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MAQASID SYARIAH STANDPOINT ON THE ISSUE OF THE IMPACT OF LIGHT POLLUTION ON ENVIRONMENTAL SUSTAINABILITY

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Abstract

Sustainability is acknowledged as the answer to delivering a reasonable and balanced resolution in the rising tension of addressing human progress. Sustaining one field is described as the concept of preserving and conserving existing resources for present and future usage. Many aspects of sustainability, including one understood by the Brundtland panel, are vague and ineffective. Uncertainty over what constitutes sustainability leads to poorly managed city development and urban growth, which ignores the dangers of light pollution that harm human welfare. Given this situation, the purpose of this research is to investigate the hazards of light pollution using the Maqasid Shariah Principle of Islamic Jurisprudence. The aspects and ideas inherent in this holistic approach are then evaluated to develop criteria on how this concept may be successfully used in sustaining light pollution. In evaluating and analysing key papers, commissions and other literary material, this research employed a qualitative technique according to content and doctrinal analysis. Findings from this study demonstrated that in conceptualising the hazards of light pollution, Maqasid Shariah includes a broader range of issues, including human life, intellectual, progeny and property preservation. In addition, this study proposes and evaluates the extent to which the study suggestions might improve the comprehension of city planners, economic players and policy makers of the problem of light pollution, hence mitigating and lowering the light pollution situation.

Keywords : *Light, Pollution, Sustainability, Maqasid, Shariah.*

INTRODUCTION

Sustainability has emerged as the core concept in integrating the issue of environmental mitigation and human development. This situation leads to a deep root network on sustainability in the study of economic management, renewable sources administration and energy organisation. The goal of sustainability has become more focal in the modern age since 1980, thus signifying an increased concern of humanity towards nature and the environment in the Biosphere. Since the academic discussion in sustainability has escalated, apprehension on the applicability of sustainability to new industries & development is inevitable. The Brundtland Commission 1987 defines sustainability as "a development that meets the present needs without compromising the need of future generations to meet their own need" (Brundtland Commission, 1987). Dovers and many others view the Brundtland interpretation of sustainability as ambiguous and indefinite (S. R. Dovers & Handmer, 1993; S. Dovers & Norton, 1992). This problem contributes to growing sustainability

interpretations designed without comprehensive and justified arguments (Christen & Schmidt, 2012). The subjective interpretation of sustainability makes it adjustable to any policies (Imran et al., 2011), which periodically do not necessarily envision the notion of sustainability at all.

In addition to that, this very definition is only oriented on the axis of human development, which is translated into economic and technological development (Carvalho, 2001; Robinson, 2004), while the social aspect of human nature (Fuchs, 2017; Weingaertner & Moberg, 2014) such as poverty and inequalities as well as ecological balance (Imran et al., 2011; Buchdahl & Raper, 1998) only play a subsidiary role in the definition. Despite its infirmity, the definition of sustainability by the Brundtland report attracted strong advocacy and admiration from research institutes, industries, economy players and policymakers. As mentioned earlier, the inconclusive interpretation of sustainability is a confused, short-lived and unplanned execution of sustainability.

At a glance, the goal of sustainability suggests that it is parallel with optimisation, but in reality, both of these goals tend to contravene each other. In achieving optimisation that revolves around customer satisfaction, wealth generation and cost reduction (Shaharir b. M. Z., 2013), sustainability is often overlooked. Any attempt to fully optimise a specific field, particularly economics, will disrupt the sustainability on the other field; for instance, energy conservation and ecosystem preservation (Rita Yi Man Li, 2011), even in some cases, the goal of economic even devastates the social balance of human life (Fuchs, 2017; Schoenaker et al., 2015). What makes it worse is that economic optimisation does not have measurable performance since optimisation is always invariably subjective to customers and industrial impetus, which contribute to the segregation on the aim of ecological and social balance to subordinate level.

Brundtland's definition of sustainability also demonstrates how little it estimates the importance of ethical or spiritual value in its definition (Shaharir b. M. Z., 2013; Narayanan, 2013; International Environmental Forum, 2001). Perhaps, this circumstance can be explained as the very nature of the ethical or spiritual value that does not have a measurable goal (Shaharir b. M. Z. & M. Alinor b. A. K, 2014), making it subjective to instability. However, it is worth noting that as the primary actor of sustainability is human, ethical and spiritual values can offer a life-enhancing element that can significantly benefit the notion of sustainability (Cairns, 2002; Mabogunje, 2004; Young, 2011; Liu, 2010). The spiritual value extracted from religious ideologies and literature is viewed by Narayanan (2013) as a critical enhancement in maintaining sustainability through its ethical values and insight into how humans react towards nature and ecology.

