

# CONCEPT AND MEANING OF BAITURRAHMAN GRAND MOSQUE BUILDING SEMARANG AS A GREEN PLACE OF WORSHIP AND SUSTAINABLE

Muhammad Viky Firmansyah<sup>1\*</sup>, Zahrotul Muwahidah<sup>1</sup>, Allizam Yahya<sup>1</sup>,  
Ahmad Fauzan Hidayatullah<sup>2</sup>

<sup>1</sup>Department of Religious Studies, Walisongo State Islamic University, Prof. Dr. Hamka Street, Semarang  
50181, Indonesia

<sup>2</sup>Department of Environmental Engineering, Walisongo State Islamic University, Prof. Dr. Hamka Street,  
Semarang 50181, Indonesia

\*Email Correspondence: [mvikyf@gmail.com](mailto:mvikyf@gmail.com)

Received: August 2024; Accepted: October 2024; Published: November 2024

## ABSTRACT

This study explains the innovative concept and meaning behind Baiturrahman Grand Mosque of Semarang, which aims to be a green and sustainable place of worship. Using qualitative research methods with phenomenology approach through in-depth interviews with mosque officials, architects, and residents, this research reveals how sustainability principles are integrated into MBS design. In addition, this study also analyzes the perception and understanding of the surrounding community towards the concept of green and sustainability in the context of worship. The findings of this study are expected to provide valuable insights into how to incorporate environmental and spiritual values in religious architecture, creating a balanced, harmonious, and sustainable environment for all parties involved. Furthermore, the research highlights the importance of community engagement in fostering a shared vision for sustainable development. By examining case studies and best practices, the study aims to provide practical recommendations for future projects. The results underline the potential of religious institutions in promoting ecological stewardship and enhancing the overall well-being of their communities.

**Keywords:** *green building; mosque; sustainable*

*This is an open access article under the [CC BY](#) license*



## INTRODUCTION

Baiturrahman Grand Mosque Semarang is one of the important landmarks in the context of the religious and social life of the people of Semarang. The Baiturrahman Grand Mosque building was established on August 10, 1968, by driving 137 foundation pillars (Ministry of Tourism and Creative Economy, 2023) and its operationalization was inaugurated by President Soeharto on December 15, 1974 (Halum et al., 2022). The mosque, located in the Simpang Lima area, the heart of Semarang City, has not only developed into a center of worship, but also Islamic preaching, education, art, and culture in Central Java (Ministry of Tourism and Creative Economy, 2023).

The Baiturrahman Grand Mosque is categorized as a Grand Mosque representing the capital city of Central Java Province (Semarang), with standard facilities that can accommodate 10,000 worshippers, have facilities for disabilities, 10,000 MW sound system capacity, and a large parking lot (Kepdirjen Bimas Islam, 2014). Based on the Decree of the Director General of Islamic Public Guidance Number DJ. II / 802 of 2014 concerning Mosque Management Guidance Standards (Arum & Budiarti, 2021), the Baiturrahman Grand Mosque of Semarang uses the concept of green building based on ecological maintenance with the concepts of sustainability, energy efficiency, and climate adjustment (Hasya et al., 2022). Improving the environment by reducing environmental damage is the motive behind the sustainable approach. It is not only beneficial for the environment but also the building and all its users (Danish et al., 2023).

With the growing awareness of the importance of environmental sustainability, many places of worship, including mosques, are beginning to integrate sustainability and eco-friendly concepts in their design and practices. Mosques are not only used for worship, but also as a platform for the community to create economic, educational, and social harmony. In this way, the mosque and its surroundings work symbiotically together. A green and sustainable mosque can be defined as a multifunctional integrated community center that utilizes space, is accessible to the community, respects the geographical environment, and supports local businesses, enhancing community engagement and information discovery (Sobri et al., 2021). Therefore, the Baiturrahman Grand Mosque requires redesign for long-term interests because as more visitors move, the comfort of the facility capacity must also increase. The Baiturrahman Grand Mosque of Semarang, which occupies an area of 11,765 meters<sup>2</sup>, began renovations in August 2021 and was completed in August 2022.

