide data of statistical precision.
Main assumptions:
15% efficiency gain in the first stage, 10% in the second, 15% in the third, 30% in the fourth due to luminaire replacement. This is a mix between direct gains from lamp efficacy improvement and additional gains from luminaire change, gain from dimming installations etc.).
The efficiency gain reflects also the improvement through ballast and luminaire replacement. It is a mix between direct gains from lamp efficacy improvement and additional gains from luminaire change, gain from dimming installations etc.
Lamps take 5 years to be phased out completely.

Years after entry into force:	-4	-3	-2	-1	0	**1**	2	**3**	4	5	**6**	7	**8**	9	10	11
All figures in TWh	2005	2006	2007	2008	2009	**2010**	2011	**2012**	2013	2014	**2015**	2016	**2017**	2018	2019	2020
Baseline																
Lamps affected by stage 1	62,0	63,1	64,2	65,4	66,5	67,7	68,9	70,2	71,4	72,7	74,0	75,3	76,7	78,0	79,4	80,9
Lamps affected by stage 2	27,2	27,6	28,1	28,6	29,1	29,7	30,2	30,7	31,3	31,8	32,4	33,0	33,6	34,2	34,8	35,4
Lamps affected by stage 3	24,4	24,8	25,3	25,7	26,2	26,7	27,1	27,6	28,1	28,6	29,1	29,6	30,2	30,7	31,3	31,8
Lamps affected by stage 4	39,7	40,4	41,1	41,9	42,6	43,4	44,1	44,9	45,7	46,6	47,4	48,2	49,1	50,0	50,9	51,8
Lamps complying with all criteria	46,4	47,2	48,0	48,9	49,8	50,6	51,5	52,5	53,4	54,4	55,3	56,3	57,3	58,3	59,4	60,4
Electricity consumption of installed base (TWh)	**199,6**	203,2	206,8	210,5	214,2	218,1	222,0	225,9	230,0	234,1	238,3	242,5	246,8	251,2	255,7	**260,3**
	rate of increase of consumption / year:					**1,01786**								Figure in the studies:		**260,3**
										2020 consumption:		**Euro (billion) :**		35,4	**CO2 Mt:**	104,1
Sub-option 3 - Entry into force after first year (2010) for all stages																
Lamps affected by stage 1	62,0	63,1	64,2	65,4	66,5	67,7	54,2	40,6	27,1	13,5	0,0	0,0	0,0	0,0	0,0	0,0
Lamps affected by stage 1 compliant	0,0	0,0	0,0	0,0	0,0	0,0	11,5	23,2	35,2	47,3	59,7	60,7	61,8	62,9	64,0	65,2
Lamps affected by stage 2	27,2	27,6	28,1	28,6	29,1	29,7	23,7	17,8	11,9	5,9	0,0	0,0	0,0	0,0	0,0	0,0
Lamps affected by stage 2 compliant	0,0	0,0	0,0	0,0	0,0	0,0	5,3	10,8	16,3	21,9	27,7	28,2	28,7	29,2	29,7	30,2
Lamps affected by stage 3	24,4	24,8	25,3	25,7	26,2	26,7	21,3	16,0	10,7	5,3	0,0	0,0	0,0	0,0	0,0	0,0
Lamps affected by stage 3 complia.	0,0	0,0	0,0	0,0	0,0	0,0	4,5	9,1	13,8	18,6	23,5	23,9	24,3	24,8	25,2	25,7
Lamps affected by stage 4	39,7	40,4	41,1	41,9	42,6	43,4	34,7	26,0	17,3	8,7	0,0	0,0	0,0	0,0	0,0	0,0
Lamps affected by stage 4 complia.	0,0	0,0	0,0	0,0	0,0	0,0	6,1	12,3	18,5	24,9	31,5	32,0	32,6	33,2	33,8	34,4
Lamps complying with all criteria (orig.)	46,4	47,2	48,0	48,9	49,8	50,6	51,5	52,5	53,4	54,4	55,3	56,3	57,3	58,3	59,4	60,4
Lamps complying with all criteria (new)	0,0	0,0	0,0	0,0	0,0	0,0	27,5	55,4	83,9	112,8	142,3	144,8	147,4	150,0	152,7	155,5
Lamps complying with all criteria (total)	46,4	47,2	48,0	48,9	49,8	50,6	79,0	107,9	137,3	167,2	197,6	201,1	204,7	208,4	212,1	215,9
Electricity consumption of installed base (TWh)	**199,6**	203,2	206,8	210,5	214,2	218,1	212,9	208,3	204,2	200,7	197,6	201,1	204,7	208,4	212,1	**215,9**
Savings compared to Baseline	0,0	0,0	0,0	0,0	0,0	0,0	9,0	17,6	25,7	33,4	40,6	41,4	42,1	42,9	43,6	44,4
												TWh	**Euros**	**CO2 Mt**	Studies:	**216,4**
									Annual savings in 2020 :			44,4	6,0	17,8		
									Accumulated savings in 2020 :			340,8	46,3	136,3		