Light Pollution and Sustainability

Light pollution is a by-product of the concentrated human population development (Faid et al., 2016) and massively profitable activity (Gallaway et al., 2010) sourced by artificial lighting of a city. The human-made light or artificial light produces vertical proliferation lighting on the atmosphere making the sky brighter (Shariff et al., 2015) and disrupts the supposed night sky ambient (Faid et al., 2019). A disturbed night sky ambience will hamper the sustainability of human welfare, environment and energy conservation. Moreover, light pollution would disturb the notion of energy conservation (Faid et al. 2018). Artificial light devours a whopping 19% of total global electricity, and a study (Hölker et al., 2010) indicated that the consumption of artificial lighting surges up to 20% every year, with 6% average while the grid-based electricity produces 1.5 billion tones of carbon dioxide each year globally (K. Gaston, 2013). The presence of calculated energy management on this issue will lead to excessive electrical energy usage and amass of Green House gas density in the atmosphere. Apart from that, light pollution would cause a deleterious mark on ecology. The polarisation of artificial light hampers the activity of the nocturnal animal, thus altering the dynamics and diversity of a balanced ecosystem. Light polarisation occurs when light from artificial lighting collides with the smooth surface of dark construction, reflecting the atmosphere (Horvath et al., 2009). This phenomenon is formerly known as polarised light

pollution. The polarised lighting will disrupt the navigation of nocturnal animals, particularly hunting and mating, hence disrupting their natural rhythm of living. It has been also reported (K. J. Gaston et al., 2013) that artificial lighting alters the photosynthesis cycle and dark repair phenomenon. Besides, light pollution exposure hurts human health. Also, long hours of light exposure would lead to disturbance in the natural rhythm of the human circadian cycle. Nightly exposure to artificial light suppresses melatonin production, a hormone that acts to lower the blood that encourages cancer growth (Navara & Nelson, 2007; Smolensky, 2013). Besides, artificial lighting during the night would cause heart disease, a sleep disorder that eventually leads to psychological problems (Chepesiuk, 2009; Falchi et al., 2011).

Above all, light pollution significantly impacts a range of disciplines encompassing human sustenance, environment equilibrium and energy efficiency. It is harrowing to learn that 80% of the global human population live under a light-polluted sky (Falchi et al., 2016). The mark of light pollution on humans, the environment and energy shows that it is another complication of unsustainability. Unbalance optimisation of development and economy needs to be resolved; this complication of unsustainability is regarded as an apparent consequence of indefinite and inoperable interpretation of sustainability. Thus, a new definition of sustainability is required to clarify its execution and objective, thus curbing the perils of light pollution.

Maqasid Syariah

Maqasid from the linguistic perspective has various definitions, although the majority of the definitions refer to the intention of a body (Sadatmoosavi et al., 2015). Syariah is interpreted as a specified path for a specific person (Khairi et al., 2020; Sadatmoosavi et al., 2015). Thus, it can be concluded that Maqasid shariah is the true intention of the specific Islamic law for Muslims (M. M. Nordin, 2016; N. Nordin et al., 2017; Qoyum, 2018).

Research on Maqasid shariah is essential to understand the true intention of Islamic law, which are to actualise maslahah indirectly and bring justice for Muslims (N. Nordin et al., 2017). Al-Ghazali defines Maqasid shariah as: *"The objective of the sharia is to promote the welfare of human beings, which lies in safeguarding their faith, their life, their intellect, their posterity and their wealth. Whatever ensures the safeguard of these five fundamentals serves the public interest and is desirable"* (Qoyum, 2018).

Al-Ghazali further classified Maqasid shariah into darurriyyah or the absolute necessity requirement for Muslims; hajiyyah, or desire or needs for Muslims not at the level of necessity and tahsiniyyah or the additional unnecessary needs. Darurriyyah, the absolute needs to be required by Muslims cover five main aspects, which are (Ahmed, 2013) :

a. Protection of the religion (Ad-din)
b. Protection of life (An-Nafs)
c. Protection of intellect (Al-A'ql)
d. Protection of progeny (An-Nasl)
e. Protection of property (Al-Mal)

Al-Shatibi in agreement with Al-Ghazali commends these five aspects as bare minimum necessities for the sustenance of human beings (Auda, 2008). This is because these necessities are required for controlling the existence of religion, life, intellect, progeny and property from being corrupted or ultimately destroyed.

METHODOLOGY

Parameters were created in the methodology to ensure a convergent focus on the goal. The criteria of this study asked, first and foremost, how does light pollution affect human development? Second, how does this connect to the framework of Maqasid Shariah? To acquire an overview of the newest findings on the impacts of light pollution on the environment, literature searches were undertaken on the theme of light pollution.

ScienceDirect, Springer Link, Elsevier, Taylor and Francis Online, Emerald Insight, and Scientific Journals were utilised to perform the literature review. The analysis covered conference proceedings, reports, books, guidelines, online newspapers, open-access publications, governmental and non-profit organisation websites and laws. The majority of the research was based on the most recent peer-reviewed literature on the subject.

