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Capacity building of regional suppliers' network

Market research of indoor lighting

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Introduction

The objective of this market research is to collect and analyse the information from the particular target market with a view to green public procurement.

This market research refers to lamps, luminaires and lighting control devices located inside buildings, but does not apply to specific forms of lighting, for example, coloured lighting, showcase lighting for museums and art galleries, escape lighting and any kind of exterior lighting, illuminated signs, lighting attached to the facility or equipment, plant lighting, lighting for television sport broadcasting, lighting for visually impaired persons with special lighting needs, lighting for historic buildings and monuments, which aren't used for commercial purposes, lighting for special medical investigation or surgery (such as hospitals, medical centres or medical/dental practices) and stage lighting for theatres and TV studios.

Green Public Procurement (GPP) is a voluntary instrument. However, there are several EU Directives that define the mandatory requirements for the public procurement of the energy-related products and services. Mandatory requirements could be set also by the national policy targets addressing energy efficiency, climate change or promotion of GPP. Energy and climate policy targets always include a CO₂ emissions reduction to a certain level. Some procurement areas, for example, indoor lighting, are in high priority list to reduce CO₂ emissions

This market research consists of several parts, which together forms a specific product market report. Market research consists of analyses of the legal and political framework, as well as formulating requirements for improvement. This study provides answers to questions that lead to conclusions, based on market research results.

EU GPP criteria are used in this market research because in such a way it's possible to compare the results of market research among other participating countries. However, the national regulation framework is significant, as it may be different in different EU member states.

Cabinet of Ministers regulation No. 359 on lighting, Annex 2 sets the indoor lighting levels depending on the workplace and the type of the work. It should be noted, that the Latvia has no laws or regulations that set (or recommend) lighting measurement, regularity, and frequency, so employers have to decide on the lighting measurements on their own. The

obtained results are compared with normative values according to the Cabinet of Ministers regulation No. 359, annex 2.

Regulatory framework of the indoor lighting

EU defines a set of rules for energy-consuming goods and public procurement (see Annex 1). One of the most important regulations in this field is of the Directive 2012/27/EU of the European Parliament and of The Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC (hereinafter referred to as - of Directive 2012/27 / EU). This Directive in Latvia is implemented through the Energy Efficiency Law.

In turn, the Cabinet of Ministers has developed draft “Regulations on energy efficient requirements for public procurement of for goods and services organized by state institution”, which aims to define public procurement requirements for energy efficiency of goods and services. These requirements also apply to indoor lighting.

After the conventional fluorescent lamps were banned with EU Directive 2000/55/EC, RoHS Directive 2002/95/EC restricted the use of hazardous materials in the electric equipment and the WEEE Directive 2002/96/EC regulates the end of life electrical utilization, the EU unveiled the Framework Directive 2005/32/EC establishing a framework for the setting of ecodesign requirements for energy-using products (eco-design). In November 2009 this directive was replaced with an updated framework directive, EU Directive 2009/125/EC relating to the ecodesign requirements for energy-related products (ErP). Requirements of the Framework Directive in Latvia has been implemented by the Cabinet of Ministers regulations No.941 (2011) "Regulations on the eco-design requirements for energy-related products."

Directive 2010/30/EU of the European Parliament and Council of 19 May 2010 on the indication by labelling and standard product information of the consumption of energy and other resources by energy-related products determine consumer access to consistent and coherent information on the energy and resource consumption by use of different products, e.g. lighting, washing machines, TVs. This Directive has been introduced Latvian legislation by the Cabinet of Ministers regulations No.480 (2011) "Regulations on the procedure for the

marked goods related to energy and other resource consumption, as well as their advertising and surveillance."

