Sustainable Indonesian Mosques (Eco-Masjid)[1]

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Abstract: This paper documents the Islamic movement on climate action in Indonesia, particularly greening the mosque. Indonesia has 800,000 mosques in the country. Following the Islamic Declaration on Global Climate Change in Istanbul in 2015, Indonesia announced an eco-masjid[2] action. Through a mosque-based website (www.ecomasjid.id), the Indonesian Council of Ulama (MUI) engaged in a country-wide eco-masjid program, launched environmental campaigns and activities, and trained masjid organizers and imams. The mosques also intensively disseminated environmental fatwas, including those supporting wildlife protection, community sanitation and water management, and prohibiting land and forest burning related to climate change to reach a large public audience.
Keywords: Islam, Indonesia, eco-masjid, climate actions, environmental fatwas.

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1. Introduction

Mosques play an important role in the performance of worship and building social and economic ties in the local community. The mosque is a place for people to interact, not only making it a place of ritual worship but also enabling social services through being a place to study, develop the people's economy, and coordinate *zakat*[3] distribution to those who are entitled.

The Prophet Muhammad (pbuh)[4] founded the first mosque – the Quba mosque – and subsequently founded the Prophet's Mosque in Medina. The function of the mosque is well explained in the practice of the Prophet in establishing his mosque. Prophet Muhammad shared his knowledge and regularly met with his companions in the mosque to discuss and decide important issues.

There were also *suffah* people in the mosque, people around the Prophet Muhammad who did not have a place to live but wanted to study religion in the mosque. Mosques can be a

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[2] *Masjid* is the Arabic terminology for a mosque, a house of worship for Muslims.

[3] *Zakat* is an alms given to the Muslim, referring to the obligation that an individual has to donate a certain proportion of wealth each year to charitable causes.

[4] *Pbuh* is short for "peace be upon him" (referring to the prophet Mohammed) or the English-language translation of alayhi as-salām. The phrase is important for Muslims because it is a way of showing respect to the Prophet Mohammed.

place to connect prayer with social causes, such as helping each other and spreading kindness. Some mosques in the Islamic world even complete the complex with madrasas, hospitals, libraries, and private museums[5] (Mittermeier 2021).
Mosques can be used as places of learning and education for life and all ages. Muslim countries are working to make the mosque a place of *da'wah*[6] and a center for anyone with questions about Islam, acting as an open beacon to educate and enlighten society and fight illiteracy (Spahic 2020).
The mosque is a place for religious events, gathering, communicating, celebrating, and interacting for the good of Muslims. Mosques can function as places to discuss how to provide solutions to common environmental challenges. They are places of learning and transmission of both religious and contemporary knowledge of nature and the environment.

2. Environmental Issues in Mosques

Accordingly, it is necessary to carry out knowledge transformation and environmental conservation actions in the mosque, starting with raising awareness among the congregation. In this way, according to the Islamic World Educational Scientific and Cultural Organization (ISESCO 2019), Muslims are encouraged to spread awareness about the need to protect the environment, respect nature, and initiate actions for environmentally-friendly development.
The mosque has a strong functional mission, primarily as a place to convey religious messages and rituals at least once a week through Friday sermons and encourage good deeds:
"Verily Allah commands (you) to do justice and do good, to give to relatives, and Allah forbids from evil deeds, evil and enmity. He teaches you so that you may learn" (Surah 16:90).
Therefore, naturally mosques can be used to encourage sustainable lifestyles and support the spiritual aspect of respect for nature and all of God's creatures. Put simply, mosques can be central in raising awareness about environmental conservation and climate change. Green mosque actions have been carried out all over the world. During the UNFCCC COP 21 Climate Conference in Marrakesh, Morocco, the Maghreb countries launched their plan for 600 large mosques using solar panels. Solar panels were also installed at the Kutoubiyah Mosque in Marrakesh, a historic mosque founded in the 12th century. The mosque – which is the pride of the Marrakesh community – uses solar panels with digital emission control displays placed outside the mosque. Thus, worshipers can learn about the sources of emissions – pollution that can lead to greenhouse gases – that can be reduced by their mosques (Bentley 2017),
Mosques are empowered with the larger goal of producing 34% lower emissions in Morocco by 2030 to support the Paris Climate Agreement.[7] In 2016, 100 mosques were renovated as part of a green mosque pilot project, including the two largest mosques in Marrakech. The country currently relies on fossil fuels and hydropower to meet its energy needs. As with other countries, its energy needs are soaring and hydropower is failing due to drought brought on by the reduced level of ice in the Atlas Mountains. Electricity demand has doubled in the last ten years, partly due to new infrastructure projects. Moreover, about 97% of the required oil, gas, and coal has to be imported.[8]

