

MOSQUE, NATURE, AND CLIMATE CHANGE: ISLAMIC ECOLOGICAL ETHICS IN MASJID AL-MUHARRAM YOGYAKARTA

Ahmad Baehaki

Magister Ilmu Al-Qur'an dan Tafsir, Faculty of Ushuluddin and Islamic Thought, State Islamic University Sunan Kalijaga Yogyakarta Indonesia
ahmbaihaqi2000@gmail.com

Abstract

Global climate change has become one of the most serious challenges to the sustainability of life on Earth. Since 1880, the global average temperature has increased by 1.2 degrees Celsius. Sustainable Development Goal (SDG) 13 emphasizes the importance of collective participation in climate change mitigation. Within the Muslim community, the concept of the eco-mosque has emerged as a concrete manifestation of Islamic ecological ethics grounded in the principles of khilāfah (human stewardship over the Earth), ihsān (benevolence and care), and amānah (responsibility to preserve creation). Al-Muharram Mosque, located in Dusun Brajan, Bantul, Yogyakarta, stands as a pioneering example of the embodiment of these ecological ethics since 2013—well before the Green Mosque initiative was globally introduced at COP22 in Morocco in 2016. The mosque has implemented various environmentally friendly innovations, including eco-conscious architecture that maximizes natural air circulation and lighting, the construction of infiltration wells to harvest rainwater and ablution water, the installation of solar panels as a renewable energy source, and the establishment of the Shadaqah Waste Movement (Gerakan Shadaqah Sampah, GSS), whose proceeds are allocated to social, educational, and health programs for the local congregation. Employing a qualitative approach through interviews, observations, and literature review, this study explores how Islamic theological values are translated into sustainable practices at Al-Muharram Mosque. The findings reveal that Al-Muharram not only meets the criteria of an eco-friendly mosque but also serves as a living model of Islamic ecological ethics that integrates spirituality, environmental awareness, and community empowerment. Through these initiatives, Al-Muharram Mosque contributes significantly to environmental conservation and climate change mitigation, reaffirming the relevance of Islamic teachings in caring for the Earth.

Keywords: *Islamic Ecotheology; Al-Muharram Mosque; Eco-mosque; Climate Change; SDGs 13*

INTRODUCTION

The Industrial Revolution, which began in the 18th century, not only brought advancements in technology and human life but also significantly triggered the decline of environmental quality (Purwanto et al., 2024, p. 2). According to NASA, the global average temperature has risen by about 1 degree Fahrenheit during the 20th century (Kaddo, 2016, p. 1), or increased by 1.2 degree Celcius since 1880 (Department of Economic and Social Affairs Sustainable Development UN, n.d.). Recent research has proven that the planet has experienced the largest increase in surface temperature over the past 100 years (Shahzad, 2012, p. 1)

Human activities such as industrial operations and the use of fossil fuels have been major contributors to greenhouse gas emissions. Greenhouse gases are considered the primary contributors to climate change (Kaddo, 2016, p. 2). Ninety-seven percent of climate scientists

and researchers agree that humans have dramatically altered the Earth's atmosphere over the past two centuries and are responsible for global warming (Shahzad, 2012, p. 1). Global warming and climate change are interconnected. Both refer to the increase in temperature (Ainurrohmah & Sudarti, 2022, p. 6). Global warming and climate change are major issues that cannot resolve themselves. Serious action from all sectors of society is required to address these problems.

Climate change impacts various physical aspects of nature, such as changes in rainfall patterns, rising sea levels, and increasing global temperatures (Malti, 2017, p. 4). These three conditions have detrimental consequences for human life as well as other living beings on planet Earth. Rising temperatures can cause stress, increased blood pressure, and heart problems in humans. The human immune system becomes more vulnerable to virus attacks and infections. Warmer oceans also pose health risks, including severe cholera outbreaks and seafood contamination that can lead to dangerous infections (Shahzad, 2012, p. 4). Climate change also triggers prolonged droughts, disrupting water supplies and causing crop failures, which lead to famines, as seen during the Sahel drought in Africa in the 1970s and 1980s (Jackson, 2024). These impacts highlight the critical importance of mitigation efforts in addressing the growing threats posed by climate change.

