



Skyglow

Prelims: Skyglow, Light Pollution, Circadian Clock, Dark Sky.

Mains: Skyglow and its implications.

Why in News?

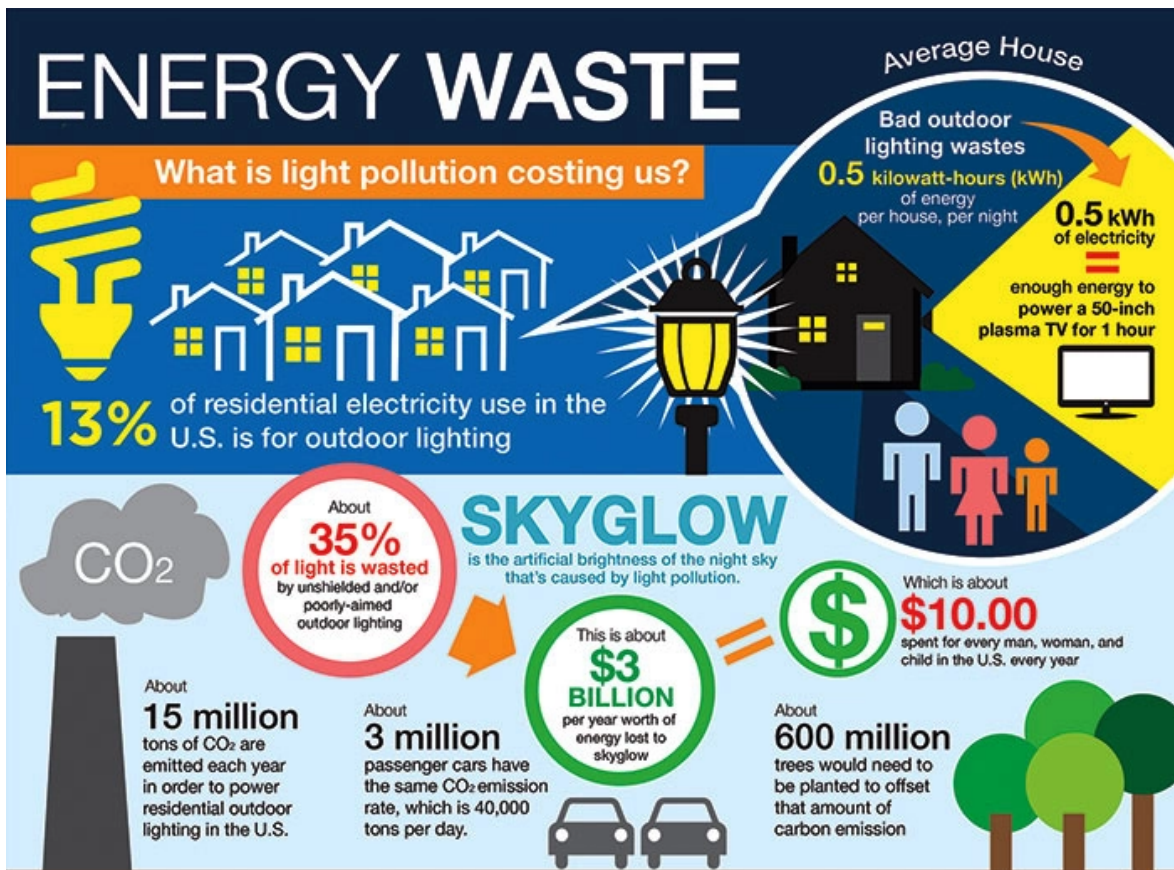
Recently, a new study has found that non-natural light had increased the brightness of [Skyglow](#), by **9.2-10% every year between 2011 and 2022** with significant ecological, health and cultural implications.

- Researchers have analyzed **a global database of what the dimmest star visible from a particular location is**; the database had more than 51,000 entries submitted by citizen scientists.

What is Skyglow?

- The Skyglow, is an **omnipresent sheet of light across the night sky** in and around cities that can block all but the very brightest stars from view.
- The brightening of **the night sky over inhabited areas because of streetlights**, security floodlights and outdoor ornamental lights cause the Skyglow.
- This light floods directly into the eyes of the Nocturnal (active at night) and also into the skies and misleads their path.
- **'Skyglow' is one of the components of [light pollution](#).**

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What is the Scenario of Skyglow?

- **Global**
 - The **Skyglow had brightened around 6.5% over Europe, 10.4% over North America**, and 7.7% over the rest of the world.
 - The finding is significant because it disagrees with **satellite-based data, which has indicated that the rate of increase has been around 2% per year.**
 - The discrepancy is **probably the result of the satellites being unable to 'sense' blue light** emitted by LEDs and to study light that is emitted parallel to the ground.
- **India:**
 - A 2016 study reported that 19.5% of India's population – the lowest fraction among G20 countries – experiences **a level of skyglow that would at least keep the Milky Way galaxy out of sight** and at most render "dark adaptation for human eyes" impossible.
 - The effects **include stimulating the cone cells in human eyes**, which is possible only when an environment is considered to be well-lit.
 - A 2017 study reported that between 2012 and 2016, **India's lit area increased by 1.07-1.09%** and the average radiance of "stably lit areas" – e.g., excluding wildfires – increased by 1.05-1.07%.

What are the Implications of Skyglow?

- **Wastes Energy and Money:**
 - Lighting that emits too much light or shines when and where it's not needed is wasteful. Wasting energy has huge economic and environmental consequences.
- **Disrupting the Ecosystem and Wildlife:**
 - Plants and animals depend on **Earth's daily cycle of light and dark rhythm to govern life-sustaining behaviors** such as reproduction, nourishment, sleep and protection from predators.
 - Scientific evidence suggests that artificial light at night has negative and deadly effects on many creatures including amphibians, birds, mammals, insects and plants.

- **Ex:** Lit beaches **deter sea turtles from coming ashore** to nest. **Skyglow keeps trees from sensing seasonal variations.**
- Clownfish eggs **don't hatch when exposed to artificial light at night**, killing the offspring.

- **Harming Human Health:**

- Like most life on Earth, humans adhere to a **Circadian Rhythm** — our biological clock — a sleep-wake pattern governed by the day-night cycle. Artificial light at night can disrupt that cycle.
- A small 2009 review concluded that **circadian disruption** – which altered melatonin levels can cause – **increased the risk of breast cancer among night-shift workers by 40%.**
- The erasure of the night sky acts to erase Indigenous connection to the stars, **acting as a form of ongoing cultural and ecological genocide.**

What can be the Solutions?

- The researchers recommend light sources casting **light at an angle below the plane of the horizon**, capping the emissions of these sources and calibrating their output according to the total brightness at the spot being lit.
- Where lights cannot be turned off, **they can be shielded so that they do not shed light into the surrounding** environment and sky.
- The International Dark-Skies Association has **certified more than 130 'International Dark Sky Places'**, where artificial lighting has been adjusted to reduce skyglow and light trespass. However, nearly all are in developed countries in the northern hemisphere.
- Less-developed regions are often both species-rich and, currently, less light-polluted, **presenting an opportunity to invest in lighting solutions before animals** there are seriously affected.

[Source: TH](#)

PDF Reference URL: <https://www.drishtias.com/printpdf/skyglow-1>