Years after entry into force:	-4	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10	11
All figures in TWh	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Sub-option 2 - Stage 1: 1 year, Stage 2: 3 years, Stage 3: 6 years, Stage 4: 8 years													billion			
Lamps affected by stage 1	62,0	63,1	64,2	65,4	66,5	67,7	54,2	40,6	27,1	13,5	0,0	0,0	0,0	0,0	0,0	0,0
Lamps affected by stage 1 compliant	0,0	0,0	0,0	0,0	0,0	0,0	11,5	23,2	35,2	47,3	59,7	60,7	61,8	62,9	64,0	65,2
Lamps affected by stage 2	27,2	27,6	28,1	28,6	29,1	29,7	30,2	30,7	24,6	18,4	12,3	6,1	0,0	0,0	0,0	0,0
Lamps affected by stage 2 compliant	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	5,5	11,2	16,9	22,7	28,7	29,2	29,7	30,2
Lamps affected by stage 3	24,4	24,8	25,3	25,7	26,2	26,7	27,1	27,6	28,1	28,6	29,1	23,3	17,5	11,7	5,8	0,0
Lamps affected by stage 3 complia.	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	5,0	10,0	15,1	20,3	25,7
Lamps affected by stage 4	39,7	40,4	41,1	41,9	42,6	43,4	44,1	44,9	45,7	46,6	47,4	48,2	49,1	39,3	29,5	19,6
Lamps affected by stage 4 complia.	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	6,9	13,9	21,0
Lamps complying with all criteria (orig.)	46,4	47,2	48,0	48,9	49,8	50,6	51,5	52,5	53,4	54,4	55,3	56,3	57,3	58,3	59,4	60,4
Lamps complying with all criteria (new)	0,0	0,0	0,0	0,0	0,0	0,0	11,5	23,2	40,7	58,5	76,6	88,4	100,5	114,1	128,0	142,1
Lamps complying with all criteria (total)	46,4	47,2	48,0	48,9	49,8	50,6	63,1	75,7	94,1	112,8	131,9	144,7	157,8	172,4	187,3	202,5
Electricity consumption of installed base (TWh)	**199,6**	203,2	206,8	210,5	214,2	218,1	218,7	219,6	219,6	220,0	220,7	222,4	224,4	223,4	222,6	**222,2**
Savings compared to Baseline	0,0	0,0	0,0	0,0	0,0	0,0	3,2	6,3	10,3	14,1	17,6	20,1	22,5	27,9	33,1	38,2
												TWh	**Euros**	**CO2 Mt**		
									Annual savings in 2020 :			38,2	5,2	15,3		
									Accumulated savings in 2020 :			193,2	26,3	77,3		
Sub-option 1 - Stage 1, 2 and 3 after 3 years, no Stage 4													billion			
Lamps affected by stage 1	62,0	63,1	64,2	65,4	66,5	67,7	68,9	70,2	56,1	42,1	28,1	14,0	0,0	0,0	0,0	0,0
Lamps affected by stage 1 compliant	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	11,9	24,1	36,4	49,0	61,8	62,9	64,0	65,2
Lamps affected by stage 2	27,2	27,6	28,1	28,6	29,1	29,7	30,2	30,7	24,6	18,4	12,3	6,1	0,0	0,0	0,0	0,0
Lamps affected by stage 2 compliant	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	5,5	11,2	16,9	22,7	28,7	29,2	29,7	30,2
Lamps affected by stage 3	24,4	24,8	25,3	25,7	26,2	26,7	27,1	27,6	22,1	16,6	11,0	5,5	0,0	0,0	0,0	0,0
Lamps affected by stage 3 complia.	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	5,0	10,0	15,2	20,4	25,8	26,2	26,7	27,2
Lamps affected by stage 4	39,7	40,4	41,1	41,9	42,6	43,4	44,1	44,9	45,7	46,6	47,4	48,2	49,1	50,0	50,9	51,8
Lamps affected by stage 4 complia.	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Lamps complying with all criteria (orig.)	46,4	47,2	48,0	48,9	49,8	50,6	51,5	52,5	53,4	54,4	55,3	56,3	57,3	58,3	59,4	60,4
Lamps complying with all criteria (new)	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	22,4	45,3	68,5	92,2	116,2	118,3	120,4	122,6
Lamps complying with all criteria (total)	46,4	47,2	48,0	48,9	49,8	50,6	51,5	52,5	75,8	99,6	123,8	148,5	173,6	176,7	179,8	183,0
Electricity consumption of installed base (TWh)	**199,6**	203,2	206,8	210,5	214,2	218,1	222,0	225,9	224,4	223,3	222,6	222,4	222,7	226,6	230,7	**234,8**
Savings compared to Baseline	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	5,6	10,8	15,6	20,1	24,2	24,6	25,0	25,5
												TWh	**Euros**	**CO2 Mt**		
									Annual savings in 2020 :			25,5	3,5	10,2		
									Accumulated savings in 2020 :			151,4	20,6	60,6		
													billion			

Annex III
Summary of the scenario analysis according to the impact assessment background studies

Baseline = 2020, SO3 = Sub-option 3, SO3+ = Sub-option 3 with benchmarks

Parameter	Scenario	Unit	HID not in	HID in SL	HID total	SL not HID	SL total	HID+SL	FL not in OL	FL in OL	FL/OL total	Total tertiary
Electricity consumption of installed base / year	2005	TWh	13,3	32,4	45,7	3,6	35,9	49,2	119,7	30,7	150,4	199,6
Electricity consumption of installed base / year	baseline	TWh	15,0	36,5	51,5	4,1	40,5	55,5	160,6	44,2	204,8	260,3
Electricity consumption of installed base / year	SO3	TWh	11,8	28,8	40,6	4,1	32,9	44,7	135,8	35,9	171,7	216,4
Electricity consumption of installed base / year	SO3+	TWh	11,8	25,0	36,8	2,6	27,6	39,4	135,8	31,5	167,3	206,7
SO3		TWh	-3,2	-7,7	-10,9	0,0	-7,6	-10,8	-24,8	-8,3	-33,1	-43,9
SO3+		TWh	-3,2	-11,5	-14,7	-1,5	-13,0	-16,1	-24,8	-12,7	-37,5	-53,6
CO2 emissions of installed base / year	2005	Mt	5,3	12,9	18,3	1,4	14,4	19,7	47,9	12,3	60,2	79,9
CO2 emissions of installed base / year	Baseline	Mt	6,0	14,6	20,6	1,6	16,2	22,2	64,2	17,7	81,9	104,1
CO2 emissions of installed base / year	SO3	Mt	4,7	11,5	16,3	1,6	13,2	17,9	54,3	14,4	68,7	86,6
CO2 emissions of installed base / year	SO3+	Mt	4,7	10,0	14,7	1,0	11,0	15,8	54,3	12,6	66,9	82,7
CO2 emissions savings from Baseline to SO3		Mt	-1,3	-3,1	-4,3	0,0	-3,1	-4,3	-9,9	-3,3	-13,2	-17,6
CO2 emissions savings from Baseline to SO3+		Mt	-1,3	-4,6	-5,9	-0,6	-5,2	-6,5	-9,9	-5,1	-15,0	-21,5
Annual expenditure on electricity consumption of installed base	2005	billion euro	1,8	2,6	4,4	0,3	2,9	6,7	16,3	4,2	20,5	27,2
Annual expenditure on electricity consumption of installed base	Baseline	billion euro	2,0	2,9	5,0	0,3	3,2	7,6	21,8	6,0	27,9	35,4
Annual expenditure on electricity consumption of installed base	SO3	billion euro	1,6	2,3	3,9	0,3	2,6	6,1	18,5	4,9	23,4	29,4
Annual expenditure on electricity consumption of installed base	SO3+	billion euro	1,6	2,0	3,6	0,2	2,2	5,4	18,5	4,3	22,8	28,1
Annual expenditure on electricity consumption savings from Baseline to SO3		billion euro	-0,4	-0,6	-1,0	0,0	-0,6	-1,5	-3,4	-1,1	-4,5	-6,0
Annual expenditure on electricity consumption savings from Baseline to SO3+		billion euro	-0,4	-0,9	-1,3	-0,1	-1,0	-2,2	-3,4	-1,7	-5,1	-7,3
Number of lighting points in installed base	2005	million	21,4	52,0	73,4	5,8	57,8	79,2	1291	209	1500	1579,2
Number of lighting points in installed base	Baseline	million	28,2	59,7	87,9	9,5	69,2	94,8	1875	375	2250	2344,8
Mercury content of installed base	2005	kg	357,4	964,1	1321,4	29,0	993,1	1350,4	9391	1859	11250	12600,4
Mercury content of installed base	Baseline	kg	470,9	1106,8	1577,8	47,5	1154,3	1700,5	14065	2810	16875	18575,5
Mercury content of installed base	SO3+	kg	195,7	728,3	924,0	19,0	747,3	500,1	3349	691	4040	4540,1
Mercury content reduction (installed base)		kg	-275,2	-378,5	-653,7	-28,5	-407,0	-1200,4	-10716	-2119	-12835	-14035,4

Annex IV
Lamp types affected by the stages of sub-option 2 and their respective electricty consumption in 2005

This table serves as an input to Annex II Simplified scenario analysis of the sub-options examined in Section 5. It is based on the data collection done in the framework of the preparatory studies.