Several EU regulations also specify specific requirements for different product groups, including lighting:

1. Household lighting (including incandescent bulbs) is regulated by these regulations:
 - Commission Regulation (EC) No 244/2009 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for non-directional household lamps;
 - Commission Regulation (EC) No 859/2009 amending Regulation (EC) No 244/2009 as regards the ecodesign requirements on ultraviolet radiation of non-directional household lamps;
 - Commission Regulation (EU) 2015/1428 amending Commission Regulation (EC) No 244/2009 with regard to ecodesign requirements for non-directional household lamps and Commission Regulation (EC) No 245/2009 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 and Commission Regulation (EU) No 1194/2012 with regard to ecodesign requirements for directional lamps, light emitting diode lamps and related equipment.
2. Directed light lamps, LED lamps and related products are regulated by the following regulations:
 - Commission Regulation (EU) No 1194/2012 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for directional lamps, light emitting diode lamps, and related equipment;
 - Commission Regulation (EU) 2015/1428 amending Commission Regulation (EC) No 244/2009 with regard to ecodesign requirements for non-directional household lamps and Commission Regulation (EC) No 245/2009 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 and

Commission Regulation (EU) No 1194/2012 with regard to ecodesign requirements for directional lamps, light emitting diode lamps and related equipment;

3. Fluorescent lamps without integrated ballast, high-intensity discharge lamps, as well as such lamps ballast and lighting equipment used for exploitation:
 - Commission Regulation (EC) No 245/2009 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;
 - Commission Regulation (EU) No 347/2010 amending Commission Regulation (EC) No 245/2009 as regards the ecodesign requirements for fluorescent lamps without integrated ballast, for high-intensity discharge lamps, and for ballasts and luminaires able to operate such lamps;
 - Commission Regulation (EU) 2015/1428 amending Commission Regulation (EC) No 244/2009 with regard to ecodesign requirements for non-directional household lamps and Commission Regulation (EC) No 245/2009 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 and Commission Regulation (EU) No 1194/2012 with regard to ecodesign requirements for directional lamps, light emitting diode lamps and related equipment.

Additionally, energy labelling of electric lamps is regulated by Commission Delegated Regulation (EU) No 874/2012 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of electrical lamps and luminaires.

Indoor lighting environmental impact and the key GPP criteria

Replacement lamps make the majority of regular procurement, and criteria have been proposed for energy efficiency, lamp lifetime, mercury content of fluorescent lamps, hazardous chemical content, and packaging. Different criteria are given for replacement lamps

and lamps in new installations, in order to minimize the need to replace fittings. However, in some exceptional circumstances, changes in light fitting may be required when replacement lamps are not available for the existing fittings. This is typically the case of incandescent fittings where compact fluorescent lamps with integrated control gear might be longer than the incandescent lamps which they are meant to replace and not fit in the existing luminaire.

The purchase of new lighting, either in a whole building or a particular space, has a big influence on building energy consumption. A new lighting installation should remain in place until its replacement with a more efficient solution is economically and environmentally viable, and during this time it will consume energy. For new installations, a systems approach has been adopted, based on installed power density. Two different sets of criteria are given:

1. Where there is new lighting in a whole building, the criterion is for the installed lighting power (including lamps and ballasts and control gear) divided by the total floor area, in W/m².

2. Where there is new lighting in a particular space in a building, the criterion is for the normalised power density in W/m²/100 lux. This is the total power consumed by the lighting, including lamps, ballasts, and control gear, divided by the total floor area of the space, and by one hundredth of the illuminance in the space. Thus if the illuminance were 500 lux, the lighting power would be divided by the floor area and by 5.

Indoor lighting effects on environment and corresponding GPP criteria:

Key Environmental Impacts	GPP Approach
Energy consumption, in all phases, but especially the use phase of indoor lighting	At design stage, ensure new lighting installations have low power density meeting visual task requirements Purchase replacement lamps with high lamp efficacy Use lighting controls to further reduce energy consumption Encourage the use of dimmable ballasts where circumstances allow At installation stage, ensure system works as intended, in an energy efficient way
Potential pollution of air, land, and water during the production phase	Promote lamps with a lower mercury content
Use of materials and hazardous materials	
Generation of waste (hazardous and non-hazardous)	Installation of waste re-use or recovery

In order to improve the quality of the procurement of materials (LED lighting), to ensure fair competition and to encourage procurers and tenderers cooperation, Latvian Electricity Traders Association (LEMTA) has summarized the most pressing issues with which suppliers have to face in public procurement competitions, and in cooperation with the Procurement monitoring bureau has developed recommendations¹ to eliminate them.