[5] For example, the charity hospital at Mustafa Mahmoud Mosque in Egypt and Sultan Abdullah Mosque in Pahang Malaysia. See https://muziumpahang.com/muzium-masjid-al-sultan-abdullah/ [Acessed 18.02.22]
[6] The Arabic term *da'wah* means "to call or invite."
[7] See the Paris Agreement and NDCs https://unfccc.int/process-and-meetings/the-paris-agreement/nationally-determined-contributions-ndcs/nationally-determined-contributions-ndcs [Accessed 14.02.22]
[8] https://www.bbc.com/future/article/20170927-can-a-place-of-worship-power-a-village [Accessed 12.12.2021]

Morocco also uses the roofs of mosques in villages to help farming communities to obtain energy, with the aim of converting 52% of its energy into renewable energy by 2030. There are 15,000 mosques in Morocco, and there have been hundreds of initiatives to green their mosques since 2017. However, without claiming to be green, many mosques have traditionally paid attention to local climate and environmental conditions when designing their mosque architecture.[9]

As another example, the Dubai Eco-Mosque achieves 25% energy savings and 50% water savings. In this way, the example of sustainability can be spread directly to Muslim communities.[10]

There is now a green-designed mosque in England, namely the Cambridge Central Mosque, with a capacity of 1,000 worshipers. In addition to providing a place for prayer, ablution, and a flat/house for imams and their families, it also has accommodation for visiting scholars. The mosque is called environmentally-friendly due to its zero local carbon emissions, as it collects rainwater and uses air-source heat pumps. Julia Barfield – the mosque's chief architect – claimed that the mosque was "a British mosque for the 21st century."[11]

The design of the mosque in Cyberjaya, Malaysia is deliberately made environmentally friendly. In addition to adopting traditional Malaysian carvings, it also adapts to modern Islamic architecture in Malaysia with the tropical climate. Cyberjaya Mosque is an example of a future green city. Tohid and Zainon (2016) assigned it a green mosque category with several conditions, including:

1) sustainable construction;
2) energy efficiency and green buildings;
3) comfortable airflow conditions; and
4) operation and maintenance.[12]

The Green Prophet[13] website states seven criteria for mosques to be categorized as green mosques (eco-mosques):[14]

1. Creating a green message for the public: Most mosques in the UK and the Middle East are containers of different types of culture, and thus talking to people about environmental issues means taking a multilingual and multigenerational approach. Ensure that you speak to people in the language that they are most comfortable with (which could mean hiring multilingual speakers to address the issue) and ensure that posters appeal to the older generation and young people by relating to the issues that concern them most.
2. Water management policy: Instilling a culture of water saving is not only following the *sunna*[15] but also a positive way to persuade people to think about other resources and energy that they use and might waste, putting up signs asking people to limit their use of water, asking for leaking faucets to be fixed immediately, and linking all of this to

[9] Ibid.

[10] See the video (https://www.youtube.com/watch?v=5yS-m-L4884) as well as the design of the sustainable mosque https://www.youtube.com/watch?vr=ReS0cS4XCzM [Accessed 12.12.2021].