The table is based on assumptions concerning:

1. in the case of MHL and HPS lamps, the share of the different sub-types in the annual lamp sales
2. in the case of T8 triphosphate lamps and Compact fluorescent lamps without integrated ballast, the share of electronic and magnetic ballast operated lamps in the annual lamp sales
3. life time, wattage and yearly burning hours: values are estimates of weighted averages for the given product category

The grand total does not exactly match the total result of the preparatory and impact assessment studies, because the studies were based on a more complex calculation method.

Abbreviations used:
MHL = metal halide lamp
CFLni = compact fluorescent lamp without integrated ballast
HPS =high-pressure sodium lamp
T5, T8, T10, T12 = double-capped fluorescent lamps with different diameters

	Annual lamp sales (millions, 2004 ELC)	Life time (90 % of CIE table)	Installed base in 2005 (millions)	Wattage	Yearly burning hours	Consumption / year (TWh)
Lamps affected by stage 1						
T8 halophosphate lamps	149,0	13000	553,4	32	3500	62,0
Total			**553,4**			**62,0**
Lamps affected by stage 2						
T12 & T10 halophosphate lamps	14,0	13000	52,0	60	3500	10,9
HPS not complying with stage 2	7,5	15000	28,1	140	4000	15,8
MHL not complying with stage 2	0,2	12000	0,6	200	4000	0,5
Total			**80,7**			**27,2**
Lamps affected by stage 3						
high-pressure mercury vapour lamps	8,0	12000	24,0	250	4000	24,0
HPS complying with stage 2 but not with stage 3	0,2	15000	0,8	140	4000	0,4
Total			**24,8**			**24,4**
Lamps affected by stage 4						
T8 triphosphate magnetic ballast	75,0	16000	342,9	30	3500	36,0
CFLni magnetic ballast	26,0	9000	66,9	11	3500	2,6
MHL complying with stage 2 but not with stage 4	0,5	12000	1,5	180	4000	1,1
Total			**411,2**			**39,7**
Lamps complying with all criteria						
T8 triphosphate electronic ballast and T5(+others)	58,0	20000	331,4	28	3500	32,5
CFLni electronic ballast	26,0	13000	96,6	10	3500	3,4
HPS complying with stage 3	2,5	18000	11,3	120	4000	5,4
MHL complying with stage 4	4,5	12000	13,5	150	4000	8,1
Total			**452,8**			**49,4**
Grand total	371,4		**1522,9**			**202,6**
High-intensity discharge lamps	23,4		Figure from studies:			Figure from studies:
Fluorescents	348,0		1579,2			199,6

Annex V
Minutes of the meeting of the Ecodesign Consultation Forum of 22 June 2007 as related to ecodesign requirements for public street lighting products[42]

1. Welcome and introduction

(…)

Concerning the organisation of this meeting, the Chairman said that it had been very important to hold a meeting before the summer break in order to progress work on draft implementing measures before more preparatory studies would be finished in the busy autumn.

He was aware of the difficulties the late invitation had caused and therefore written contributions from forum members on street lighting would be accepted for up to five weeks after the meeting.

(…)

7. Working document on possible Eco-design requirements for Public Street Lighting *(for opinions)*

The CHAIRMAN indicated that the transmitted working document was not the draft legal text of an implementing measure, but rather a collection of main ideas for such a measure, meant to identify the significant environmental aspects, the improvement potential, and how to achieve it. He thanked Finland, Belgium, the European Lamp Companies Federation (ELC), the Federation of National Manufacturers Associations for Luminaires and Electrotechnical Components for Luminaires (CELMA) and the environmental NGOs represented by the European Environmental Citizens Organisation for Standardisation (ECOS) for the written comments they have sent, in spite of the late diffusion of the working document. He then gave the floor to Mr. TOTH.

Mr TOTH recalled the structure of the working document and explained the relationship between the concerned applications areas / lighting technologies, as well as the scope of the proposed requirements in relation to lamps, ballasts and luminaires as the different parts of street lighting products (see presentation).

Then followed a discussion on the written comments received before the meeting, compiled into a single list of questions (see presentation). Unless otherwise noted, the question is coming from the joint ELC/CELMA comments.

1. More time needed for proper input (also ECOS) – request for a revised Working Document

Addressed earlier (see Welcome and introduction) and further on.

2. Is the luminaire an EuP? Are lamps and ballasts its components?

[42] Complete minutes available on TREN ecodesign website

Mr TOTH stated that since in street lighting, luminaires are always sold together with ballasts, which are EuPs, the luminaires themselves are also EuPs. He confirmed that lamps and ballasts are both EuPs and not components as they are dependent on energy input, their environmental impact can be assessed separately, and they are placed on the market also as individual parts. CELMA claimed that while it is true that the environmental performance (energy efficiency) of ballasts can be assessed separately, the same is not true for lamps of the HID technology – they always need a ballast to operate, even for the purposes of assessment. Therefore they do not fulfil the criteria to be considered as EuPs. ELC replied that HID lamps can be considered EuPs if a clear procedure is developed for assessing them independently. The CHAIRMAN confirmed that it is the Commission's intention to consider lamps as EuPs, as they conform to the definition of Article 2 (1).

3. Harmonisation of abbreviations, terminology, numbering of requirements

Mr TOTH promised that in later documents the necessary harmonisation of abbreviations and terminology would be done and that the current numbering of requirements (overlapping with category codes in street lighting standards) would disappear when the legal text will be drafted.

4. Are labelling/marking requirements possible, in addition to the CE marking?

Mr TOTH explained that Annex I Part 2 of the EuP Directive gives the possibility to require manufacturers to provide product information with their products, and so the requirements proposed in the working document are backed by the Directive. In spite of the terminology "labelling" or "marking", it is only product information after all. ELC and CELMA expressed their opposition to any labelling or marking based on the intended purpose of the products. Mr Markku Norhio, registered as CELMA participant and speaking for the ballast industry, also joined ELC and CELMA in this opinion. The CE marking should be the only requirement for placing on the market. Also, it is not the manufacturers who decide where the products are going to be used, but installers and lighting designers in the following step. In that logic HID lamps used in industrial lighting (indoor/outdoor), shoplighting etc, should also have their own marking. Mr TOTH replied that the proposed marking and detailed product information is meant to inform about a product's particular suitability for street lighting and assist the designers and installers to put the products into service so that their performance is optimal. Reaping the improvement potential through putting into service seems to be the aim of industry as well. Furthermore, as opposed to shop lighting or industrial lighting, street lighting involves other, more local levels of public decision-making, which could impose as an installation requirement that only products marked as suitable for street lighting can be installed in public streets under their control. Also, more stringent requirements can be put on products that are meant to be suitable for street lighting than on other products.

5. ECOS: Dynamic requirements are missing from the measure – no push for innovation through phased introduction of requirements.

