

# Product Definition: Domestic Lighting

## Version 2: 26<sup>th</sup> April 2010

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### 1 Introduction

Lighting is somewhat unusual among the products being addressed by the Mapping and Benchmarking Annex due to the large variety of individual product types and subgroups of colour, shape, light output, etc. Further, in many parts of the world the lighting market is going through a significant transitional phase due to the introduction of new regulations “to phase-out inefficient lighting” and the market entrance of new products (in particular LEDs). As a consequence of these factors, Annex participants have agreed that rather than examine the comparative efficiencies of *individual* products, they would benefit from:

- A comparison of the stringency of the various “phase-out” regulations being introduced by each participant (and potentially others);
- A comparison of changes in *overall average* efficiency of new products entering each market

Such an approach is *broadly* in line with the approach used elsewhere in the Annex for the definition of individual products, ie based on “functionality” (in this case “illumination”), but taken one step further to include technologically very different products.

Participating countries have already responded positively to a questionnaire on the proposed approach and have given positive indications that, in the majority of cases, the required data is likely to be available. Further, participants also provide requests for the addition/removal of specific product types, sizes and attributes.

### 2 Product Scope

Products to be included within the lighting mapping and benchmarking activity can be defined broadly by the following:

*“Lighting products that perform the vast majority of illumination applications within the domestic (household) sector<sup>1</sup>”*

Within this context, specific lighting products that are to be included within the scope of this mapping and benchmarking activity are shown in Figure 1.

In all cases the “product” is the lamp element only with the exception of self-ballasted CFLs and LEDs where the ballast/driver is almost universally sold as a single package with the lamp unit.

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<sup>1</sup> Most 'domestic lighting' products are also used in other areas (e.g. hotels, shops, offices, etc). However, given the functionality of these products is virtually the same in all installations, and in almost all participating countries it will be impossible to separate sales to the domestic sector from sales elsewhere, all products shown will be considered as “domestic lighting” irrespective of final installation point.

**Figure 1: Lighting Products and Wattage Ranges included within the Scope**

Lamp Type	Wattage Ranges										
Main Voltage Incadescents	0-25	26-40	41-60	61-75	76-100	>100					
<i>Total Sales Volume (number of lamps)</i>											
Mains Voltage Halogens (single ended)	0-17	18-20	21-35	36-38	39-50	51-100	>100				
<i>Total Sales Volume (number of lamps)</i>											
Mains Voltage Halogens (double ended)	0-100	101-225	226-360	361-400	>400						
<i>Total Sales Volume (number of lamps)</i>											
Low Voltage (12V) Halogens	0-34	35-38	39-50	51-100	>100						
<i>Total Sales Volume (number of lamps)</i>											
Mains Voltage Pin Based CFLs	0-3	4-5	6-7	8	9-11	12-13	14-15	16-20	21-25	>25	
<i>Total Sales Volume (number of lamps)</i>											
Mains Voltage Self-Ballasted CFLs	0-3	4-5	6-7	8	9-11	12-13	14-15	16-20	21-25	>25	
<i>Total Sales Volume (number of lamps)</i>											
Mains Voltage Linear Fluorescent Tubes (T5)	0-28	29-50	>50								
<i>Total Sales Volume (number of lamps)</i>											
Mains Voltage Linear Fluorescent Tubes (T8)	0-24	25-27	28-31	>31							
<i>Total Sales Volume (number of lamps)</i>											
Mains Voltage Linear Fluorescent Tubes (T12)	0-33	34-40	>40								
<i>Total Sales Volume (number of lamps)</i>											
Retrofit LED Lamps	0-1	1-2	2-4	4-8	8-11	12-14	15-20	>20			
<i>Total Sales Volume (number of lamps)</i>											
Dedicated LED Lamps	0-1	1-2	2-4	4-8	8-11	12-14	15-20	>20			
<i>Total Sales Volume (number of lamps)</i>											

### 3 Metrics

In line with almost all testing methodologies and regulations worldwide, it is proposed to define the energy used by the product based on:

*Unit Power/Rating:*  $W$  (instantaneous power consumption of “new” products<sup>2</sup> under test conditions)

The efficacy (efficiency<sup>3</sup>) of the lamps will be defined as:

*Unit Efficacy:* Lumen/Watt (where lumen output is measured for “new” products under local test conditions)

### 4 Data requirements

To enable the most effective analysis of data and comparison between countries, we would like to collect the following data:

#### 1. For comparison of the stringency of “phase-out” regulations

- a) Details of the regulations defining minimum product energy performance and the date at which the regulation (and any requirement) did or will come into force. For example, for Country X:

*“Lamps sold within the market will have a minimum efficacy level of 15lm/watt. This regulation will apply to lamps with rated power above 100W on 1<sup>st</sup> January 2011 and for all lamps on 1<sup>st</sup> January 2012.”<sup>4</sup>*

<sup>2</sup> New product is defined as the point when a particular product would be tested for “initial values” under the local test condition, typically at 24-100 hours of aging.