The Baiturrahman Grand Mosque of Semarang uses a tropical modern architectural design because it must adapt to conditions in downtown Semarang which are crowded, modern, densely populated, worshipping in busyness, noise, unclean air circulation, extreme heat, and environmental beauty (Sari et al., 2021). With this design style, the Baiturrahman Grand Mosque of Semarang can maximize its existence so that it remains alive, providing comfort and tranquility for worshippers when worshipping in it. Then, there is the installation of elevators and benches for ablution, parking basements, and ramps for people with disabilities to ensure easy access for the elderly and people with disabilities. In addition, the solution to minimize heat by greening the plaza and pavement of the mosque yard, adding ponds and fountains that prioritize an environmentally friendly atmosphere.

The application of environmentally friendly and sustainable green architecture in the design and construction of mosques makes this research important to explore the concept and meaning of the Baiturrahman Grand Mosque building in Semarang as a green and sustainable place of worship. Based on the above, the researcher conducted research on the implementation of the concept of sustainability in the design and construction of the Baiturrahman Grand Mosque of Semarang and aims to find out people's perceptions and responses to the concept and practice of sustainability implemented at the Baiturrahman Grand Mosque of Semarang.

## METHODS

This research uses a qualitative approach. Qualitative research is a research method to research, describe, and explain the state of objects naturally or naturally, where researchers act as key instruments (Sugiyono, 2013). This type of qualitative research is descriptive, meaning that data is presented in words or images systematically, factually, and accurately according to research facts (Rasyid, 2022). The research location is in the Baiturrahman Grand Mosque Semarang.

Baiturrahman Grand Mosque was chosen as the place of research because there have been few research studies that examine the concept and meaning of the Baiturrahman Grand Mosque building, the concept of sustainability in design, construction, and operation. Second, there have been few research studies that specifically focus on the concept and meaning of environmentally friendly buildings of Baiturrahman Grand Mosque after being renovated from 2021 to 2022. Third, the location of the mosque is very strategic since it is located in the heart of or in the middle of Semarang City.

Data collection techniques include literature studies, direct observation of mosque buildings and sustainable environment implemented therein, as well as interviews with mosque administrators, architects, and members of the local community. Researchers conducted the study on March 4, 2024, March 29, 2024, and April 1, 2024.

The observation method used is direct observation conducted at the Baiturrahman Grand Mosque Semarang. This method is used to obtain data related to the object of research, namely how the concept and meaning of the Baiturrahman Grand Mosque building as a green and sustainable place of worship. In this context, the author needs to interview architects or architectural experts because they have a deep understanding of the application of sustainability and green architecture concepts in building design. The technical insights that architects have, such as the use of eco-friendly materials, water management, and daylighting, can provide more specific explanations of how these principles are applied in mosque buildings. This information is important to ensure that the claims in the article are based on valid technical data, thus adding credibility to the writing and providing a more comprehensive understanding of the architectural concepts used.

This research uses several theories, which is The "Green Mosque" theory developed by Dr. Azzam Alwash integrates sustainability principles with Islamic values, emphasizing the importance of sustainable design of mosques using environmentally friendly materials and efficient techniques, as well as utilizing renewable energy sources. The theory also includes efficient management of water resources, environmental education for pilgrims,

and promotion of community activities that support sustainability, such as eco-markets and reforestation programs. By making the mosque a center of education and environmental action, this theory aims to make the mosque not only a place of worship, but also a model of social responsibility and sustainability in the daily lives of Muslims (Fahmi et al., 2023).

This theoretical framework regarding “Sustainable Mosques” focuses on the integration of green technology in the design of environmentally friendly mosques, taking into account social, economic, and environmental aspects. In this context, Zainon Mat Sharif emphasized the importance of accessibility for all individuals, including people with disabilities, as well as the efficient use of resources in mosque construction. This concept incorporates design principles that are responsive to the climate and needs of the community, making the mosque not only a place of worship but also a center of social activities that support the welfare of the community. By applying green technology and sustainable design, mosques can contribute to environmental preservation and improve the quality of life for their residents (Mat Sharif et al., 2019).

