



Humans have always wondered at natural darkness and stars in the sky, which today, owing to millions of poorly designed lamps throughout the world, are disappearing.

Outdoor lighting is necessary, however, provided that it is of good quality and in the proper amount. We tend to over-light, and lighting today often exceeds its primary purpose – providing security. Just like many other advantages, outdoor lighting has many undesired side-effects.

Impact on people

People's health depends on the biorhythm of changing day and night, to which man has adapted in his million-year evolution. The introduction of artificial light during the night interrupts the formation of melatonin, a hormone that has an antioxidant effect and reduces the possibility of cancer and influences our sleep, well-being and health. Research increasingly points to lack of melatonin resulting in increased frequency of breast, prostate and colorectal cancer. **Therefore, it is important to sleep in total darkness.**

Because of glare, unshielded lamps also bother especially elderly people.



Impact on astronomical observations

Inappropriate lighting creates sky glow, which makes astronomical observations difficult. Especially problematic are white light sources (metal halide, LED) as their rays scatters (disperses) three to four times more intensively in the atmosphere as yellow light. **Due to inappropriate and increasingly massive lighting, the possibilities of observing the night sky are ever more diminishing. Hardly anywhere in Europe can the Milky Way be observed in all its glory.**

Impact on animals

Exaggerated artificial light disturbs numerous animals and **threatens biodiversity.** The greatest impact can be observed in nocturnal insects, bats, birds and turtles. Some animals are attracted by artificial light and get caught in it by circling around the lamps, and others are repelled by it, which limits their natural habitat. Many animals which orient themselves by celestial objects are confused by artificial light sources when migrating. Because of circling around the lamps and the changed daily rhythm, nocturnal animals have less time for feeding and reproduction.



Reduction in the number of insects can significantly influence the pollination of plants as well as the entire food chain. **Research has shown that lamps giving off white light (metal halide lamps, etc.) have the most negative impact.**

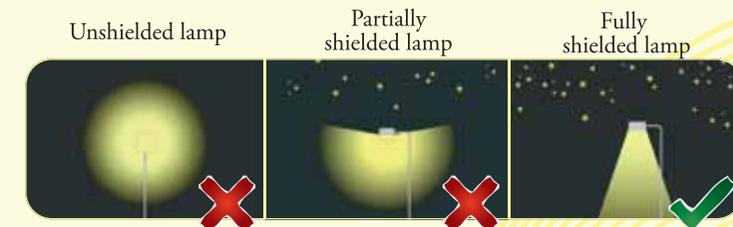
Economic consequences

Inappropriate (unshielded) lamps partially emit light in the sky – where people do not need it. This causes great loss of energy and increases CO₂ emissions. **In Slovenia, we annually lose 10 million euros worth of electricity on account of inappropriate public lighting, and 5 million euros on account of private outdoor lighting** (data for 2006).



Environmentally inappropriate artificial light sources and the causes of light pollution are primarily:

- Lamps giving off light above the horizontal;
- Using lamps which give off white light (metal halide, LED);
- Inappropriately mounted lamps (at an angle);
- Illuminating surfaces which could remain unilluminated;
- Exaggerated and inappropriate illumination of billboards and cultural monuments.



Only fully shielded lamps which give off 0 % of light above the horizontal are environmentally appropriate.

Solutions are given in the Slovenian Decree on the Limitation of Light Pollution of the Environment and by the requirements of nature conservationists:

- Application of fully shielded lamps which give off 0 % of light above the horizontal;
- Application of lamps which predominantly give off light in the yellow part of the spectrum;
- Restricting the use of white metal halide and LED lamps which attract insects approximately by a factor of three times more than lamps with yellow light. White light, also more intensively interrupts melatonin formation and increases sky glow by several times;
- Reducing illumination during the night between 11 p.m. and 5 a.m. when there is less traffic and there are hardly any pedestrians;
- Illuminating only where it is really necessary;
- Restricting the illumination of billboards;
- Restricting the brightness of facades and cultural monuments to 1 cd/m².

At small angles above the horizontal, light spreads up to 200 km distant.

Dark-Sky Slovenia

Dark-Sky Slovenia operates as a professional non-governmental organisation with numerous volunteers which endeavour to reduce the negative impacts of light pollution.

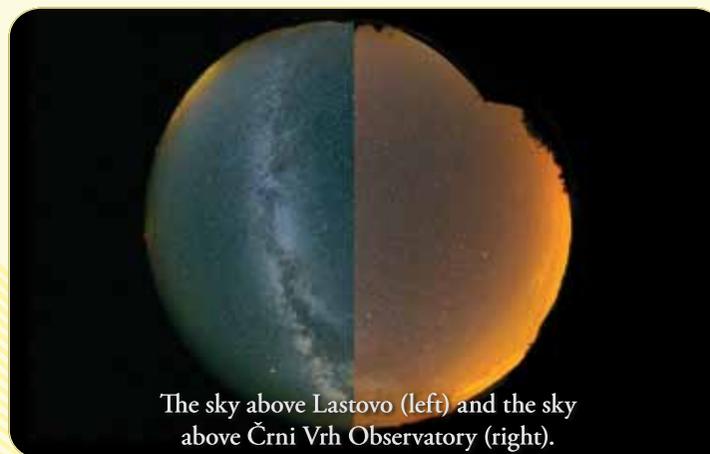
Our activities are:

- Monitoring the implementation of the **Decree on the Limitation of Light Pollution of the Environment** (Official Gazette of the Republic of Slovenia No. 81/2007);
- Counselling services for municipalities, companies and individuals regarding quality outdoor lighting;
- Training for counsellors for quality lighting;
- Stimulating quality project engineering;
- Monitoring (measurements) of light pollution;
- Stimulating research in the field of light pollution;
- Organising educational events (seminars, lectures, conferences, annual symposium and dark-sky camp at Lastovo, etc.);
- International cooperation with professional organisations from the field of environmental protection.

How can I contribute?

We would be glad if you would join our society. Your activities could contribute importantly to environmental protection. Here is how you can help:

- Active participation in the activities of Dark-Sky Slovenia;
- Help to raise awareness of general public, your friends and acquaintances;
- Visit lectures, symposiums, camps or engage in other activities organised by us;
- Help with voluntary work;
- Warn about inappropriate outdoor lighting;
- Ensure environmentally appropriate outdoor lighting from your home (which should be turned off while you sleep);
- Financial support to Dark-Sky Slovenia.



The sky above Lastovo (left) and the sky above Črni Vrh Observatory (right).

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Let's preserve the night sky



Milky Way as can hardly be seen anywhere in Europe.

Dark-Sky Slovenia

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