<sup>3</sup> For lighting, the “efficiency” of the product is normally referred to as the efficacy.

<sup>4</sup> Clearly this is somewhat simplistic as almost all regulations are scaled based on rated power and/or product type. However the example if provided to give an *idea* of the desired information.

The primary information required is the specific regulatory requirements for product efficacy, the date these requirements come into force, and the test method(s) specified for compliance. However, where possible, the provision of other performance requirements (minimum lifetime, maximum lumen depreciation, requirements for colour temperature, etc) and the associated test methodology would be of significant value.

## ***2. Information on New Product Sales***

For as many years as possible between 1996-2010, the following information is requested:

- a) Total sales **volumes** of products falling within individual lamp type and wattage bands defined in Figure 1 above (and where possible the total number of lamp sockets with that type of lamp installed);
- b) Where the information in 2a) is not available, the percentage of total sales within the market for each lamp type defined in Figure 1 (and ideally the total number of lamp sales for all lamp types, the average installed wattage for each lamp type, and the total number of lamp sockets with that type of lamp installed).

## ***3. Information required for Mapping and Benchmarking***

- a) Total number of socket in households;
- b) Total number of households.

## ***4. Additional Information Required for Other Analysis***

- a) Summary of all major policy actions (other than the “phase-out” regulations) over the period data is available including the times when policy were first considered, the time of formal announcement of the policy plans and the date when policy came into force;
- b) Summary of major cultural issues that are thought to affect this product at the local level.

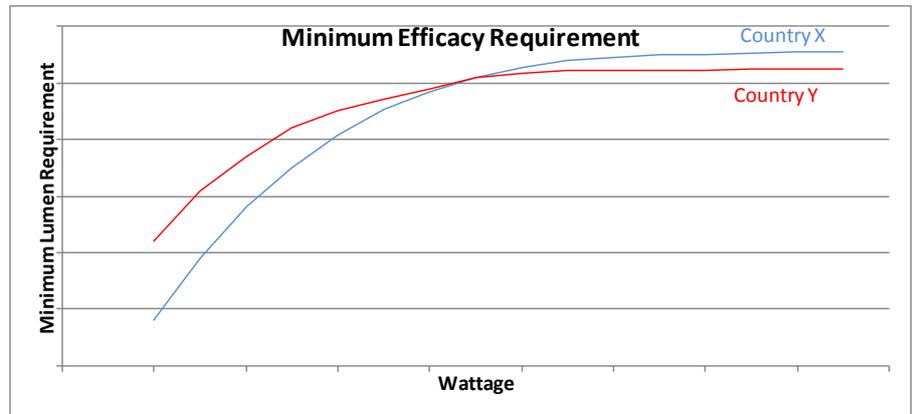
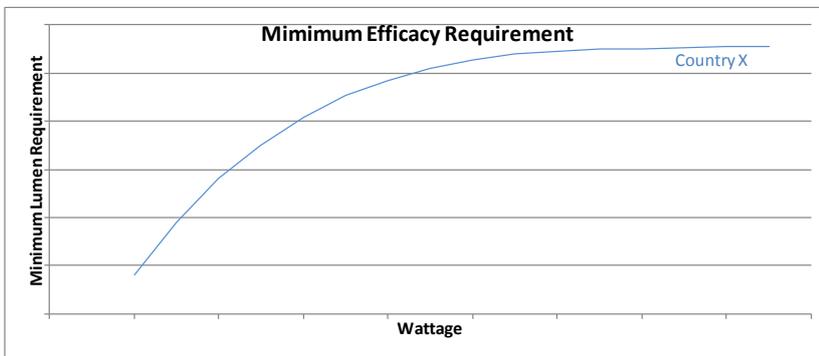
# Annex 1: Desired Outcomes

*To provide an idea of the outcomes to be expected from the slightly unusual product group, please refer to the following:*

## **Output 1: Mapping and benchmarking comparison of regulatory regimes for lighting that have recently, or are soon to be, introduced**

This will provide a comparison of regulatory regimes for lighting that have recently, or are soon to be, introduced. However, it will not give any indication of the actual efficiency, number or type of products entering the market.

This option will provide outputs similar to the following (note, depending on the market and local regulations these outputs may be for the full market and/or specific products or wattage ranges eg CFLs or lamps over 100W):



## **Output 2: Mapping and benchmarking comparison of new lamps sold within a market and the estimated average efficiency of lamps sold**

This will provide any indication of the actual efficiency, number and type of products entering the market.