Then, the first interview was conducted on March 4, 2024, at 16.07 WIB, meeting with Dr. KH. Multazam Ahmad, M.A (Chairman of the Takmir Division of the Central Java Baiturrahman Grand Mosque). Second, with mosque visitors on March 4, 2024, at 19.20 WIB, namely Mr. Djumian who works as an online motorcycle taxi, Mr. Ahmad Zufarzen who works as a self-employed person, as well as Muhammad Ronal Qolba Salis Fiddar as a high school student on March 29, 2024. Third, interviews with lecturers of Islamic Art and Architecture Walisongo State Islamic University, namely Ms. Shofiyah Nurmasari, S.T., M.T., on March 29, 2024 at 13.00 WIB, and Mr. Alifiano Rezka Adi, S.T., M.Sc., on April 1, 2024 at 12.30 WIB.

## RESULT AND DISCUSSION

### **Concept and Meaning of Baiturrahman Grand Mosque Building Semarang as a Green Place of Worship and Sustainable**

Mosques, as centers of religious and social activities, also follow technological developments. In modern times, there are new opportunities to develop mosques into eco-mosques, that is, places of worship that integrate technology. Based on the study and data we got from an interview with a lecturer who focuses on Urban Architecture, namely Mr. Alifiano Rezka Adi, S.T., M.Sc. (Lecturer of Islamic Art and Architecture, Walisongo State Islamic University). He stated that the Baiturrahman Grand Mosque Semarang is a clear example of the concept of “green and sustainable places of worship.”

Apart from being a place of worship, this mosque also has other functions developed, such as education, community education, and economy. In the ecological aspect, the mosque responds to the conditions of the surrounding environment with a pond in the front area that conditions the temperature of the local climate. The mosque's sloping roof reduces heat from the sun and drains rainwater into the drains. In addition, the layout of this mosque considers evolving functions rather than just worship spaces, thus reflecting the concept of sustainability involving social, ecological, and economic aspects. According to (Steele,

1997) sustainable architecture is an architectural concept that meets the needs of today, without jeopardizing the ability of future generations to meet their own needs.

The pond in the ablution place in the picture below has the main function as a rainwater reservoir and a place for recycling water used for ablution and toilets. This pond collects rainwater through channels or roofs of buildings to reduce dependence on groundwater sources and PDAMs. The collected water can be used for various purposes such as watering plants or ablution, provided it meets hygiene standards. In addition, ablution and MCK water is recycled through filtration and purification processes, so that it can be reused for non-drinking purposes, supporting water and environmental conservation.

Besides being functional, the pool also adds aesthetics and comfort to the ablution area. The existence of the pond creates a cool and calm atmosphere and can be a habitat for aquatic plants or ornamental fish, beautifying the surrounding environment. Thus, this pond not only supports the sustainability of water resources but also enhances the comfort and beauty of the ablution place.

Mr. Alfiano Rezka Adi, S.T., M.Sc. (Lecturer of Islamic Art and Architecture, Walisongo State Islamic University) said that spaces designed with sustainable concepts or eco-friendly architecture have benefits that can be felt tangibly. For example, with shade, shade, and ponds in the ablution place and the front yard of the mosque, as well as sufficient ceiling height, making these spaces more comfortable for worship and relaxation considering the extremely hot conditions in Semarang. In addition to physical benefits, these spaces also have social benefits. People not only come to worship but also to rest and gather with family. In addition, the outdoor space of the mosque can also be a crowded place to sell at night, thus providing economic benefits for traders and creating a festive atmosphere.