INFORSE, DENMARK, GERMANY and the NETHERLANDS also expressed their concerns over the lack of dynamism in the proposed requirements, even though the European Council and the Energy Efficiency Action Plan are asking for it. Separate tiers would be necessary in the measure, or at least clear deadlines for a revision, otherwise it could lead to a standstill. A long term-perspective is also desirable from an industrial point of view, for predictability. According to Annex VII, implementing measures should also provide a date for their revision. ELC added that as lighting manufacturers, they are in a position to indicate

which time-frames would be achievable for improving their products and bringing in better technologies in the longer run. Mr TOTH pointed out that there are already elements of a phased approach bringing dynamism in the working document, e.g. on dimming of ballasts and the interrelation of requirements relating to lamps and luminaires providing for phasing out in several steps. The CHAIRMAN explained that even though there is scope for fixing dynamic limits and phases, the provisions of the Directive do not allow the Commission to go beyond what is considered as best available technology already on the market, when determining what is going to be mandatory in the future. Other instruments could also contribute to achieving dynamic market incentives. At the stage of the working document, it may be too early to discuss tiers and revisions, we first need to agree on where the improvement potential is and what are the means to achieve it. Instead of setting a date for revision already now, we could first see how the market evolves after the adoption of the measure, and examine the necessity of a revision later, e.g. on request of stakeholders. ECOS expressed doubts whether without setting deadlines for revision now, any review would happen at all taking into account the workload of the Commission under the EuP Directive. Too technology specific requirements are to be avoided, as they would not cover possibly upcoming new technologies, which would then push the current good technologies off the market, since the requirements would not apply to them. Dynamically increasing general requirements applying to all products in the category should be preferred.

6. Further measures needed to accelerate replacement and for « putting into service criteria »

CELMA explained that lighting product manufacturers do not need a push to be more efficient, efficient products have been on the market for years, and still they are seeking even more efficient new technologies (such as LEDs) without external pressure. But there is not enough market demand for new products, the rate of replacement is slow, and new installations are not always the most efficient. The savings forecasted in the street lighting preparatory study through the proposed product-level measures would bring only 0.07 % reduction of the total energy use in the EU, whereas the savings through installation level requirements could be 2.93 %. [It was pointed out after the meeting that the preparatory study had estimated the consumption of street lighting to 1.3 % of the final electricity consumption of the EU. It is therefore questionable how installation level requirements on street lighting could achieve a 2.93 % reduction of total energy use in the EU. CELMA is in the process of verifying the percentages they provided during the meeting.] EuP should be backed up in the same time frame with a legislative instrument regulating the integration of the products in installations. ECOS warned against starting to compare a product group's achievable savings to the total energy use in the EU, because taken by themselves the individual savings could seem minor, it is their combined impact that would make a difference. Mr TOTH argued that solutions should be first sought within the EuP Directive itself. The working document introduces requirements which would have an indirect effect on the installation phase, such as product information for better installation, or accelerated replacement of the long-life luminaires triggered by a phasing out of spare lamps (ca 3 year lifetime) that go into them. Also, the marking for suitability can serve as a basis for legal requirements on installation at other levels of decision making (e.g. Member States as part of their National Energy Efficiency Action Plans under Directive 2006/32/EC), as described under question 4. The improvement potential of these requirements was not yet assessed in the preparatory study, so the real saving through direct and indirect effects of the implementing measure would be much higher than 0.07%. CELMA expressed worries over the approach for accelerated replacement, because if it is not properly prepared, local authorities will be taken by surprise by the disappearance of spare lamps, and streets will either be in the dark, or cheap, less

performing or inefficient solutions will be sought. Instead, predictable regulation at installation level is necessary. Also, the working document assumes too quickly that in a transitional period high-pressure mercury vapour lamps can be replaced by retrofit high-pressure sodium lamps in the same old luminaire. Compatibility issues may arise. Instead, a replacement of the entire luminaire should be preferred through installation requirements. The CHAIRMAN concluded that the impact assessment would determine the improvement potential related to the different policy options, and that in case it is demonstrated that the EuP Directive alone cannot achieve the desired proportion of the potential savings, other instruments may have to be explored.

7. Differentiating street lighting and other products is impossible, detailed product information to facilitate installation is difficult because manufacturer does not know where product will be installed

Already addressed in question 4.

8. Weakness of market surveillance

CELMA noted that putting into service requirements could provide a solution to check the conformity of the products in the lighting design and installation phase. If renovation is forced through phasing out of spare parts, cheap, non-conforming products will dilute the lighting market. ELC underlined the necessity of short term action to improve market surveillance under the EuP Directive, which works properly only in a few Member States. Mr MONTOYA recognised that market surveillance has not always worked ideally, but the difficulties are relative. Member States are improving their systems. Some directives (including EuP) have better provisions on market surveillance, and it is a key question during the ongoing review of the New Approach. There is much to be gained by the implementing measures and experience of the Low Voltage Directive has shown that certain market surveillance problems have not altered the positive balance. The CHAIRMAN pointed out that the current discussion concerns only the street lighting implementing measure, which alone would not solve the problem of market surveillance. The measures should not open the door to new ways of cheating, on the contrary they should facilitate market surveillance.

9. Are all street lighting luminaires targeted, even TL-F?

Mr TOTH confirmed that the requirements on the luminaire maintenance factor and the upward and downward lumen output ratio would have to be fulfilled by all street lighting luminaires, including those for tubular fluorescent lamps. CELMA suggested that because these luminaires are also used in other application areas, technology-based common requirements could be set instead in implementing measure, which would also cover products used in other areas (e.g. implementing measure on tubular fluorescent lamps and luminaires). Complementary installation requirements on street lighting could ensure that no other less efficient technology is used in street lighting as a backdoor way.

10.The measure should be only on street lighting products.

Already addressed in the introductory presentation.

11.Why does the measure exclude LFL and halogen lamps in public but not in private road lighting?

Mr TOTH explained that stronger requirements can be imposed on public street lighting products, due to the unique characteristics of public street lighting as compared to private road lighting. CELMA suggested that if the rule was technology-based, it would apply through it to all applications. The CHAIRMAN concluded the debate on applications / technology by pointing out that we have two options: either requirements on street lighting products are applicable also when those products are used outside street lighting, or if we want different requirements, we need to mark the products as suitable for street lighting.

12.Fast phasing out of spare lamps will create critical situations – 5 years are needed

Already addressed in question 6.

13. Will this measure refer to additional environmental aspects not yet mentioned in the text?

Mr TOTH confirmed that the intention was to stick to the environmental aspects identified in the working document.

14. The assessment of a product's energy efficiency should include the surface to be lit.

Mr TOTH explained that in chapter 3 of the preparatory study (Consumer analysis and local infrastructure), assumptions were made on the EU average characteristics of the surface to be lit. EU totals in the study were calculated taking into account those characteristics. Also, the detailed requirements on product information should allow the installers to assess the product's performance as regards the surface to be lit.

15. Existing high-pressure sodium lamps (HPS) are good enough, innovation would bring undue costs. <> ECOS: requirements on metal halide lamps (MHL) and HPS too modest

ELC claimed that contrarily to the position expressed in the question, the lighting industry was ready to put forward better specifications for a reasonable time frame. ECOS replied that while this tackles part of their question, the other issue is lamp lumen maintenance factors and burning hours, where harmonised requirements on all lamp types and a stepwise increase in ambition would be more appropriate. Mr TOTH objected that according to experts, common maintenance factors and burning hours requirements for HPS and MHL lamps cannot be set.

