

Science for Environment Policy

The market for more eco-friendly lighting

Use of environmentally-friendly LED lighting in Europe could play an important role in reducing energy consumption. A new report has now assessed the market for a mass adoption of such light sources, highlighting the need to ensure that the European lighting industry remains competitive.

Solid State Lighting (SSL) is based on light-emitting diodes (LEDs), which convert electricity directly into light, in contrast to traditional light bulbs, which use electricity to heat a filament that in turn produces light. One of the main advantages of LEDs is that they are more energy-efficient, for example, they can reduce the energy costs of street lamps by 50% compared to traditional lamps. Their mass adoption could play a role in the EU achieving its 2010 goal¹ of cutting [energy consumption](#) by 20% by 2020. The EU Green Paper 'Lighting the Future'² proposes measures to speed up the adoption of LED lighting.

The report, by French and Portuguese researchers, and researchers at the European Commission's Joint Research Centre³, aimed to analyse the current status of SSL in Europe. The European lighting industry is worth over €20 billion and employs 150,000 people, according to the report. Worldwide, LED lighting is growing rapidly, spreading from specialist, architectural and entertainment use to general indoor use and street lighting.

In 2010, the EU market share was only 3% for LED materials and 11% for lamps and components, despite its 65% share for production equipment and 30% for complete lighting units and systems. The greatest portion of the profits from LED lights comes from making the semiconductor chips and many new chip manufacturing companies are Asian. LEDs remain relatively expensive to produce and require rare earth metals such as gallium, for which EU companies are largely reliant on China. The authors of the report suggest that the EU could reduce its dependence on imported rare metals by opening new mines or increased recycling. LEDs in lighting units are included under the [Waste Electrical and Electronic Equipment Regulations](#), which will soon extend to "bare" LEDs as well, following review.

The researchers suggest that one of the greatest challenges facing the industry is the price of LED lamps, which is too high – ten times that of traditional lamps – and will need to fall to around US\$10 (€7.70) if they are to be widely adopted in the residential sector. Development of new technologies will be important for improving manufacturing processes within the next decade. The EC is already investing large sums of money in world-class research in this area. However, the report highlights a problem transitioning from research to product and scale-up in Europe, and a lack of public-private partnerships that would help shorten the time to market.

Testing and performance standards for LED lighting are still in development. The authors say test procedures and measurement standards need to be determined at the European level for the several components. They also highlight the need for studies analysing lifetime carbon dioxide emissions of LED production and potential human health effects from using LEDs.



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1. http://ec.europa.eu/energy/renewables/targets_en.htm

2. http://cordis.europa.eu/fp7/ict/photronics/digitalagenda-and-ssl_en.html

3. <http://ec.europa.eu/dgs/jrc/index.cfm>