**Figure 1.** Ablution place and pool area in the middle  
(Source: Author's, 2024).



**Figure 2.** Water storage pond and recycling ablution/MCK water with filtration process  
(Source: Author's, 2024).



**Figure 3.** People gather in the front yard after performing Maghrib prayers  
(Source: Author's, 2024).

Through our analysis with the observation data we obtained in the context of developing and disseminating ideas about environmental sustainability, mosques or other places of worship can play an important role. Since mosques are often landmarks or centers of attention in the spatial structure of cities, many people from different walks of life come to them. The spaces in mosques can provide inspiration to the wider community and visiting stakeholders. Good ideas in the mosque can be transmitted to other places. Therefore, if the mosque applies sustainable concepts well in its design, it can be an effective learning tool for the wider community. Especially for mosques that have a strong attraction or potential, such as the grand mosque or Central Java mosque, the better the application of sustainable concepts in the building, the better it is for the wider community.

With the above analysis, therefore application of eco-green is also important, eco-green is a term that means “one with nature” which is a metaphor for a characteristic with environmental carrying capacity which is a major concern in development/construction as well as in residential / housing development (Zefri N., 2019). This is related to energy efficiency, the role of energy efficiency is to reduce the use of non-renewable energy by utilizing renewable natural energy such as solar energy, wind, etc (Yuda Wardiana et al., 2019).

Based on our research the mosque building is equipped with energy-efficient lighting systems, such as efficient LED lights. In terms of energy use efficiency, the strategy applied is the use of natural lighting and ventilation. Even though lights as lighting and air conditioning are present in the room, humans still need natural lighting and air circulation for lighting and ventilation (Dewantoro et al., 2019). The use of efficient lighting technology helps reduce energy consumption and the resulting environmental impact. During the day the use of lights will be turned off because the interior design of the mosque



**Figure 4.** The mosque uses LED lights for energy efficiency and adds aesthetic aspects (Source: Author's, 2024).

is open so that sunlight from outside the mosque can enter to illuminate the mosque's prayer room so that electricity use can be reduced.

In terms of landscaping, the mosque is designed with green spaces and natural surroundings. Beautiful gardens, trees, and other vegetation not only provide ecological benefits, such as carbon absorption and air filtration, but also create a cooler and more comfortable environment for worshippers. Additionally, the thoughtfully designed outdoor areas add a sense of tranquility and spirituality, enriching the worship experience. Walkways and shaded seating areas invite contemplation, while water features like fountains offer a calming atmosphere that strengthens the connection with nature and the Creator.

As for the interview with Dr. KH. Multazam Ahmad, M.A (Chairman of the Takmir Division of the Baiturrahman Central Java Grand Mosque) on March 6, 2024. According to him, this mosque also cooperates with local communities that care about the environment. By working together on environmental projects, the mosque can expand its positive impact and build collective awareness about the importance of sustainability. The mosque has regular events, namely studies with ustadz every week, and is open to the public.



**Figure 5.** Ramadan Iftar Study (Source: Author's, 2024).



**Figure 6.** Event pamphlets for the community (Source: Screenshot of @mrb.jateng Instagram post, 2024).



**Figure 7.** Ramadan MSME Stand 2024  
(Source: Author's, 2024).

According to Mr. Multazam Ahmad, the mosque's efforts are not only limited to the renovation stage, but also involve long-term planning. For example, the long-term program includes ongoing maintenance, regular maintenance of buildings, and continuous monitoring of energy use, water, and waste management. In addition, the mosque also provides job opportunities and supports MSMEs by providing a place for traders to sell, such as during Ramadan, in the parking area and in front of the MUI building in Central Java Province, where some of them sell healthy food. By maintaining harmony between religion, health, and the environment, Muslims have the opportunity to play an active role in maintaining the sustainability of the earth that Allah has created (Rahmi et al., 2020).

### **Implementation of the Sustainability Concept in the Design, Construction, and Operation of Baiturrahman Grand Mosque Semarang**

Mosque architecture in general is an influential factor that determines the holistic experience of worshippers. This concerns not only the architectural aspects of a mosque but also the practical qualities and durability of a mosque. In this context, the concept of sustainable mosques should consider environmental strategies to ensure optimal use of resources; energy, climate, construction materials, indoor air quality, and flexible design (Sobri et al., 2021).