16. No requirements on ballasts are possible, as there is no measurement standard for ballast efficiency and none will be proposed by industry in the near future. <> ECOS: COM should come forward with measurement method

CELMA (ballast manufacturers) insisted on the small energy saving that is achievable through improving magnetic ballasts, whereas the electronic ballast technology for street lighting has not yet proved that it can replace them (maybe in five years' time). Article 15.2.c of the EuP Directive states that the targeted EuP shall present significant improvement potential without entailing excessive costs. Differences in ballast efficiency are so little (85% for magnetic, 90% for electronic for 70W HPS lamp) that with current measurement methods they are hard to trace, due to variations in the wattage of the test lamps themselves. It is the main reason why no measurement standard could be developed ten years ago in spite of a mandate from the Commission. Magnetic ballasts would be replaced anyway by electronic ones, it does not make sense to force a new generation of magnetic ones at this point. A measurement method could be developed for electronic ballasts later. Mr EIFEL noted that the absence of a measurement method is not a reason in itself for not adopting measures. Requirements could be set, a measurement standard could be mandated, and the measure

could be applied when the standard is adopted. ECOS agreed, noting that the upcoming electronic ballast technology needed a push from the implementing measure.

17. Electronic ballasts cannot always replace magnetic ones and they do not bring enough benefits – bilevel or phase-cutting dimming should be enough, 5 levels are too much. ECOS: 50% dimming not enough, 20 or 30% already used

Mr TOTH noted that this was another example of product-level requirements that would have an indirect effect if the product is properly installed and used. If all ballasts are dimmable, the option is always there to make use of the dimming. Dimming has also other benefits apart from adapting to low traffic situations: it can play an important role in reducing the energy use of new lamps that are overdimensioned to take account of the later reduction of their performance (lamp lumen maintenance factor compensation). It is also an example of staged (dynamic) requirements: it would not enter into force right away, only when electronic ballasts are improved in a few years time. CELMA (ballast manufacturers) noted that applying this requirement to all ballasts was currently unrealistic, installation or design phase requirements would be needed instead. Also not all lamps are suitable for dimming. The matter could be rediscussed when electronic ballasts become widely available.

18. Conservative values proposed by industry for luminaire IP rating and for ULOR/DLOR <> ECOS: maintain ambition

CELMA claimed the IP rating values do not need to more ambitious, a closed luminaire should be enough for street lighting. It is the rating of the optical part that is important. The experts from VITO noted in reply that the values proposed in the working document have been applied in street lighting in the past, and that two countries outside the EU have already imposed them as minimum requirements. As the luminaire maintenance factor (IP rating) is important in calculating the initial installed power, there are potential energy efficiency gains with better protected luminaires.

19. RoHS and WEEE directives should be used for mercury and waste, no requirements under this measure. <> ECOS: a maximum mercury content per unit should be defined + a mandatory take back system for used lamps would be appropriate (at least for Hg and other heavy metal containing lamps). Design for recycling needed.

On request of DENMARK, Mr TOTH confirmed that HID lamps are completely exempt from restrictions on their mercury content under the RoHS directive. ELC noted that a take-back system for spent gas-discharge lamps (including HID) exists in all EU countries, as a result of the WEEE directive. ECOS clarified that they do not have a problem if the lamp industry prefers that the mercury content of lamps is regulated under the RoHS directive. They would appreciate more information on recycling methods under the WEEE directive, as it was not detailed in the preparatory study. ELC proposed to provide them with the information. On design for recycling, Mr EIFEL noted that if an Article 175 directive such as WEEE requests the Member States to adopt design requirements for products, it can be counterproductive both for the internal market and for ambitious common product environmental performance requirements, as Member States are free to set a low level of requirements, or, since the WEEE directive is vague in its wording, soft measures only. It would be a good idea to harmonise design for recycling through EuP, providing clear rules with legal certainty. If appropriate, all significant/relevant environmental parameters could be addressed in a similar way as waste in the working document. CENELEC added that product-specific standardisation could also be considered, as it is an area subject to fast change. Mr EIFEL

agreed that this could be a way of introducing dynamism in the implementing measures, through a combination of generic requirements and standards.

20. Product documentation should be made available but not with individual products.

Mr TOTH explained that the location of the product documentation to be required from manufacturers is still an open question, especially with a product group such as street lighting*21. Requirements are necessary on component manufacturers.*

Mr TOTH recalled that neither the preparatory study nor the accompanying stakeholder consultation showed the need for requirements on component manufacturers (i.e. components of lamps, ballasts and luminaires), according to Article 11 of the Directive. Nobody in the meeting room could clarify what was meant with this question.

22. ECOS: Requirements for (new) technologies not covered by the addressed lamp types may be either missing or inappropriate, which could result in a limited push towards the development and/or use of more efficient product alternatives available on the market.

Already addressed in questions 5, 9 and 11.

23. ECOS: Requirements needed for S1 lamp lumen maintenance factor and lamp survival factor, the same should be harmonised across S3 and S4

Already addressed in question 15.

24. ECOS: Ga-1 on light pollution - clear requirements supporting future upgrade possibilities of lamps (e.g. possibilities without change ballasts) are missing

Mr TOTH asked for clarifications concerning this question as it was difficult to understand it, but none were given. CELMA recommended their recently published "Guide on obtrusive light" for reading.

Member States questions:

Having gone through the compilation of questions received from ELC/CELMA and ECOS, Mr TOTH then answered written questions from Member States. FINLAND had raised concerns about the term "public street lighting", which could be too general: it is unclear whether the definition covers lighting for park areas or walkways. Mr TOTH claimed that the European standards were already using this terminology, which should be thus suitable for regulatory purposes. Slow traffic areas are covered, including park areas and walkways if they are public. FINLAND also stated that the present life-cycle of products should be taken into account for transitional provisions. Mr TOTH replied that they were already taken into account in the study. BELGIUM had asked why there was no specific requirement on mercury content in HID lamps. Mr TOTH pointed out that this issue was discussed earlier in the meeting (see question 19). BELGIUM also noted that the reference to the WEEE directive may not be sufficient, especially when the HPM lamps will be phased outMr TOTH then opened the floor for further comments relating to the working document on public street lighting. ELC stated that all the problems worth discussing in the current Forum meeting had been raised. Mr TOTH closed the discussion and promised that a consolidated document containing all the comments received before the meeting from stakeholders and MS would be circulated in the forthcoming days.

The CHAIRMAN concluded this point of the agenda by stating that the Commission had fulfilled its mandate by listening to the different points of view relating to the planned implementing measure. Major issues discussed were the question of the technology versus application approach, and the necessity or not to have installation requirements for public street lighting. The rest are probably technical points that can be solved in the forthcoming months. The NETHERLANDS asked when the impact assessment mentioned several times in the working document would be ready, and when a revised version of the working document would be available. The CHAIRMAN answered that the impact assessment could be ready at the earliest in approximately 3 to 4 months time. It will be certainly ready for the interservice consultation within the Commission, before the draft measure is sent to the committee for vote (currently scheduled for early 2008). As for the revised version of the working document, it could be that none would be sent to the Forum, as the next version might be the draft measure itself. The Commission services will take stock of the comments received so far and possibly in the forthcoming weeks. They will then make a number of choices regarding the available policy options. If those choices respect the discussions and comments, and nothing radically new is introduced, there is no reason to come back to rediscuss the draft measure with the Forum. This would also respect the intention of having one Forum meeting per product group. In that case, the Forum would of course be informed of the next steps in a form yet to be determined.