In response to this phenomenon, especially as the impacts of climate change have become more widespread and significant since the 1960s, the global community began seeking serious mitigation steps (Purwanto et al., 2024, p. 2). In 2015, more than 196 countries signed the Paris Agreement, a treaty that provides a global framework for combating climate change. In the same year, climate action became the focus of the 13th goal of the world's 17 Sustainable Development Goals (SDGs). The World Economic Forum's Global Risk Report 2020 identified climate change as a serious threat that requires immediate preventive action (Rahman et al., 2024, p. 1552).

SDG 13 emphasizes the critical role of the global community in addressing climate change (Department of Economic and Social Affairs Sustainable Development UN, n.d.). Religious institutions play a vital role in raising public awareness about the environment and efforts to mitigate climate change (Rahman et al., 2024, p. 1553). Scholars argue that there is a fundamental need to understand the role of religion in order to fully grasp the cultural dynamics of climate change (Koehrsen, 2021, p. 2). For example, within the Catholic Church, Pope Francis, the leader of the worldwide Catholic community, considers dumping waste into waterways as a criminal act. He has also firmly opposed deforestation efforts in the Amazon rainforest in America. In May 2015, he signed a written document titled "Laudato Si" as a contribution from the Catholic Church in responding to environmental degradation (Purwanto et al., 2024, p. 2)

Within the Muslim community, during the 2015 International Islamic Climate Change Symposium, Islamic leaders signed The Islamic Declaration on Global Climate Change. This declaration integrates Islamic principles such as khilafah (stewardship), mizan (balance), and taqwa (piety) with scientific concepts to address climate change. The declaration emphasizes that the responsibility to care for the Earth is part of the religious obligations of Muslims. As a follow-up, the United Nations Environment Programme later published 'Al-Mizan: An Islamic Covenant for Earth,' further strengthening the involvement of Muslims in climate change mitigation efforts (Rahman et al., 2024, p. 1553).

At the 2016 Climate Change Conference COP22 in Morocco, various initiatives from Muslim-majority countries were introduced to support climate change mitigation, one of which was the Green Mosque initiative (Masjid Hijau: Inisiatif Masyarakat Muslim Dalam Melawan Perubahan Iklim, n.d.) Greenpeace, The Ummah for Earth Organization, The Lebanese Foundation for Renewable Energy, and several other organizations supported this initiative by installing solar panels in several major mosques worldwide (The Lebanese Foundation for Renewable Energy et al., 2012). Green mosques play a crucial role as models in implementing environmental sustainability agendas through efforts such as energy efficiency, water management, waste management, and the use of eco-friendly products (Rahman et al., 2024, p. 1561). This program is considered a pioneering initiative that can raise awareness among Muslims about environmental care (Koehrsen, 2021, p. 14).

On February 19, 2016, the Indonesian Ulema Council (MUI) and the Indonesian Mosque Council (DMI) launched the ecoMasjid program at Masjid Azzikra Sentul, Bogor (Prabowo, 2017, p. 23) The ecoMasjid program is an initiative for sustainable mosque management through various activities that maintain environmental health and natural resources. This program aims to enhance the effectiveness of preaching, both verbally and through measurable real actions, as a manifestation of Islam that brings blessings to the entire universe (Prabowo, 2017, p. 24). Before the ecoMasjid program was adopted nationally, Masjid Al-Muharram in Dusun Brajan, Yogyakarta, had already embraced the concept of eco-friendly mosque management since 2013. The mosque, currently led by Ustadz Ananto Isworo, has long implemented six eco-mosque-based programs, making it one of the pioneers in this initiative.