Baiturrahman Grand Mosque Semarang is one of the places of worship that has implemented eco-mosques. This concept is identified with a concern for the mutual relationship between all living things and their environment, in an environmentally friendly and sustainable way to respect the balance of the surrounding nature (Hayu Prabowo, 2017). This can be seen from the design of the mosque building which is designed by paying attention to airflow and natural lighting, to minimize the use of air conditioners and electric lights during the day. In addition, the area around the mosque is equipped with gardens and trees, which serve as green spaces and help maintain the balance of the ecosystem and make a positive contribution to the environment.





**Figure 8.** Mosque pyramid roof design architecture  
(Source: Author's, 2024).

The concept of green architecture essentially leads to sustainability. Eco-friendly architecture is not only related to the building itself, but also depends on the users, climate, and setting of the building so that under certain conditions differences in site selection will greatly affect the design and construction of the building (Ramadhan et al., 2019). Like the location of the Baiturrahman Grand Mosque which is located in the center of Semarang, with its tropical climate and high humidity levels, it affects the architectural design. Therefore, the mosque is designed with natural ventilation that allows for good airflow thereby reducing dependence on air conditioning. In addition, adaptation to climate and the environment is reflected in the design that is adapted to the tropical climate conditions in Semarang. The use of heat and moisture-resistant building materials supports the long-term sustainability of these structures.

Based on the exploration of interview data from informants, namely Mr. Alifiano Rezka Adi, S.T., M.Sc., (Lecturer in Islamic Art and Architecture, Walisongo State Islamic University) on April 1, 2024, explained that the design of the Baiturrahman Grand Mosque in Semarang adopts the concept of tropical modern architecture with a pyramid roof, sloping roof. The characteristics of tropical modern architecture use a lot of air ventilation and thin types of walls. The values of sustainable practices have been applied in the design planning of the Baiturrahman Grand Mosque of Semarang to achieve and provide comfort for worshippers and ensure natural ventilation throughout the building.

Places of worship with the concept of sustainability have architectural spaces that can provide facilities for many people and make it comfortable so that people can continuously be in the mosque. The concept of sustainability is seen in the large glass windows to respond to natural light maximally. There is also a roster in various rooms to respond to natural air. Based on observations made during the month of Ramadan 2024, it can be seen that many mosque visitors gather to break their fast together in the mosque, then continue with congregational prayers. This situation shows that the architectural design of the mosque that applies the concept of sustainability can provide comfort and facilities that sustainably support the activities of worshippers. Features such as large windows that maximize natural lighting and the use of breezeblocks for natural air ventilation contribute to this comfort level. This indication of comfort can be seen from the number of worshippers who remain in the mosque to participate in various worship services throughout the night.



**Figure 9.** The secondary skin design on the facade of the mosque building is in the form of kufi calligraphy  
(Source: Author's, 2024).

Mr. Alifiano Rezka Adi said the water in the pool is one of the applications of the ecological concept which means life and sustainability. In addition, the sloping roof construction or limasan which is suitable for the climate in Indonesia, both in terms of its function to control heat and rain, as well as the efficiency of the structure and materials that are relatively easy to obtain, is more popular in terms of the form of a construction structure.

According to Mrs. Shofiyah Nurmasari, S.T., M.T., (Lecturer in Islamic Art and Architecture, Walisongo State Islamic University), the architectural design style and construction of the Baiturrahman Grand Mosque building represent contemporary Islamic architecture in the form of secondary skin in mosque ornaments, such as Kufi calligraphy. The secondary skin on the Baiturrahman Grand Mosque, especially the Kufi calligraphy ornaments, can be considered as elements that support sustainability. In addition to providing religious and artistic aesthetics, this secondary skin also functions to maintain indoor temperature conditions, ventilation, and protect the building from being damaged quickly. This shows that the contemporary Islamic architecture in this mosque not only focuses on aesthetics but also integrates the principles of sustainability according to the climate and local cultural needs.