8. Any other business

Concerning the method of product documentation, ORGALIME noted that making the information available on websites or catalogues rather than on individual products has worked well in the past. The CHAIRMAN replied that the location of the product information depends on the product and on the purpose of the information. In many cases, this information is needed for a proper use of the product by the end-user, in which case it should accompany the product. In some special cases information is needed many years after the product is purchased and put into service, and thus should be fixed on the product itself, as the marking on boilers that ensures their proper use if their installation is reconfigured.

ORGALIME asked what would happen to the 12 environmental aspects where the preparatory study showed that no action is necessary, and which were not mentioned in the working document either, where only three aspects were identified as significant. Will there be a formal ban on Member States legislation on these environmental aspects, as the Directive allows it? The CHAIRMAN replied that it was determined today that there is a consensus on the aspects to be considered as significant. It was clear that implementing measures can, if appropriate, list the ecodesign parameters for which no ecodesign requirements are necessary. In practice it should not make a difference whether such an approach is used or not, since it is a harmonising Article 95 directive on the internal market and any subsequent Member State regulatory initiative on a non-significant environmental aspect of the product in question would be considered negatively in the framework of the Directive 98/34/EC notification system of Member States legislation to the Commission. If, for the sake of legal clarity, there is a need to adopt a stronger position, and stipulate that no ecodesign requirement is necessary for all these environmental aspects, it can be done.

(…)

The UNITED KINGDOM asked whether the implementing measures would take the form of directives or decisions/regulations, keeping in mind that the directive format would allow for adaptation to the UK legal system through transposition, making it probably easier for the UK

to agree to draft measures in the committee. The CHAIRMAN pointed out that legally speaking, all three options are available and the Commission's Legal Service has confirmed that the implementing measures can take the form of regulations or decisions. In practice, it would be decided on a case by case basis for each measure whether its content is straightforward enough to understand and apply directly in all Member States, or a margin of interpretation should be left to them. Regulations should be preferred, as they would save the burden and delays related to transposition by Member States and checking the transposition by the Commission, and would avoid potential differences in the national transpositions that would be detrimental to clarity on the internal market.

On a question from CELMA, the CHAIRMAN indicated that the next meeting of the Consultation Forum would probably take place in the autumn, depending on the state of readiness of the further working documents to discuss, however certainly not before the beginning of October. The presentations and minutes from this meeting would be made available on the EUROPA ecodesign websites, where updates would also be published on the state of advancement of the different implementing measures.

Annex VI
Minutes of the meeting of the Ecodesign Consultation Forum of 18 December 2007 as related to ecodesign requirements for office lighting products [43]

Mr Toth explains that the intention is to put in the coming measure basic requirements for the luminaires already now, and leave more time for the discussion of detailed luminaire efficacy rating / light output ratio requirements as they are very complex and important elements for their analysis are only going to be provided in the second part of the domestic lighting study. Following a remark by **IT**, the **Chairman** explained that the same committee could deal with both ecodesign and energy labelling, for consistency and complementarities between ecodesign requirements and labelling. Consultation Forum could identify labelling as one of the policy option. Following the question of **DK** whether installation requirements could lead to a revision of lighting standard EN 12464, **CELMA** (Federation of National Manufacturers Associations for Luminaires and Electrotechnical Components for Luminaires) replied that CEN has adopted plans to revise the standard so as to integrate installation level requirements.

1. How many implementing measures on lighting and what scope?

Mr Toth explains that it is likely that the planned two tertiary sector measures could be merged into one, simply adding up the content of the existing proposals. CELMA's plea for application independence is already answered by the suggestions presented in the working documents (Annex I of office lighting, street lighting document already has horizontal requirements). In a merged measure voluntary indication of suitability according to application would still be handled as separate annexes. Thus implementing measures will be on products, but the voluntary indication for suitability would open the way for further legislation outside the ecodesign scope. **CELMA** notes that best way forward is to have complementary legislation. **Environmental NGOs** stress the need to keep the application oriented approach in parallel to technology requirements. **ELC** (European Lamp Companies' Federation): the number of measures on lighting is currently an open issue, and should be decided based on which approach is easiest for stakeholders to understand, comply with and is fastest to implement.

2. Application vs. technology approach

Covered under point 1.

3. Form of the implementing measure

Mr Toth: supportive comments received for regulation. **IT** supported the principle of using regulations for products requirements, but for installation/systems requirements a directive would be more appropriate. **Environmental NGOs** support the regulation because it is simpler for later reviews.

4. Voluntary indication of suitability and installation requirements

Mr Toth: change in the approach compared to working document on street lighting in June 2007 (Instead of mandatory, voluntary indication for the manufacturer if relevant for installation-level local/national and/or public procurement provisions).

[43] Complete minutes available on TREN ecodesign website

5. Repeal of directive 2000/55/EC (existing implementing measure on fluorescent ballasts)

CELMA is opposed to the repeal of the 2000/55/EC directive. It is clarified that by "repeal" it is not meant to cancel its requirements, but to embed its full (but possibly amended) content into the forthcoming ecodesign measure covering all fluorescent lighting products. This would also solve the problem of the legal form, as 2000/55/EC is currently a directive and the intended form of the implementing measure would be a regulation.

6. Standards and measurement methods

Mr Toth accepted that the working document is not specific enough on definitions and measurements. Either references or the methods themselves will be introduced into the draft measure.

7. Standby and off-mode power limits

Mr Toth: this topic relates also to the 19 October 2007 Forum meeting. Ballasts and luminaires should both have requirements on standby values. The functionality of presence detectors and other sensors that dim them or switch them off is not considered as standby under the terms of the standby implementing measure. Therefore the current working document on fluorescent lighting can propose limit values for their "standby" status. **CELMA** supports that ballasts are removed from a horizontal standby implementing measure and agree with the values proposed. However, dimmable ballasts can serve both as ballasts for the lamps and power supplies to the sensors in the lighting network. It should be clarified that the standby losses are for the ballast function only and not for the power supply function.

8. Product information (location, content, labelling)

Mr Toth: several options for location: product itself, packaging, accompanying instructions, website/catalogue, technical file available at the manufacturer. The latter two are obvious choices, the question remains about the first three. **AT:** in a pragmatic approach, we should include all information sources used by buyers, catalogues etc. It is less important to have the information on the packaging. **NL:** the proposed information requirements and the discussion on their location should be in line with Article 14 of the Ecodesign Directive (the content can be prescribed but not the form). **Mr Toth:** part 2 of Annex I should be considered too – out of the 4 categories of product information listed there, only one is covered by Article 14, information for consumers on how to use and dispose of the product in a sustainable way. For the other categories, the form of the information can also be specified. **Environmental NGOs:** if the requirements are not application based, the information should be available on the package, as the application and therefore the end-user is not known. Lamps are not only bought by professionals. A++ should not be used as new classes for the energy label. Need for a clear mark on mercury content, important for the waste phase. **Chairman:** We need to know what message to convey and to whom, and only then we can decide where it should be located. Users, not only consumers should be targeted. **IT** noted that we have to take into account Article 7.b of 92/75/EEC – if likely to confuse, the display of other marking is prohibited. **ELC:** the question is relevant for the market surveillance discussion too – we should make it easy for authorities to do their job. **CELMA:** LOR value is already voluntarily indicated by CELMA members, for the benefit of users for whom CE marking (showing compliance with the potential minimum LOR requirement) may not be sufficient. Requirement on display of the Energy efficiency index on the ballasts themselves is a good idea, reputable manufacturers already do it. **NL:** watertight requirements and information on

the products themselves should be the rule for proper enforcement, if necessary exceptions can be granted on information location.

