

Lighting For Sustainable Development

The Advanced Study Group of Lighting

Appropriate lighting is a basic prerequisite for the quality of modern life. The electric light has enabled a great expansion of human activity. However, inappropriate light and light pollution also have serious side-effects on human health and quality of life. Furthermore, the energy and materials used for lighting tend to have serious environmental consequences.

As a species, humans depend most heavily upon visual and endocrine regulatory information to interact with the environment. Some 80% of our sensing cortex in the brain is devoted to vision. All species, including humans, also depend upon the natural, 24-hour light-dark cycle to coordinate, literally, every physiological system in the body to live healthy and productive lives.

Effective lighting is one of the important elements for a sustainable lifestyle. Thus far, most of the interest has focused on the amount of light and the efficiency of the light producing processes, often measured as lumens (lm) and lm/W. The primary aim has been to produce a sufficient amount of light at the lowest possible cost. Most of the consumer interest has focused on the cost of the light source. In a life-cycle perspective the energy cost has become a major part of the cost, in particular for lighting with ordinary incandescent light bulbs. Since the 1960s the professional market has become increasingly interested in more efficient light sources.

The evolving technology, primarily in Light Emitting Diodes (LED), is beginning to enable new tailor-made and dynamic forms of lighting. The commercial LED technology is approaching the same level of efficiency as fluorescent tubes. Incandescent lamps mainly produce heat, fluorescent tubes produce the light in an indirect way and LED produce the light in a direct, and thereby more effective and versatile way. The purchase price for high quality LED-based light sources is still relatively high, but the life-cycle cost is becoming more competitive. There is keen interest in light quality to enhance plant growth within intensive greenhouse production systems.

So far there has not been much public awareness of the importance of the quality of light. Since the 1990s, there have been significant breakthroughs in knowledge about the positive and negative effects of different kinds of light, on human health and comfort. There is also an evolving interest in light pollution, i.e. too much light and unsuitable kinds of light.

On a global level, countries like China and Korea are investing heavily in the development of LED related businesses. Within this context, it is urgent for Sweden to make significant investments in the development and commercialisation of new light related knowledge and advanced lighting systems, with a special emphasis on human lighting needs and greenhouse applications. At present there is a relatively narrow window of opportunity to build on these technological advancements in the context of the policies for the phase out regulation of incandescent light sources.

There are strong reasons for the rapid introduction of new lighting technologies. However there is also a risk that a too rapid introduction of the new technologies may cause disappointment because of poor quality products, which can result in a bad image for the new technologies. There is also a considerable risk that a rapid international introduction of new kinds of lighting systems, that contain numerous unusual materials, some of them toxic, for example in the diodes, electronics and flame retardants, may cause serious unanticipated human health and environmental consequences.

Seminars, symposiums and events

Ljuset i Lund

Research indicates that lighting affects our well-being, confidence and concentration, the right lighting makes us feel better and achieve more. The first part of the seminar deals with the importance of light in school environments and the second part illustrates the development potential of the lighting sector. The seminar is open to all, please note that application is necessary!

Time: December 15, 15-20

Venue: Stadshallen, Lund

More information:

<http://www.utmaninghallbartlund.se/>

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