Market analyses

In order to assess the situation in the Latvia's lighting market and compliance with the GPP criteria and willingness to offer such products in public procurement, on 7 July 2016, a meeting was arranged with market participants. Overall, 17 companies were invited to the meeting. However, only 4 companies (Ltd. Tamara, Ltd. Teliko, LEDEKSPERTS and Ltd. Oninnen) responded and attended the meeting.

While compact fluorescent lamps (CFL) remain the largest segment in the global light sources market, real value sales peaked in 2014 and Euromonitor International predicts that they will be overtaken by light-emitting diode lamps (LED) as early as this year. Similarly also in public procurement, more and more incandescent bulbs and compact fluorescent lamps are replaced by LED. Most of the companies who responded to the invitation to participate in this meeting are distributing LED lights and their fixtures. LED accounted for more than a quarter (26%) of global light sources value sales in 2015, but this figure forecast to reach 55% by 2020. Unfortunately, there are no sales data available for Latvia.

The LED segment is highly unusual in that the Chinese market is more mature than its counterpart in Europe. In 2015, real values sales of LED in China rose by 19%, to US\$2,197 million, while in Western Europe they increased by 25%, to US\$1,096 million, and in North America by 80%, to US\$593 million. However, cheap Chinese LED does not have a great reputation for longevity and quality. This was also recognized by some of the participants in the meeting highlighting that there are many cases when LED lights do not comply with the EU quality standards, but the tests are performed rarely.

Osram is the second-largest player in the LED segment in Europe, with 2015 market shares of 19%. However, with a relatively high-cost base, Osram has been struggling to

¹ http://www.iub.gov.lv/sites/default/files/upload/ieteikumi_LEMTA_020315_FINAL.pdf

compete on price and has been losing market share, mainly to cheap (usually Chinese-made) private label offerings. So it has been acquired by Ledvance (China).

Data from Procurement monitoring bureau demonstrates that indoor lighting (CPV - 31500000-1) represents only small part of the total public procurement – 6.9 M EUR or 0.37% (see Table 1). In 2015 only 4 out of 95 procurements on lighting procurers have highlighted that they have included environmental criteria in their procurement. However, we believe the total number could be higher as many of the procurers do not recognise that energy efficiency provisions are also part of GPP. Green indoor lighting (compatible with EU GPP criteria) is also available at Electronic purchasing system (www.eis.gov.lv) managed by The State Regional Development Agency (hereinafter referred to as SRDA). Total turnover on green indoor lighting in Electronic purchasing system in 2015 was 54 510.15 EUR, 3 times more than 2 years ago.

Table 1. Total number and amount of procurements in 2015 (Procurement Monitoring Bureau)

CPV	Nr. of procurements		Total costs in EUR (without VAT)	
	Total	including GPP	Total	including GPP
31500000-1	95	4	6 863 178	334 172

According to the data of Procurement monitoring bureau database² some of the biggest distributors in this section over the last years are:

- Unitrans Baltic, Ltd
- AS Spectrum
- SGS sistēmas, Ltd
- 1 un 2, Ltd
- Moduls interjers, Ltd
- Kompānija NA, Ltd
- Photon-L Baltic, Ltd
- Vizulo, Ltd
- OMS, Ltd
- Baltijas gaisma, Ltd

The main conclusion from the market research is that energy efficient LED lights are freely available in Latvia and there is a high competition among the distributors, however,

² <http://www.iub.gov.lv/lv/mekletiepirkumus>

procurers have to pay more attention to the quality and longevity of the products they are procuring for.