[11] ‚Eco mosque' opens for prayers in Cambridge https://www.bbc.com/news/uk-england-cambridgeshire-48044025 [Accessed 12.12.2021].

[12] Tohid, Z., & Rahim, A. A. (2016). Sutainable Masjid Architecture and Public Buildings.

[13] "Green Prophet was founded by biologist, journalist, tech entrepreneur Karin Kloosterman (…) We are partnered with a number of international organisations that impact the potential of religion and Middle East culture for the greater good." https://www.greenprophet.com/about/ [Accessed 12.12.2021].

[14] Eco-Mosque Checklist. https://www.greenprophet.com/2012/06/the-eco-mosque-checklist-7/ [Accessed 12.12.2021].

[15] *Sunna* is the Arabic term for the Prophet Muhammad's way of life and legal precedent.

the hadith that the Prophet Muhammad (Pbuh) said that water should be used with caution even if it is in abundance.

Using renewable energy: After obtaining efficient water for the pilgrims, the next step is to educate the congregation to think about the energy used and where it comes from. First, it is important to encourage reduced usage by promoting a 'turn off when not in use' policy and think about switching to green energy providers. Mosques can install solar panels, including many in the Asian region. In fact, mosques have adapted to environmentally-friendly architecture, opening up considerable space to take advantage of the wind for cooling.

Green events and actions: Learning to care more about the environment can be a daunting task for green beginners. Therefore, it is suggested to offer an opportunity to attend a 'tasting event' by hosting an exchange shop, green Ramadhan, recycling lessons, promoting fair trade, and even speaking to those attending an educational class at the mosque for five minutes. This can be a useful way to introduce them to the issue and encourage them to think about aspects such as why mosques follow certain policies and what they can do to be greener in their daily lives.

Green transportation: Getting from one place to another is a major part of life, and there is no lifestyle that does not involve transportation. This means that people should walk more often, leaving their cars behind and walking to the mosque. However, green mosques should also encourage their congregations to go to mosques using environmentally-friendly means, such as cycling.

Gardening on mosque land: Mosque land and even vacant land next to the mosque can be used as a demonstration place to share how it can be used for eco-friendly, organic, and practical gardening. People can see and enjoy the greenery around the mosque and even bring in cash for mosque maintenance.

Environmentally-friendly Islamic bank accounts: Perhaps many mosque stewards or managers use accounts with non-shariah-compliant or non-Islamic banks. This would be a real shame because Islamic banks have definitely avoided investing in the arms, tobacco, and alcohol industries, and are slowly learning to care about their environmental footprint. Although many Islamic banks might not yet be the greenest, if mosques place their accounts with Islamic banks and activists offer encouragement, the banks can become much greener.

3. Eco-Masjid Movement in Indonesia

This paper will share a narrative and Indonesia's experience, particularly in engaging the mosque communities and the ulama' (clerics) from the national level to local actions. The paper is generated from interviews, fact-finding and experiences shared by the author as an activist and mediator for the faith-based approach towards the environment, particularly the Islamic approach.

The Indonesian Ulema Council (MUI) designed an eco-mosque program coordinated under the MUI Environmental Unit (LPLH-SDA), a new institution at MUI formed in 2010. In a country with a Muslim majority population, according to the Indonesian Mosque Council (DMI), there are 800,000 mosques. Indeed, this number is probably larger than any other country in the world. Therefore, starting to engage mosques and their communities and raising environmental awareness is essential and could potentially contribute to better knowledge and practices protecting nature and the environment. The eco-masjid initiative – under the MUI Environmental Unit – has various long- and short-term programs and the following objectives:

"Improve the effectiveness of oral da'wah and tangible actions in a measurable manner as the embodiment of Islam that brings mercy to the entire universe."

In addition, as detailed on its website (ecomasjid.id), the MUI eco-masjid program has the following aims:

1. preparing the people[s resilience in facing the threat of water and energy scarcity;
2. being oriented to the aspects of *idarah* (management), *imarah* (prosperity activities), and *riayah* (maintenance and procurement of facilities);
3. building synergy with the community and government; and
4. building an independent and sustainable mosque management.

