

A STUDY ON FIGHT AGAINST LIGHT POLLUTION INDIA

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ABSTRACT:

Electrical and artificial lighting were associated with economic growth and development. Unfortunately, the overuse of natural lighting has proven to have negative consequences. Studies have shown that excessive light affects human health and threatens the ecological balance, disturbs wildlife, causes a decrease in insect, moth, reptile pollution and depletes energy resources. Countries around the world are gradually recognizing light pollution as an emerging challenge and introducing legislation to curb it. However, India has not realized the dangers of light pollution. In this context, the authors have established the need to understand light pollution as an issue that requires dedicated and coordinated attention. This was achieved through an analysis of the category of recent and credible journal articles with more than ten cite score.

This paper draws on best practices from these areas and recommends that India adopt technological and legal legislation, initially, to fight light pollution.

KEYWORDS: Light pollution, India, Laws, Best practices, Techno-legal legislation

INTRODUCTION:

Nature is plagued by various natural and man-made factors that have polluted the air, water and soil around us and now, as it turns out, light factors are entering into all of them as well. Light pollution refers to the excessive, incorrect and inappropriate use of artificial lighting which has a tendency to harm not only human beings but also plants and animals. In disrupting ecosystems, light pollution poses a particularly serious threat to nocturnal wildlife, with negative effects on plant and animal ecosystems.

Electric lights have become an integral part of modern society. When such light is inefficient, annoying or unwanted, it is known as light pollution. Many environmentalists, chemists, and medical researchers consider light pollution to be one of the fastest growing and most widespread forms of environmental pollution. Furthermore, a growing number of scientific studies suggest that light pollution may impair biological function in humans and wildlife. Researchers are working to determine the extent and nature of the link between light pollution and adverse human health effects such as cancer, cardiovascular disease, depression, and insomnia. It can cause perturbations in animal movement patterns, alter their competitive relationships, alter predator-prey relationships, and cause irreversible damage.

Light pollution comes in many forms, including sky glare, light penetration, glare, and glare. Sky glow is the bright halo that appears over cities at night, caused by light scattered by water droplets or particles in the air. Light intrusion occurs when unwanted natural light from, for example, a flood light or street light spills onto an adjacent property, illuminating an otherwise dark area. Glare is created by light shining in the sky. Over-illumination refers to the use of natural light far in excess of that required for a specific task, such as keeping the lights on all night in an empty office building.

LITRATURE REVIEW:

1. LIGHT POLLUTION: a systematic review about the impacts of artificial light on human health by Marli Do Carmo Cupertino

The result shows that human exposure occurs through lights from electronic devices and artificial (ambient, and external) light at night. Human alterations most described were sleep disturbances, circadian rhythm, melatonin, and cortisol alterations. In addition, were described

mood alterations and depression, alterations in spermatogenesis, ocular structures, thermoregulation, and other cardiovascular diseases.

2. Light pollution: A review of the scientific literature by Jesús Rodrigo-Comino

University of Granada

The main goal of this paper is to review the literature on light pollution using ISI Web of Science by paying attention to the (i) type of publication, year and journal; (ii) impacts on specific elements; (iii) location and (iv) methods used. Our results indicated that the elevated number of papers come from a diverse range of disciplines, methods, places and scales. It is clear that light pollution is getting enough attention from the scientific community but decisions on the implementation of mitigation measures are left with the stakeholders, ordinary inhabitants, policymakers and politicians.

OBJECTIVES:

1. To study problem of sky glow in new Era.
2. To study problem of light pollution.
3. To study law on light pollution.

HYPOTHESES:

1. When does nuisance light become a health hazard?
2. What is problem of sky glow in new Era?
3. What is problem of light pollution?
4. What is law on light pollution?

RESEARCH METHODOLOGY:

This research is based on secondary data only.

TYPES OF LIGHT POLLUTION:

There are basically three types of pollution caused by excessive and inadequate light:

1. Glare: This is the unshielded lighting evolves with a public-health hazard that affects people as they age. Scattering of fluorescent light into the eye causes loss of contrast, sometimes

temporarily blinding and leading to uncomfortable driving conditions. For example, if a person is driving with their headlights having a higher sensitivity, then the long beams emitted from the vehicle may prevent drivers in the opposite lane from seeing which could lead to a serious road accident.