EU legislation that is relevant to Indoor Lighting

EU legislation act	Requirements	Affected products
Commission Regulation (EC) No 244/2009 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for non-directional household lamps http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32009R0244&from=en	on energy efficiency related to the eco-design	non-directional household lamps: <ul style="list-style-type: none"> • compact fluorescent lamps incandescent lamps
Regulation (EC) No 245/2009 with regard to eco-design requirements for fluorescent lamps without integrated ballast, for high-intensity discharge lamps, and for ballasts and luminaires able to operate such lamps, repealing Directive 2000/55/EC (http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:076:0017:0044:EN:PDF) and Regulation 347/2010 http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:104:0020:0028:EN:PDF	on energy efficiency related to the eco-design	<ul style="list-style-type: none"> • fluorescent lamps without integrated ballast, • High-intensity discharge (HID) lamps, ballasts and luminaires able to operate such lamps
Directive 2010/31/EC on the energy performance of buildings http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:153:0013:0035:EN:PDF	Energy performance of buildings	Built-in lighting installation
Directive 2009/125/EC establishing a framework for the setting of ecodesign requirements for energy-related products http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:093:0003:0010:EN:PDF	Framework for the setting of ecodesign requirements for energy-related products	The directive doesn't set binding requirements, but it defines the conditions and criteria surroundings
Directive 2004/108/EC on the approximation of the laws of the Member States relating to electromagnetic compatibility Latvia: Cabinet of Ministers regulation No. 208 (2016)	Electromagnetic compatibility (EMC) of the equipment	electrical and electronic equipment

–“Electromagnetic compatibility rules”	regulation	
Directive 2002/96/EC on waste electrical and electronic equipment (WEEE) http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32002L0096:lv:HTML	<ul style="list-style-type: none"> • for the treatment and recovery of WEEE. • for labelling 	electrical and electronic equipment
Directive 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS) http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32002L0095&from=en	on the restriction of the use of certain hazardous substances in electrical and electronic equipment	electrical and electronic equipment. Exemptions relate to lamps (allows the use of mercury in fluorescent and discharge lamps, allows the use of lead in a glass of lamp tubes). Energy-saving light bulbs are temporarily exempted from the directive.
Regulation (EC) 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:037:0019:0023:EN:PDF	on registration, evaluation, authorisation and restriction of chemicals	electrical and electronic equipment
Commission Delegated Regulation (EU) No 874/2012 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of electrical lamps and luminaires http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:258:0001:0020:en:PDF		
Commission Regulation (EU) 2015/1428 amending Commission Regulation (EC) No 244/2009 with regard to ecodesign requirements for non-directional household lamps and Commission Regulation (EC) No 245/2009 with regard to ecodesign requirements for fluorescent lamps without integrated ballast, for high intensity discharge lamps, and for ballasts and luminaires able to		Light lamps, LED lamps and related products

<p>operate such lamps and repealing Directive 2000/55/EC of the European Parliament and of the Council and Commission Regulation (EU) No 1194/2012 with regard to ecodesign requirements for directional lamps, light emitting diode lamps and related equipment (Text with EEA relevance)</p> <p>http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32015R1428&from=EN</p>		
<p>Directive 2012/27/EU of the European Parliament and of the Council on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC</p> <p>http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32012L0027&from=en</p>	<p>Determine the public bodies of exemplary energy efficient in public procurement field, which is settled in Latvia with appropriate framework in Public procurement law</p>	

Cabinet Regulations No. 359 (28.04.2009.) “Work protection requirements in workplaces” sets a minimum level of lighting in the work area (lux – lx) (Appendix 2)

No.	Place of work or work type	Em – minimum level of illumination over work area (lx – luks)	Remarks
1.	Traffic areas:		
1.1.	roadways	100	1. Lighting at the room level 2. Lighting 150 lx, if the vehicles are moving on the public highway 3. Entrances and exits must be equipped with transitional zones to prevent sudden changes in lighting between the indoor and outdoor lighting
1.2.	Stairs, escalators, travelators	150	
1.3.	Loading and unloading ramps	150	
2.	Living, rest rooms, first aid rooms		
2.1.	canteens	200	
2.2.	lounges	100	
2.3.	Exercise rooms	300	
2.4.	Changing rooms, toilet facilities	100	
2.5.	First aid rooms	500	
3.	Command and control rooms		
3.1.	Management and control measuring space	200	
3.2.	Mail rooms, fax rooms, server rooms	500	
4.	Warehouses:		
4.1.	Warehouses, including freezers	100	200 lx, if the room is constantly being used
4.2.	Sorting and packing area	300	