This mosque is heading towards a building with a sustainable design concept of around 60% because sustainability has many aspects, such as 17 SDGs so it cannot be said that the mosque revitalization form is 100% sustainable. The SDGs (Sustainable Development Goals) themselves are a progressive, multi-sectoral, human rights-based, and people-centered approach to development, bringing together diverse global efforts to change the way development takes place (Sidibé, 2016). The revitalization of the Baiturrahman Grand Mosque by the Ministry of Public Works and Housing, which includes strengthening the building structure, adding facilities for people with disabilities, providing elevators, ablution places, and underground parking areas, is part of efforts to realize a more inclusive, accessible, and environmentally friendly building. This action supports several SDGs goals, such as goal 9 (resilient and sustainable infrastructure), goal 10 (reducing inequality through accessibility for all), and goal 11 (creating sustainable

cities and communities). However, this revitalization has not fully covered all aspects of the SDGs, such as the application of renewable energy, water use efficiency, and overall waste management. Therefore, this revitalization can be said to be still in the early stages or around 60% in achieving sustainable design. In other words, the steps taken by PUPR are already an important effort towards sustainability, but there is still room for improvement in the future so that more aspects of the SDGs can be achieved. This 60% percentage is a measure of how far the project has gone to implement sustainability principles broadly, compared to if all SDGs indicators had been fully adopted.

The construction of the Baiturrahman Grand Mosque building has three levels. There are head, body, and foot parts. The foot section on the first floor is for supporting functions, such as ablutions, parking lots, and educational and commercial places. The aspect of land use efficiency is the availability of green open areas as absorption areas (Ramadhanty et al., 2020). Then, the body as the second level is in the middle for a place of worship as its main function. Finally, the head, which is reflected in the shape of the roof, is likened to a crown and looks the most iconic from the outside, symbolizing the highest element that is strong and sturdy.

### **Public Perception and Response to Sustainability Concepts and Practices at Baiturrahman Grand Mosque Semarang**

Public perception and response to sustainability concepts at the Baiturrahman Grand Mosque in Semarang are generally positive. Environmental care, which is important for the community, aligns with Islamic teachings, where humans are entrusted by Allah to protect and preserve nature. Several studies mention that environmental care aims to encourage habits of maintaining cleanliness, avoiding damage, and fostering responsibility toward the environment (Sujana et al., 2018; Purwanti, 2017). Through environmental care, we can protect the environment by preserving and preventing pollution and damage, which includes planning, utilization, control, maintenance, supervision, and law enforcement (Auvaria, 2018). Allah gives three mandates that are implemented in Islam, the first is the relationship with *al Intifa*, the second is *al I'tibar*, and the third is *al Islah* where all creatures must maintain and preserve the nature that has been given by Allah SWT.

In addition to environmental care, community empowerment is crucial in supporting environmental sustainability. Empowerment is carried out by developing community potential, providing accessible facilities, and ensuring justice to protect vulnerable groups. By maximizing environmental potential and strengthening groups that are not yet empowered, sustainable community welfare can be achieved (Najiyati, 2014; Ningrum, 2016).

By determining the right approach to community empowerment, we hope to achieve community empowerment that can achieve independence, optimal growth, and a community that can empower itself and its environment. We conducted structured interviews and direct observations to ask for responses and perceptions from the surrounding community at the Baiturrahman Mosque in Semarang to provide direct results and we have done so, we interviewed three people who each have different ages so that we could see each person's views regarding the Baiturrahman Mosque.

According to Mr. Djumian (resident), appreciates the mosque's cleanliness and green environment, as well as its effective waste management. Additionally, community participation through volunteerism, donations, and knowledge-sharing plays an important role in maintaining the mosque's environment. The mosque's efforts to create a healthy and environmentally friendly space are seen as having a positive impact on air quality.

Additionally, the perception of Mr. Ahmad Zufarzen notes that while the mosque provides many social benefits, such as distributing sacrificial meat and zakat, local community participation in sustainability is still less than optimal. Many people only stop by the mosque temporarily, especially due to its location in the city center, which reduces their involvement in sustainability activities.

Furthermore, the perception of Ronal emphasizes the importance of environmental sustainability at a mosque located in the heart of the city. According to him, public awareness of cleanliness and environmental care varies, but the mosque remains an important place for promoting green practices in Semarang. By continuing to maintain cleanliness and greenery, the Baiturrahman Grand Mosque is expected to remain a center for religious activities and a good example of sustainability for the surrounding community.