Based on this background, this article aims to explain the implementation of the eco-friendly mosque concept practiced by Masjid Al-Muharram in Yogyakarta. This study seeks to examine the role of Al-Muharram Eco-Masjid, which not only serves as a place of worship and religious activities but also acts as a community hub and an epicenter of social growth.

METHOD

This research was conducted using a qualitative research method. A field observation-based approach and interviews were conducted to gather in-depth data and information to achieve the research objectives. Interviews were held with Mr. Ananto Isworo, S. Ag, the mosque's *ta'mir* (manager) and initiator of the Eco-Mosque program at Masjid Al-Muharram, as well as with several congregants. In addition, content analysis of various literature was conducted to enrich the study and data analysis.

The object of study in this research is Masjid Al-Muharram, located at Jalan Ngestiwidi, Brajan, Tamantirto, Kec. Kasihan, Bantul Regency, Special Region of Yogyakarta 55184. The observations focused on the facilities at Masjid Al-Muharram that support climate change mitigation, namely energy efficiency, water efficiency, solid waste management, and greening efforts.

FINDINGS AND DISCUSSION

Profile of Masjid Al-Muharram

According to Ananto Isworo and one of the *jamaah* (congregants), Masjid Al-Muharram was first established in October 1980. At that time, the mosque was a single-story building on a 300 m² plot of land. When the Yogyakarta earthquake struck in 2006, the mosque sustained severe damage, leading to a complete renovation. The mosque was rebuilt as a two-story structure with a new architectural design by a civil engineering expert from Gadjah Mada University, and it was completed in 2011. Today, Masjid Al-Muharram serves as a religious and social center in Dusun Brajan, with a congregation size of approximately 700 people.

In its development, Ananto Isworo, the head of the mosque's management (*ta'mir*), initiated the Waste Donation Movement (Gerakan Shadaqah Sampah, GSS) at Masjid Al-Muharram in 2013. Along with other eco-friendly programs at the mosque, Ananto referred to this initiative as the Eco-Mosque program. In November 2017, the Indonesian Ulema Council (MUI) and the Indonesian Mosque Council (DMI) officially recognized the EcoMasjid program as a national initiative. Ananto has been the most vocal figure in promoting eco-friendly mosque management. For his contributions to environmental sustainability, he has received numerous awards from various organizations, with the most recent being the Kalpataru Award in the Province Builder category for the Special Region of Yogyakarta in 2024.

The eco-friendly and sustainability programs implemented at Masjid Al-Muharram can be observed through three main aspects: social progress, economic growth, and ecological balance (environment).

The Six Eco-Masjid Programs of Masjid Al-Muharram

1. Eco-Friendly Building Architecture

After suffering severe damage from the 2006 earthquake, Masjid Al-Muharram underwent a complete renovation with a more eco-friendly building design. The mosque's windows were deliberately enlarged and increased in number to maximize natural sunlight, thereby reducing dependence on artificial lighting. Additionally, the mosque's design was aimed at maximizing natural air circulation. The use of iron-grilled windows allows the wind to flow freely, creating a cooler atmosphere without the need for air conditioning.

The lighting of the building is divided into two types: natural and artificial lighting (Harsritanto et al., 2021, p. 727). Masjid Al-Muharram is designed to optimize the use of natural lighting from direct sunlight and reflected light from the floor surfaces. Besides saving electricity, natural lighting offers a pleasant and comfortable visual environment with light quality that resembles outdoor natural conditions (Imriyanti, 2014, p. 9).



The windows of Masjid Al-Muharram were designed to be more numerous and larger in size

In addition to reducing electricity usage, the larger and more abundant air ventilation system also benefits the health and comfort of congregants. Good ventilation can meet oxygen needs, reduce CO₂ concentration, minimize bacteria in the room, and eliminate odors (Imriyanti, 2014, p. 9). With a well-designed air ventilation system, Masjid Al-Muharram remains cool without the need for air conditioning (AC). To add to the cooling effect, the mosque is equipped with repaired fans donated through the Waste Donation Movement (Gerakan Shadaqah Sampah, GSS). Since the largest energy consumption in mosques generally comes from air conditioning systems for the comfort of the congregation, optimizing natural lighting and ventilation offers substantial benefits in terms of energy efficiency (Hidayat et al., 2018, p. 22).