Eco-masjid provides a platform in the form of a website (ecomasjid.id) offering practical guidance on how to create an environmentally-friendly mosque; for example, by implementing water-saving principles such as collecting rainwater and saving water in performing ablution, saving energy with solar panels and biogas, making infiltration wells, and using efficient waste incinerators to burn waste that can no longer be recycled.[16]

Indonesia launched its first example of an eco-mosque – the Azzikra Mosque in Sentul Bogor –in 2016. The Azzikra Mosque is usually filled with worshipers remembering God every month, with a congregation that can reach 22,000 worshipers. They stay for at least a day and spend the night there. Mosque facilities with toilets, showers, and places for ablution are also provided. This mosque requires at least 20,000-40,000 liters of water for ablution alone during a monthly gathering. Given that saving for ablution is necessary, Azzikra collects rainwater in storage barrels and provides a filter for every ablution water faucet, as well as mechanically recycling ablution water.[17]

Congregants of the Istiqlal Mosque in Jakarta can enjoy ready-to-drink water technology installed by the Agency for the Assessment and Application of Technology (BPPT). One unit of ready-to-drink water equipment with a capacity of 5,000 liters of water was inaugurated to coincide with the commemoration of the 75th Indonesian Independence Day. Following the installation of the second unit – which is still in assembly – starting in August 2020, the Istiqlal Mosque – which is ready to serve as a state mosque – introduced the concept of a green mosque and an e-mosque.[18] The largest mosque in ASEAN started the installation of the Arsinum Lite 4.0 innovation from BPPT. The capacity of 5,000 liters can be used for up to 10,000 worshipers based on the estimate that each congregation consumes about 500 milliliters of drinking water.[19]

In addition, the Istiqlal Mosque seeks to be an example of controlling pollution and processing water needs. With the assistance of the Ministry of Environment and Forestry (KLHK), among others,[20] it can:

1. recycle ablution water;
2. function as a wastewater treatment plant;
3. carry out continuous and online monitoring of Ciliwung river water quality; and
4. adopt best practices in the management of existing water sources.

The culture of this state mosque is becoming a model of a typical urban mosque where land is very limited, and efficiency in the use of water, energy, and waste management is required.

[16] See http://www.ecomasjid.id/ [Accessed 12.12.2021].

[17] https://www.dw.com/id/masjid-ekologis-memberi-teladan-manajemen-air-cerdas/av-52182599 [Accessed 12.12.2021].

[18] E-Istiqlal is a digital wallet service that helps Istiqlal mosque congregations to make financial transactions digitally.

[19] https://www.jawapos.com/nasional/18/08/2020/dilengkapi-teknologi-arsinum-istiqlal-siap-jadi-green-mosque/ [Accessed 12.12.2021].

[20] http://ecomasjid.id/post/pengelolaan-lingkungan-hidup-di-masjid-istiqlal [Accessed 12.12.2021].

At the end of 2020, the Istiqlal Mosque installed 504 solar module units with a capacity of 325 KW peak each. Such arrays could save 7-10% of electricity consumption in the country's mosques. In addition, the Istiqlal Mosque participates in several environmental movement programs, such as green building certification through the Green Building Council Indonesia (GBCI) and the green mosque program (eco-masjid MUI).[21]

4. Environmental Fatwas and Eco-Masajid

Since the establishment of the MUI's Environmental and Natural Resources Institute (LPSLH) in 2010, the Indonesian Ulema Council has issued six fatwas answering public questions about the environment. These fatwas were made based on the results of the discussions among scholars, as well as questions raised by the community about their needs (Mangunjaya & Praharawati 2019). The list of these fatwas can be seen in Table 1.