Mr Toth: revised lamp energy label will be proposed but not in spring 2008 – limits are set out already now for LFLs and CFLni, however the class names should follow the forthcoming 92/75/EEC revision (after extension of the scope beyond household appliances). **DE:** for recycling it should be indicated on the label if mercury is present in the product. **CHAIRMAN:** mercury indication would confuse the consumers and would jeopardize the positive message on lamp energy efficiency, so in the end they would buy the cheaper lamp. Of course the indication is useful in the professional context.

9. Role of benchmarks

Mr Toth: the benchmarks indicate what is the best available technology on the market at the time of carrying out the preparatory study. Benchmarks could become the requirement at term. In some cases the working document suggests that the requirements are at the level of the benchmark: wording should make this clear in the implementing measure. LFLs are a mature technology, and for some parameters there is no differentiation on the market that would allow the setting of benchmarks.

10. Market surveillance

Mr Toth: of does not depend only on the ecodesign process. The Commission services working on the implementing measure are aware that the effectiveness of eco-design measures also depends on market surveillance by the Member States; the revised New Approach Regulation is addressing the issue. **UK**: the UK Department for Environment, Food and Rural Affairs (DEFRA) draws the attention to a conference in Paris on 28-29 February 2008 co-organised with the International Energy Agency (www.iea.org) entitled "Meeting Energy Efficiency Goals: Enhancing Compliance, Monitoring and Evaluation". **CELMA:** in the professional market, products produced on order for particular installations "disappear" immediately in the market as they are installed as soon as shipped to the buyer. This makes product-based market surveillance typically occurring in shops difficult. The proposed lighting design legislation would be a solution, because "market surveillance" on products would be exercised by the lighting designers and installers eager to comply with the installation level requirements. **Environmental NGOs:** This could entail new levels of bureaucracy – better to have EuP requirements which are then interconnected with energy efficiency requirements on buildings. **Mr Toth:** Environmental NGOs had noted in their comments that the complexity of some requirements could be a threat to the proper functioning of market surveillance. **ELC:** complexity is justified, because it is important to ensure that products meet all requirements, not just requirements on one parameter (e.g. energy efficiency). It is easy to optimise the product on one parameter if the others are neglected – simplistic requirements could be a loophole for bad quality products entering the market.

11. Monitoring and revision of the measure

DE: support the proposal from Environmental NGOs to require both manufacturers and importers to report on the environmental performance of the products placed on the market into a central database through which the effectiveness of the implementing measures could be constantly monitored. **Chairman:** the Commission services are currently examining ways to identify dynamic benchmarks for rapidly improving products in order to pull the market.

The setting of such advanced benchmarks should be a continuous and dynamic process which cannot work if linked to some formal administrative/legislative process. Advanced benchmarks could be an indicator of technological evolution and serve as an input to trigger the revision of implementing measures (also for labelling). It is proposed to discuss such possibilities later. **Environmental NGOs:** the benchmark is for identifying the best products, where the Environmental NGOs proposal is to set out a legal requirement for provision of data to increase knowledge about all existing products through a database. .

12. Way to set exemptions

Mr Toth: exemptions should be based on technical parameters, not on claimed application areas, in order to make market surveillance straightforward and avoid creating legal loopholes. This is in line with the objective of covering all general lighting technologies under the planned implementing measures. **ELC:** ready to cooperate to come up with technical parameter-based exemptions. **Mr Toth:** Exemptions based on e.g. lamp diameter are meant to ensure that the scope remains restricted to general lighting so that the measure does not affect lighting technologies in applications where lighting is used e.g. for decorative purposes. **Environmental NGOs:** why restrict the scope of luminaire requirements to luminaires for lamps with more than 1000 lumen output? **VITO and CELMA:** the purpose was to limit the scope to luminaires used in professional lighting, which normally do not use lamps under 1000 lumen output. **CELMA:** for those kinds of luminaires it is anyway difficult to set requirements and the saving potential (as far as the optical efficiency of the luminaires is concerned) is marginal. **Mr Toth:** agrees that Annex I was supposed to be application-independent and that there could be scope for requirements on luminaires for fluorescent lamps under 1000 lumen output. The requirements should be reviewed to take this into account.

Detailed discussion

The participants are asked to indicate which are the parts of the working document they would like to discuss in the remainder of the meeting.

I.2. Requirements on lamp efficacy for fluorescent lamps without integrated ballast

DE: will submit detailed written comments later. It is suggested to take up a service oriented

view, to consider the luminus flux versus wattage and to define efficiency

requirements by kilowatthours per kilolumenhours instead of lumen/watts versus

watts . Instead of the many tables categorised by wattage and giving lm/W values for different lamp types, a single common equation should be preferred both for lamps and ballasts. In the current proposal lamps with the same performance but different technology could have different target values. **ELC:** interested to see DE proposal, as they have not managed to come up with a simple solution so far.

I.4. Requirement on mercury in fluorescent lamps without integrated ballast

ELC: mercury content of lamps is tackled in the RoHS directive (2002/95/EC). **DK:** agree with the recommendation in the working document to tackle mercury limits under RoHS. **DK**, **Environmental NGOs:** would like to clarify what is the legal value of the recommendation to tackle mercury limits under RoHS. **Chairman:** Once we know what the limits should be, it

is a formal question where they will be set, provided legal consistency is ensured. A practical arrangement could be that a provision in the implementing measure sets out the values, with the clause that they will be applicable unless superseded by the subsequent revision of the RoHS annex. **IT:** this is a typical example of a product directive overlapping with a horizontal directive. Mercury content should be clearly tackled under RoHS and nowhere else. The same holds for other potentially overlapping aspects. **Chairman:** Leaving it to RoHS is also a good option, however it would be better if we did not have to wait and hope that the same conclusion is reached in another process. DG TREN and ENTR will discuss with ENV how to solve this.

DK, **Environmental NGOs:** agree with lowering the limits on mercury content. **ELC:** mercury content is part of a larger picture, as other aspects of the product are affected (efficacy, lifetime etc.). Low limits such as 2mg can be set, however we have to consider the consequences on other aspects. Also some lamp types would be phased out of the market (e.g. T9 circle lamps). **ECEEE:** it could be envisaged to make trade-offs among the different lamp parameters (e.g. for lower mercury content, shorter lifetime would be accepted, and vice versa).