Energy savings from the use of natural lighting and ventilation significantly contribute to environmental management and ecological sustainability (Imriyanti, 2014, p. 8). The eco-friendly building concept of Masjid Al-Muharram is one implementation of sustainable development, allowing the mosque's building and physical facilities to function well, be durable, and avoid negative environmental impacts. Sustainable development can be observed through three main aspects: social progress, economic growth, and ecological balance (environment) (Imriyanti, 2014, p. 4).

2. Gerakan Shadaqah Sampah (GSS)

One of the main components of eco-friendly mosque management is sustainable waste management (Suara Muhammadiyah, 2021). The Indonesian Ulema Council (MUI) has issued a fatwa supporting environmentally friendly waste management by

promoting the segregation of organic and inorganic waste, as well as the implementation of the 3R concept (Reduce, Reuse, Recycle). Masjid Al-Muharram adopted the Waste Donation Movement (Gerakan Shadaqah Sampah, GSS) on 1st Ramadan, or July 9, 2013, as part of this initiative.

In practice, residents bring waste from their homes or have it collected by volunteers, and then it is sorted according to its type. The sorted waste is sold to recyclers, and the proceeds are used for social programs, such as providing basic necessities, orphan aid, medical assistance, and education support for orphans and the underprivileged. The GSS program not only contributes to waste reduction and environmental preservation but also provides economic and social benefits to those in need.



a). The volunteers are sorting the waste



b). Trash bins at Masjid Al-Muharram

To address the issue of organic waste, such as food scraps, Masjid Al-Muharram encourages residents to manage it directly from their own homes. The mosque provides education on installing biopores and using organic composting (losida) as methods for organic waste management.

Due to the success of the Waste Donation Movement (GSS) at Masjid Al-Muharram, the Coordinating Ministry for Maritime Affairs and Investment, through the Secretariat of the National Coordination Team for Marine Debris Management (TKN PSL), in collaboration with the Indonesian Ulema Council (MUI), has adapted this movement nationally under the name Indonesian Waste Charity Movement (Gerakan Sedekah Sampah Indonesia, GRADASI) Mosque-Based. Masjid Al-Muharram has been designated as a pioneering and model mosque in efforts to expand mosque-based community waste management initiatives throughout Indonesia (Suara Muhammadiyah, 2021).

3. Mosque Area Greening

One of the ways to reduce the impact of global warming and climate change is by participating in planting activities and growing more trees (Mulasari et al., 2024, p.

4). As a commitment to creating an eco-friendly mosque environment, Masjid Al-Muharram has planted various types of plants, including fruit trees, around the mosque area. Additionally, to enhance the aesthetic appeal, a variety of ornamental flowers are also grown.

Greening the mosque area is one of the efforts to implement eco-friendly mosque principles (Purisari et al., 2017, p. 9). Ecologically, planting trees and plants around the mosque plays a vital role in absorbing rainwater, improving air quality, sequestering carbon dioxide, and producing oxygen, which directly contributes to reducing the effects of global warming. Moreover, greening serves as a natural temperature regulator in the mosque area, creating a cooler and more comfortable environment for worshippers without excessive reliance on air conditioning systems, thus reducing electricity consumption.



The shady trees in the courtyard of Masjid Al-Muharram

From a social perspective, the green areas around the mosque provide a calming aesthetic, creating a more peaceful and comfortable atmosphere for worshippers. The presence of ornamental plants and fruit trees also fosters social interaction by offering a space for the community to gather and engage in activities in a healthy environment. The importance of mosque greening reflects the collective responsibility of Muslims in maintaining the balance of nature as part of the *amanah* (trust) and the concept of *khilafah* (stewardship) on earth.