## CONCLUSION

The concept and meaning of the construction of the Baiturrahman Grand Mosque in Semarang as a green and sustainable place of worship can be reviewed through qualitative research methods with a phenomenological approach. Where this reveals how sustainability principles are applied in the design of the mosque, such as the use of eco-friendly modern tropical architecture and adaptation to the local climate. This mosque is equipped with a water management system, natural lighting, and efficient ventilation, which supports environmental sustainability while providing comfort for worshippers. In addition, this mosque serves as a community center that supports social, economic, and educational activities, which reflects the important role of places of worship in improving community welfare and preserving the environment.

This research also highlights the importance of community involvement in supporting green and sustainable concepts. The results of the research revealed that mosques are not only places of worship, but also centers of social and economic activities, such as providing places for MSMEs and studies during the month of Ramadan. The renovation of the mosque from 2021 to 2022 emphasizes inclusive facilities, such as underground parking areas and accessibility for people with disabilities, which supports the implementation of the concept of sustainable development. The Baiturrahman Grand Mosque in Semarang shows that religious architecture can blend spiritual and ecological values, and contribute to sustainable development in the future.

## ACKNOWLEDGEMENT

The authors acknowledge his gratitude for the research that has been carried out, for the support from students of Religious Studies in 2022, as well as lecturers of Religion and Environment courses, Walisongo State Islamic University, Ngaliyan, Semarang City, Central Java, Indonesia.

## REFERENCES

- Arum, D. S. A., & Budiarti, R. (2021). Kriteria Ruang Luar yang Responsif pada Masjid Agung Jawa Tengah. *Prosiding Seminar Intelektual Muda #6*, 3(1), 281-287. <https://doi.org/10.25105/psia.v3i1.13052>.
- Auvaria, S. W. (2018). Improvement of Awareness and Aspect of Community Participation in Environmental Management and Climate Change Adaptation By Eco-Mosque. *Al-Ard: Jurnal Teknik Lingkungan*, 4(1), 9–15. <https://doi.org/10.29080/alard.v4i1.321>.
- Danish, M., Shukri, S. M., & Taib, I. (2023). Sustainability of Green Design Mosque in Cyberjaya. *MAJ - Malaysia Architectural Journal*, 5(3), 45-60. <https://www.majournal.my/index.php/maj/article/view/185>.
- Dewantoro, F., Budi, W. S., & Prianto, E. (2019). Kajian Pencahayaan Alami Ruang Baca Perpustakaan Universitas Indonesia. *Jurnal Arsitektur ARCADE*, 3(1), 94. <https://doi.org/10.31848/arcade.v3i1.162>.
- Fahmi, R. A., Suyitno, & Rochmiatun, E. (2023). MOSQUE-BASED ECONOMIC EMPOWERMENT IN THE MALAY WORLD: Views of Ibnu Khaldun's Asabiyah and Malik Bennabi's Civilization Theories. *Al-Qalam Jurnal Penelitian Agama dan Sosial Budaya*, 29(1), 88-101.
- Halum, U., Simamora, I. M., Taurano, G. A., & Fernando, R. (2022). Analisis Perbandingan Kapasitas Kolom Pra-Jacketing dan Pasca-Jacketing dengan Bantuan Laser Scanner pada Proyek Penataan Kawasan Pusaka Masjid Baiturrahman Semarang. *Jurnal Inovasi Konstruksi*, 1(2), 27–37. <https://doi.org/10.56911/jik.v1i2.23>.
- Hasya, A., 'Umillah, Purwanto, E., & Indraswara, M. S. (2022). Masjid Kota Semarang dengan Pendekatan Bangunan Hijau. *Jurnal Poster Pirata Syandana*, 3(2). <https://ejournal2.undip.ac.id/index.php/jpps/article/view/14840>.
- Keputusan Direktur Jenderal Bimbingan Masyarakat Islam Nomor DJ.II/802 Tahun 2014 Tentang Standar Pembinaan Manajemen Masjid.
- Mat Sharif, Z., Jannah Jalil, N., & Ali Bekhet, H. (2019). Green Building, Sustainability and Mosques Design in Kuala Terengganu. *International Journal of Engineering & Technology*, 8(1), 228–234. <https://doi.org/10.14419/ijet.v8i1.1.24664>.
- Ministry of Tourism and Creative Economy. (2023). *The Wonderful Mosque of Indonesia 2023*. Deputy for Tourism Products and Event Organizers.
- Najiyati, S., Asmana, A., & Suryadiputra, N. (2016). *Pemberdayaan masyarakat di lahan gambut*. Bogor: Wetland Internasional-IP.
- Prabowo, H. (2017). *ECOMASJID: Dari Masjid Makmurkan Bumi*. Yayasan Pesantren Al-Amanah Sempon.
- Rahmi, E., Patoni, A., & Sulistyorini, S. (2020). The Management of Human Resources Development in Increasing the Quality of Islamic Education Institutions. *Al-Ta Lim Journal*, 27(2), 166–178. <https://doi.org/10.15548/jt.v27i2.624>.
- Ramadhan, T., Wibowo, H., Sukardi, R. R., & Hertoety, D. A. (2019). Implementation of Green Architecture Concept in Mosque Design : A Face And Islamic Da'wah. *Indonesian Journal of Built Environmental and Sustainability*, 1(1), 23-33. <http://dx.doi.org/10.31848/ijobes.v1i1.250>.