Environmental NGOs: in the spirit of the EU's mercury strategy COM(2005)20, would like the Commission to set requirements on the production phase of the lamps. No "dripping method" to be used in producing the lamps such as in many third countries, because half of the mercury is wasted. It would be good to clarify also whether this method is in use in the EU currently. The preparatory study contained no data on this. **Chairman:** The Ecodesign directive deals with product design, it does not address industrial processes, cf. Annex I Part 1 "In so far as they relate to product design, significant environmental aspects are identified with reference to the following phases of the life cycle of the product". Requirements on how raw materials are extracted or on how certain materials are inserted in the product could not be set also because of the difficulty of EU surveillance on the territory of third countries. **Mr Toth:** the horizontal methodology used in the preparatory study makes assumptions on the production phase impact of the mercury content of the product. Those assumptions are averages based on typical production processes, they were used in the life cycle impact modelling of fluorescent lamps in the preparatory study.

Environmental NGOs: unclear what the Commission's intentions are with the leaching mercury requirement. With the proposed test procedure it is common practice to mask the presence of leaching mercury by hiding it in compounds.

I.5. Product information requirements for ballasts used with fluorescent lamps without integrated ballast

I.6. Requirements on the efficiency of ballasts used with fluorescent lamps without integrated ballast

Mr Toth: The tables in Directive 2000/55/EC and in CELMA's ballast guides setting out efficiency limits on ballasts used with the different lamp types were merged into a single table, independent from lamp type and containing also limit values for the different classes according to the energy efficiency index (EEI). It is proposed to complement CELMA's initial classes with new benchmark classes, to rename all the classes so as to avoid confusion, and to raise the minimum requirement for the ballasts used with low-wattage lamps as extremely low efficiencies were detected there.

CELMA: electronic ballasts are the future for office lighting, however in order to prepare for the banning of class C magnetic ballasts in 2005, a new generation of magnetic ballasts was developed and new production machinery and tools still have a long lifetime ahead. The timing to further raising the limits should allow for some returns on the investments to be made. Magnetic ballast production is local business in Europe whereas most electronic ballasts come from third countries. CELMA welcome the intention to base the energy efficiency index on real efficiency, not the supply power, because lamp power then does not affect the measurement result, there will be less variation. However, the measurement method still needs to be developed before the new system can be accepted.[44] They are opposed to renaming the EEI classes, which have been used since end of last decade, and already well known, it will create a lot of confusion if changed. However, if new benchmark classes are added without changing the existing ones, they can accept it. They did not put forward a suggestion on how to name the new classes (knowing that the existing ones are A1 A2 A3 B1 B2). **AT:** would favour a renaming to have a normal A-G label. **CECED:** suggest to use their proposal for a dynamically evolving labelling system with an open scale using numbers starting at 1 for the worst products, in order to avoid difficult rescaling.

I.7-8-9 Luminaire requirements

Mr Toth: The proposed categorisation of luminaires according to light distribution classes and the Light Output Ratio (LOR) / Luminaire Efficacy Rating (LER) requirements are complex and very new issues. Also, some of the aspects can only be addressed once the results of the second part of the domestic lighting study are known, so that a comparative analysis of luminaire and reflector lamp optical efficiency can show how to establish a consistent categorisation and set of requirements. It is therefore proposed to postpone the debate on the parts of the working document on luminaire classification and LOR/LER requirements to the Consultation Forum where the working document following up to the second part of the domestic lighting study will be discussed. Accordingly, only the simpler luminaire requirements would remain in the draft implementing measure on fluorescent and office lighting (certain information requirements such as the CEN flux code, and design requirements). **CELMA:** They will have to consult their member organisations on the changes proposed in the fluorescent and office lighting working document. SMEs do not have the necessary high tech equipment to measure the CEN flux code values, it would be a disproportionate burden on them to provide that information. We need a simple tool on the market, such as the LOR value which describes well the luminaire's optical efficiency. LER is a complex formula taking into account LOR but also the lamp and ballast efficiency. LER would make it possible to hide bad performing products into good ones: a very bad lamp could still go into a good luminaire, or vice versa. **Environmental NGOs:** support the detailed requirement on product information, as lighting designers say it would be very useful in optimising the lighting installations they are planning. **AT:** LER values are already used in Switzerland, not as minimum requirements, but for benchmarking. **CELMA:** the Swiss solution is application-based.

I.10. Requirement on waste of fluorescent lamps without integrated ballast, and luminaires and ballasts for such lamps

[44] CELMA indicated after the Forum meeting that they reconsidered this issue and came to a different conclusion. Please refer to their paper among the comments subsequent to the Consultation Forum.

Mr Toth: though the WEEE directive (2002/96/EC) contains some provisions on product design, product design legislation should be as much as possible under the Ecodesign Directive, which is based on Article 95 of the Treaty and therefore more suited for product legislation harmonised across Europe for their free movement. The proposed requirement comes in addition to the WEEE provision on product design. It is a generic requirement and the details of its implementation would be worked out by the European Standardisation Organisations (ESOs). In the written comments suggestions were made to have more specific requirements. **Environmental NGOs:** Why not a specific requirement on product lifetime and resistance to frequent switching, in the spirit of waste prevention, and as it is already done under the ecolabel on light bulbs? **Mr Toth:** No requirement seemed necessary as according to the study already all LFLs on the market are performing well from this point of view (mature technology). **ELC:** Only the products of EU-based companies are certain to perform well, it is not always the case of all imported products. Also, the required increased efficiency could be achieved at the expense of product lifetime, so to be safe, a specific requirement would make sense after all. **Mr Toth:** if that is the case, requirements on product life time should also be introduced.

ELC: would like to see clarity on whether the proposed additional waste requirements would come on top of the WEEE requirements, and whether the Member States would also be required to have additional requirements under Ecodesign. **Mr Eifel:** WEEE, RoHS and the Waste Framework Directive already address the waste of products horizontally. However, it is important to have requirements also in product design. To avoid divergent national legislations fragmenting the market, it would be better to use a harmonising Article 95 directive such as Ecodesign.

Environmental NGOs: There has been very bad experience with applying essential requirements / standardisation to waste legislation, notably with the packaging directive, where it did not result in any reduction in packaging waste. **Mr Eifel:** If stakeholders or Member States are unhappy with a particular harmonised standard, procedures such as the safeguard clause are foreseen, and ultimately the Commission (assisted by a committee of Member States) may decide to withdraw the reference to the standard as suitable for presumption of conformity. There have been examples before. When standards work, they are a good dynamic way for acting, also affecting the world level as ESOs interact with international standardisation organisations. Products are for the world market and it is best to ensure consistency for a free movement of goods. Also, when we will have to deal with products where many environmental aspects come into picture, it is best to leave it to standardisation to work out how the different requirements should interact with each other in order to optimise the environmental performance of the product. **CELMA:** agrees with attention given to international dimension, currently IEC standard is under development for ballasts, largely based on current CELMA classification. The common global requirement will ensure that products will not have to be manufactured differently for different markets.

NL: Generic requirements should only be used for non-crucial parameters where we have only vague ideas, but even in that case we should not leave it to standardisation bodies to determine the requirements. The discussion on concrete requirements should take place linked to the implementing measures, and not in the European Standardisation Organisations. **Chairman:** reminds that Recital 30 of the Ecodesign directive provides that "the purpose of harmonised standards should not be to fix limits for environmental aspects".