Thus, greening is not just about aesthetics; it is a concrete step toward supporting environmental sustainability and reflects the mosque's commitment to addressing climate change challenges.

4. Green Energy Utilization

The utilization of solar energy is one of the core principles in the Eco-Mosque concept, significantly contributing to reducing negative environmental impacts and saving energy costs (Mulasari et al., 2024, p. 53). According to the Australian Greenhouse Office, 80% of the world's energy needs are still dependent on fossil fuels

such as oil, coal, and natural gas (Kaddo, 2016, p. 4) In Indonesia, about 80% of the national electricity supply still relies on fossil energy sources (Prabowo et al., 2020, p. 21). Fossil fuels are non-renewable energy sources, and their combustion increases the amount of greenhouse gases (carbon dioxide, methane, and nitrogen oxides) in the atmosphere (Shahzad, 2012, p. 1). Greenhouse gases are considered the main contributors to climate change (Kaddo, 2016, p. 2). Continuous increases in greenhouse gas emissions will exacerbate global warming, reaching 1.5°C in the near future. Even small increases in global temperature will intensify various simultaneous environmental threats, such as natural disasters, extreme climate changes, and ecosystem degradation (Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, 2023, p. 22)

To mitigate greenhouse gas emissions, utilizing environmentally friendly alternative energy sources like solar, wind, biomass, geothermal, and hydro energy becomes the most significant solution. These renewable energies not only reduce greenhouse gas emissions but also contribute to global environmental stability. Although the initial installation costs are relatively high, in the long run, the use of clean energy provides substantial ecological and economic benefits to the community (Shahzad, 2012, p. 5).

Masjid Al-Muharram had long aspired to use solar panels to support more eco-friendly operations. In 2023, this effort was realized through collaboration between Muslim for Shared Actions on Climate Impact (MOSAIC), the Central Muhammadiyah Environmental Council (MLH PP), the Nahdlatul Ulama Disaster and Climate Change Management Agency (LPBI NU), and several other partners. This initiative successfully raised donations for the installation of solar panels with a capacity of 4,280 WP at Masjid Al-Muharram. Thanks to the installation of these solar panels, the mosque can now save up to 80% on its electricity bills.



The solar panels at Masjid Al-Muharram

In addition to installing solar panels, Masjid Al-Muharram also strives to conserve energy by using LED lights for artificial lighting. LED lights are known to be more efficient compared to other types of lighting, as they save more energy. Moreover,

LED lights are flexible in producing various types of light, from high-intensity cool light to low-intensity warm light. This not only helps reduce energy consumption but also creates a more comfortable atmosphere for mosque worshippers (Harsritanto et al., 2021, p. 727).

5. Water Harvesting System

Water is an essential element in the mosque, used primarily for ablution (*wudhu*) before performing prayers. The Prophet Muhammad (SAW) prohibited wastefulness in water usage during ablution, which demonstrates that Islam teaches its followers to preserve the environment. Proper water management is a critical component of the Eco-Mosque principles to achieve environmental sustainability (Mulasari et al., 2024, p. 54).



a) infiltration wells sign



b). The pipe channels water into the infiltration well.

To support environmental sustainability, Masjid Al-Muharram has built several infiltration wells designed to harvest rainwater and water from ablution. This effort not only helps address water scarcity during dry seasons but has also proven effective in reducing the risk of flooding during the rainy season.

6. Child-Friendly Mosque

In addition to the role of the mosque's management and building, *jamaah* or the congregation plays a crucial role in the management of an eco-friendly mosque. Congregants actively participate in supporting environmental welfare (Prabowo, 2017, p. 26). The mosque can inspire its congregation to adopt good environmental practices in their daily lives (Mulasari et al., 2024, p. 28).