- Ramadhanty, Rr. A. H., Hardiyanti, & Yuliarso, H. (2020). Penerapan Prinsip Arsitektur Berkelanjutan Pada Desain Taman Budidaya Burung Walet di Karanganyar. *Senthong Jurnal Ilmiah Mahasiswa Arsitektur*, 3(1), 230–241.
- Rasyid, F. (2022). *Metode Penelitian Kualitatif dan Kuantitatif: Teori, Metode, dan Praktek*. Kediri: IAIN Kediri Press.
- Sari, W. N., Nuzuluddin, T. R., & Sasmito, A. (2021). Redesain Masjid Raya Baiturrahman Semarang. *Neo Teknika: Jurnal Fakultas Teknik Universitas Pandanaran*, 7(2), 22–31. <https://doi.org/https://doi.org/10.37760/neoteknika.v7i2.1836>.
- Sidibé, M. (2016). Religion and Sustainable Development. *Review of Faith and International Affairs* Routledge, 14(3) 1–4. <https://doi.org/10.1080/15570274.2016.1215848>.
- Sobri, M. I. M., Ismail, S., Sabil, A., Yusof, H., Asif, N., & Setiyowati, E. (2021). Systematic Review of Sustainable Design Approach for Mosque. *Journal of Islamic Architecture*, 6(4), 369–375. <https://doi.org/https://doi.org/10.18860/jia.v6i4.14016>.
- Steele, J. (1997). *Sustainable Architecture: Principles, Paradigms, and Case Studies*. New York: McGraw-Hill.
- Sugiyono. (2013). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*. Bandung: Alfabeta.
- Sujana, K., Hariyadi, S., & Purwanto, E. (2018). Hubungan Antara Sikap Dengan Perilaku Peduli Lingkungan Pada Mahasiswa. *Jurnal Ecopsy*, 5(2), 81. <https://doi.org/10.20527/ecopsy.v5i2.5026>.
- Yuda Wardiana, I., Heru Purnomo, A., & Sunoko, K. (2019). Penerapan Prinsip Arsitektur Berkelanjutan Untuk Mensejahterakan Penghuni Pada Rumah Susun Pondok Boro Di Surakarta. *Jurnal Senthong*, 2(2), 1–10.
- Zefri, N. (2019). Concept Development Housing and Settlement of Coastal Areas based on Eco-Green: Case Study-Coastal Areas Babelan and Tarumajaya District Bekasi West Java, Indonesia. *Journal of Environmental Science and Public Health*, 03(03), 461–473. <https://doi.org/10.26502/jesph.96120076>.