

Possibilities and Challenges designing low-carbon-energy technologies

The case of the lighting sector

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Barriers and possibilities for low carbon energy using technologies- the case of lighting sector

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Abstract

Final electricity consumption across the EU-27 showed an absolute increase of 28.7% between 1990 and 2005. The average electricity use per capita in the EU-27 is almost 2.5 times the global average and 3.5 times that for China. World electricity generation will increase by 77 % from 2006 to 2030. These are some of the facts that set a big question mark on how the CO2 emission goals can ever been achieved for 2020 even talking of a modest reduction of 20%.

These growing tendencies still take place despite the emergence of countless number of energy saving devises. The production and consumption of electronic devises is, at the same time growing a high speed. As a matter of fact the European ecological foot print is currently 2.2 times bigger than the surface required re-producing the resources internally consumed in the EU. Thought there is almost an international consensus that one of the solutions to the current environmental challenge will be based on low carbon technologies, there are many issues that set a barrier for its adequate development and still many actors in these sectors are sceptical about the possibilities.

Illumination is a very interesting sector to target since it uses 19% the total electricity produced on the world. Consequently this paper takes the Danish office lighting sector as a study object and discusses the question: what are the main barriers and possibilities for the energy saving illumination technologies to efficiently reduce their ecological footprint.

The discussion is supported using relevant elements of the cradle to grave, eco-design and environmental- innovation theories. It is based on active participation in interdisciplinary projects and face to face in-depth interviews with relevant actors along the entire Danish illumination value chain. The study points to the most relevant possibilities within the Danish office illumination sector to achieve reduction of energy within a holistic framework.

Keywords: Electricity, Lighting, Energy Policy, Low-carbon Technologies

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