Masjid Al-Muharram strives to become a center of excellence in environmental education, open to the entire mosque community and the surrounding society. Masjid Al-Muharram ensures that its facilities are accessible to everyone, including children and people with disabilities. For children, the mosque is committed to being a second home, where they can gather, play, learn, and worship. The mosque provides play areas for children and involves them as volunteers in the *Gerakan Shadaqah Sampah* (GSS)

program. This is part of environmental education from an early age, preparing a green generation that will continue environmental preservation efforts in the future (Isworo, 2018, p. 20).



a). Children become GSS volunteers



b). Environmental awareness education for children

Thus, Masjid Al-Muharram not only serves as a place of worship but also functions as a center for education and behavioral change concerning the environment for its congregation, especially for children as the green future generation.

CONCLUSION

Environmental degradation and climate change are global issues that must be addressed by all sectors of society. The rise in the global average temperature poses a serious threat to life on Earth. Therefore, preventive measures involving all parties, including religious institutions, are essential to minimize the impact.

Masjid Al-Muharram in Dusun Brajan, Yogyakarta, has implemented six Eco-Mosque programs since 2013 as an active effort to tackle climate change and environmental degradation. This initiative can serve as an inspiration for other mosques in Indonesia to adopt the concept of an eco-friendly mosque as part of efforts to mitigate climate change and other environmental damages.

REFERENCES

Ainurrohmah, S., & Sudarti, S. (2022). Analisis Perubahan Iklim dan Global Warming yang Terjadi sebagai Fase Kritis. *Jurnal Phi Jurnal Pendidikan Fisika Dan Fisika Terapan*, 3(3), 1. <https://doi.org/10.22373/p-jpft.v3i3.13359>

- Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, H. L. and J. R. (eds.)]. (2023). Summary for Policymakers. In: *Climate Change 2023: Synthesis Report*. In IPCC. <https://doi.org/10.59327/IPCC/AR6-9789291691647.001>
- Department of Economic and Social Affairs Sustainable Development UN. (n.d.). *Climate Action and Synergies*. Sdgs.Un.Org. Retrieved September 16, 2024, from <https://sdgs.un.org/topics/climate-action-synergiess>
- Harsritanto, B. I. R., Nugroho, S., Dewanta, F., & Prabowo, A. R. (2021). Mosque design strategy for energy and water saving. *Open Engineering*, 11(1), 723–733. <https://doi.org/10.1515/eng-2021-0070>
- Hidayat, E. R., Danuri, H., & Purwanto, Y. (2018). Ecomasjid: the First Milestone of Sustainable Mosque in Indonesia. *Journal of Islamic Architecture*, 5(1), 20. <https://doi.org/10.18860/jia.v5i1.4709>
- Imriyanti. (2014). MOSQUE ARCHITECTURE AS A SUSTAINABLE BUILDING IN URBAN (Case Study: Al Markas Al Islamic Mosque Makassar). *Journal of Islamic Architecture*, 2(4). <https://doi.org/10.18860/jia.v2i4.2467>
- Isworo, A. (2018). Profil GSS Kampung Brajan Menggerakkan Jama'ah Dakwah Jama'ah Melalui Gerakan Shadaqah Sampah Berbasis Eco Masjid. Direktorat Pengelolaan Sampah Kementerian Lingkungan Hidup dan Kehutanan. <https://www.unisayogya.ac.id/wp-content/uploads/2019/01/Buku-Profil-GSS-Brajan-Eco-Masjid.pdf>
- Jackson, S. T. (2024). Climate Change. Britannica. <https://www.britannica.com/science/climate-change/Climate-change-within-a-human-life-span>
- Kaddo, J. R. (2016). Climate Change: causes, effects, and solutions. A with Honors Project. <https://doi.org/10.1177/095968360401400620>
- Koehrsen, J. (2021). Muslims and climate change: How Islam, Muslim organizations, and religious leaders influence climate change perceptions and mitigation activities. *Wiley Interdisciplinary Reviews: Climate Change*, 12(3), 1–19. <https://doi.org/10.1002/wcc.702>
- Malti. (2017). Global Climate Change : Causes , Effects and Remedies. *PARIPEX: Indian Journal of Research*, 6(4), 503–504.
- Masjid Hijau: Inisiatif Masyarakat Muslim dalam Melawan Perubahan Iklim. (n.d.). ISEF Indonesia. Retrieved September 16, 2024, from <https://isef.co.id/id/cat-artikel/masjid-hijau-inisiatif-masyarakat-muslim-dalam-melawan-perubahan-iklim/>
- Mulasari, S. A., Yuliansyah, H., Nafiati, L., Sulistyawati, Tentama, F., Sukei, T. W., Sudarsono, B., & Ghozali, F. A. (2024). Ecomasjid Dan Kotribusinya dalam