2. Light interference: This occurs when unwanted light enters a person's property and causes problems. For example, shining an unwanted light into someone's bedroom window while they are trying to sleep would cause them to be disturbed and make malefactors liable for interfering with light.

3. Skyglow: This refers to the glow effect that can be seen on populated areas. Skyglow is the combination of any reflected light and upward (unshielded) reflected light running high in the sky (and for the most part, not being used). This presence causes significant energy damage as natural lighting loses most of its usefulness when it runs through the air.

POSSIBLE NEED FOR REGULATION:

Bright electric lights can also disrupt bird behavior. About 200 species of birds fly their nocturnal migration patterns over North America, and especially during bad weather with low cloud cover, they regularly blend in through brightly lit buildings, communication towers, and other structures. "Light attracts and distracts birds," explains Michael Measure, CEO of the Toronto-based Light Lethal Awareness Program (FLAP), which works to protect migratory birds in urban areas. "It's a serious situation because many high-collision species are known to be in long-term decline and some are already officially declared endangered."

On 14–15 September 2006 the National Institute of Environmental Health Sciences (NIEHS) sponsored a meeting focused on how best to conduct research on possible links

between artificial lighting and public health. "One of the defining features of life in the modern world is the way light and darkness have been replaced in built environments made possible by the use of electricity," said the meeting report in the September 2007 issue of EHP. The authors of the meeting report noted that it may not be entirely coincidental that dramatic increases in the risk of breast and prostate cancer, obesity, and early-onset diabetes are reflected by dramatic changes in the amount and characteristics of photosynthesis 'nature which is done night and day in contemporary societies in recent decades. "The science underlying these theories is well-founded, and is currently advancing rapidly," they wrote.

The link between artificial light and sleep disorders is well understood. Trouble regulating the time clock can lead to a number of sleep disorders, including shift sleep disorder, which affects people who change shifts or work at night, and late sleep–stage syndrome, in which people tend to go to bed very late at night as well they have trouble waking up on time for work, school, or socializing.

The sleep pattern that existed before the invention of electric lighting no longer exists in a world where natural light extends the day. In the 2005 book *At Day's Close: Night in Times Past*, historian Roger Ekirch of Virginia Polytechnic Institute described how before the Industrial Age people slept in two 4-hour shifts (“first sleep” and “once sleep the second”) separated by sleep the night time of quiet awakening.

Thomas A. Wehr, a psychiatrist at the National Institute of Mental Health, is investigating whether people would return to a double-shift sleep pattern if they were not exposed to the long period of light provided by artificial lighting. In the June 1992 issue of the *Journal of Sleep Research*, Wehr reported his findings on eight healthy men, whose light/dark schedule was changed from their normal hours of light and 8 hours of darkness to the schedule in which they were they're exposed to 10 hours of natural and electromagnetic light, followed by 14 hours of darkness to simulate natural day-night spaces in winter. The subjects did revert to a two-shift pattern, sleeping in two periods of about 4 hours each separated by 1-3 hours of quiet wakefulness.

It is clear that light pollution does not cause the alarm that air or water pollution does and this is why there are no safety guidelines or standards in most parts of the world. Although India is not yet at a portable level of light pollution as worrisome as in the United States or other European countries, the progress it's achieved in recent years in terms of digitalization and technological innovation may make it necessary to be prepared. In 2018, he pointed out that India is losing 3 times more of its natural night light than the global average. In other words, the presence of artificial light in nature has disturbed the Indian system, and the animals too, more than any other country or region.

FINDING:

Light pollution, or artificial light at night, is the excessive or poor use of artificial outdoor light, and it disrupts the natural patterns of wildlife, contributes to the increase in carbon dioxide (CO₂) in the atmosphere, disrupts human sleep, and obscures the stars in the night sky.

SUGGESTIONS:

Too much lighting or the wrong angle caused by light pollution so avoid use lighting in night for betterment of society.

CONCLUSION:

In order to effectively curb light pollution India can follow some international standards like fixing a fixed unit of consumption and supply of lights after careful study of the amount of light actually needed and desired. Furthermore, violation of the rules by using more and more energy efficient lights should be as damages, exemplary in nature, the perpetrator. There will be a curfew after which all decorative lights and sign lights by 'retail and restaurant advertising shall be turned off or reduced to the necessary only in conformity with measures taken to reduce noise pollution. With efforts like these made in, India may be able to do more than delay the inevitable.

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