RESULT

Light Pollution from the Perspective of Maqasid Shariah

This section highlights the relationship between the effect of light pollution on sustainability and Maqasid Shariah. The discussion focuses on the five main necessities under darurriyyah (Azhari, 2010). The relationship of elements between light pollution on sustainability against preservation and conservation Maqasid shariah is highlighted as follows:

1. Protection of Life

The unsustainable exposure to light pollution at night will increase the rate of death among humans. A balanced cycle of night and day hours is a requirement for humans in their daily life. The generation of melatonin in the phase-shifting circadian rhythm is disrupted by extended exposure to light at night, which imitates the sun (Navara & Nelson, 2007). Individuals exposed may be at risk for serious health repercussions, including cancer, as this disturbance affects numerous bodily systems (Smolensky, 2013). Researchers at Cal Poly and the University of South Florida found that light pollution increases the risk of insects spreading the West Nile virus to animals and humans (Kernbach et al., 2019). Between 2003 and 2020, more than 7,200 reports of infections resulted in 320 deaths (Kernbach et al., 2020). The dangers of cancer and the increased outbreak rate of the West Nile virus indicate that light pollution potentially harms the notion of human life preservation.

2. Protection of Intellect

Overexposure to light pollution has been also found to harm the human mind. A study shows that long night exposure to artificial lighting decreases the level of body melatonin production and increases cortisol, a hormone that is directly involved in inducing stress and depression (Harb et al., 2015). The elevated level of cortisol also increases the risk of suicidal thoughts among humans. A national study on 150 00 Korean adults discovered that human exposure to artificial outdoor light at night has a higher likelihood of adopting depressive symptoms or suicidal behaviours. This finding indicates that overexposure to light pollution hampers the capability of rational thinking of the human mind, leading to the dangers of depression and suicidal thoughts.

3. Protection of Progeny

Light pollution also impacts the endeavour of preserving linage. As prolonged exposure to artificial lighting hampers the production of melatonin in humans, the underproduction of artificial lighting increases the spread of cancer cells due to melatonin functionality in suppressing cancer cell growth. Prostate cancer is more likely to develop in individuals exposed to high levels of artificial light at night, according to studies (Haim & Portnov, 2013; Kim et al., 2017). Furthermore, a drop in melatonin levels was shown to be strongly associated with an increased risk of breast cancer (Kloog et al., 2010). Breast cancer is a disease that affects women, particularly those who work night shifts. Research demonstrated that breast tumour development might be induced by exposure to intense light at night. There is no safe haven from breast cancer for women at home, since the intensity of bedroom light, particularly short-wavelength (460 nm), was shown to be nearly directly proportionate (95%) to the incidence of breast cancer (Smolensky, 2013). Breast and prostate cancer risks were five times greater in developed countries than in poor ones owing to this (Stevens, 2006). Treatment of prostate cancer can reduce the production rate

of sperm (Farhood et al., 2019), while cancerous breast will decrease the production rate and taste of breast milk (Bhurosy et al., 2020). As these two organs are involved in the reproduction and nurture of human offspring, it demonstrates the severity of light pollution on the preservation of progeny.

4. Protection of Property

In addition to progeny, intellect and life, light pollution has been also found to impact the preservation of property. Large-scale use of artificial lights in irrelevant areas is, without a doubt, a waste of money and energy. In addition, the effects on the economy and ecology of energy wastage are significant. The energy created for electrical use in the United States in 2018 averaged 3.600 billion kilowatt-hours per year, costing USD362 million (EIA, 2018). To put it into perspective, only USD0.7 billion (Hunter & Crawford, 1991) was spent on the generation of electricity in 1991, which was 10 times less expensive than now. Tenfold growth in wasteful electricity use for artificial lightning indicates a stagnated concern about light pollution despite the great number of studies on light pollution. The waste of money due to unnecessary artificial lighting indicates how light pollution hampers the Protection of human property.

Thus, it is shown that light pollution's impact on sustainability directly hampers the notion of preserving the protection of life, intellect, progeny and property. Considering its severe impact on multiple elements of human life, it is demonstrated that light pollution should be a concern situated under the umbrella of Maqasid Syariah.

CONCLUSION

Light pollution has been indicated to harm the sustainability of human development. However, as the current definition of sustainability is not comprehensive and arbitrary to interpretation, the endeavour of mitigating the issue of light pollution cannot be taken strategically and exhaustively. Thus, the dangers of light pollution have been discussed in this study under the framework of Maqasid Shariah. Light pollution was found to impact the notion of human life, progeny, intellectual and property preservation, which are the core framework of Maqasid Shariah. This study will help future city planners, industry players and infrastructure builders develop a more Islamic-centric city.

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