Pengelolaan Lingkungan dalam Prespektif Keagamaan, Ekonomi, Kesehatan Masyarakat, Pendidikan Karakter dan Pemberdayaan Masyarakat. CV Mine.

Prabowo, H. H. S. (2017). *EcoMasjid: Dari Masjid Makmurkan Bumi*. Yayasan Pesantren Al-Amanah Sempon.

Prabowo, H. H. S., Wardhanie, M. S. A., Sormin, J. M. I., Dana, A. C., Priastana, J., Lontoh, L. L., & Satya, A. D. (2020). *Eco-Rumah Ibadah 6 (Enam) Agama Untuk Pengendalian Perubahan Iklim (Vol. 6)*. Yayasan ICLEI- Local Government for Sustainability Indonesia. http://repository.ibs.ac.id/5335/1/ICL2020_PANDUAN_UMUM_ECO-RUMAH_IBADAH.pdf

Purisari, R., Safitri, R., Permanasari, E., & Hendola, F. (2017). *Green Architecture Approach on Mosque Design in Cipendawa Village, Cianjur, West Java, Indonesia*. *IOP Conference Series: Materials Science and Engineering*, 216(1). <https://doi.org/10.1088/1757-899X/216/1/012059>

Purwanto, H., Imawan, F. A., & Reynold, W. (2024). THE ROLE OF THE “ECOMASJID” PROGRAM IN JAKARTA IN THE DEVELOPMENT OF AWARENESS OF ECO-FRIENDLY LIVING CULTURE. *Cities and Urban Development Journal*, 2(1). <https://doi.org/10.7454/cudj.v2i1.1023>

Rahman, N. A., Hatta, F. A. M., Jalil, M. H., Nasir, Z. M., Mohamad, A. D., Ibrahim, N. L. N., Hamzah, S. M. H., S, N.-A. A., Din, M. N., & Zain, N. M. (2024). The Green Mosque and Climate Change Mitigation: A Study of Green Mosques in The Klang Valley. *International Journal of Religion*, 5(10), 1552–1564. <https://doi.org/10.61707/cy4prm29>

Shahzad, U. (2012). *Global Warming – Causes, Effects and Solution’S Trials*. *JES. Journal of Engineering Sciences*, 40(4), 1233–1254. <https://doi.org/10.21608/jesaun.2012.114490>

Suara Muhammadiyah. (2021). *Alhamdulillah, Gerakan Shadaqah Sampah Diadaptasi ke Tingkat Nasional*. <https://web.suaramuhammadiyah.id/2021/04/30/alhamdulillah-gerakan-shadaqah-sampah-diadaptasi-ke-tingkat-nasional/>

The Lebanese Foundation fo Renewble Energy, National Council for Scientific Research, & AUB Lebanon. (2012). *Green Mosques Initiative : Empowering Community-Led Sustainable Solutions*. In *Greenpeace (Vol. 1, Issue 2)*. <https://eur-lex.europa.eu/legal-content/PT/TXT/PDF/?uri=CELEX:32016R0679&from=PT%0Ahttp://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52012PC0011:pt:NOT>