No	Fatwa	About
1	Fatwa 2/2010 The Recycle Water for Ablutions	Regarding the use of recycled water using permitted technology.
2	Fatwa 22/2011 Environmentally Friendly Mining	Mining allowed as long as it is for the benefit of the public, non-destructive and environmentally friendly.
3	Fatwa 4/2014 The Protection of Wildlife for the Balance of The Ecosystem	The prohibition (haram) of illegal wildlife trade and protection of all endangered wildlife is a religious obligation.
4	Fatwa 47/2014 The Fatwa on Waste Management	Every Muslim is obliged to maintain cleanliness and use useful items for benefit and to avoid waste. Reusing things that are useful is obligatory, and it is forbidden to dispose of waste that can be re-used.
5	Fatwa No 1/MUNAS-IX/MUI/2015 The Utilization of Zakat Infaq Shadaqah and Wakf (ZISWAF) for the Construction of Community Water & Sanitation	Sanitation and clean water facilities are a government obligation, and the utilization of zakat, infaq and shadaqah funds is permissible for these provisions and public benefit.
6	Fatwa 30/2016 The Law of Burning and Land and Forest	Burning forests and land – which can cause pollution, disasters, health problems, and negative impacts – is forbidden (haram).

Table 1: Six environmental fatwas by MUI

In accordance with the mission of the establishment of LPLH-SDA, MUI concentrates on disseminating these fatwas to the public, providing sermon guides in collaboration with relevant institutions with the government, NGOs, academics, and environmental activists. This effort is carried out together to support and empower the imams and mosques in the target areas as a form of awareness-raising about caring for the environment. Cooperation for the dissemination of Fatwa No. 4/2014 on the Conservation of Endangered Animals for Ecosystem Balance is carried out by MUI, Universitas Nasional, local NGOs, and Riau BBKSDA. Implementation is also carried out together with the assistance of UNDP and WWF Indonesia in urban mosques in Indonesia, such as Jakarta, Medan, and Pekanbaru. Urban communities

[21] Lihat GBCI website https://www.gbcindonesia.org/ [Accessed 12.12.2021].

are consumers of both legal and illegal animal trades, particularly songbirds for pleasure and song competitions.

As a follow-up to the empowerment of mosques with their managers in the regions, the Peat Restoration Agency (BRG) involves mosques and their administrators in the field, in the context of socializing non-burning land-processing techniques (Pembukaan Lahan Tanpa Membakar - Clearing Land without Burning or PLTB). The PLTB technique is an effort to demonstrate that land clearing can be productive and safe without burning, including by utilizing organic waste as compost. For this reason, the mosque area – where residents can visit the mosque almost every day – can be a demonstration area for worshipers around it. This activity reflects the government's effort to support the restoration of peatlands based on mosques in the Peat Care Village (DPG).

According to BRG, during 2020, this institution disseminated activities to protect peat and the use of natural materials for agriculture on peatlands to 40 mosques in Jambi, Riau, and South Sumatra.[22]

BRG's consistency in collaborating with a religious approach to environmental restoration continues by integrating training and modules that will be carried out by official training institutions conducted by the government through the Ministry of Environment and Forestry. In this way, integrating the use and empowerment of religious leaders and religious instructors in environmental activities can be sustainable under related ministries.

Indonesia is listed as the second largest producer of marine debris in the world, after China. In 2020, Indonesia contributed around 521,540 tons of waste to the ocean.[23] Reducing and processing waste has become a concern for the community and mosques have begun to be involved. In April 2021, the Indonesian government together with MUI launched the mosque-based Indonesian Waste Charity Movement (GRADASI) program.[24] This program is being launched nationally, supported by the Ministry of Environment and Forestry (KLHK), MUI and Islamic organizations, as well as the Indonesian Mosque Council (DMI), and it is planned that community and mosque involvement will become increasingly intensive with this activity.

5. Mosques and Natural Areas

The involvement of the eco-masjid program in Indonesia is not only related to improving the physical features of mosques but also the quality and capacity of mosque administrators, including community leaders who become mosque imams.

Since 2014, PLH-SDA and MUI – together with the Universitas Nasional (UNAS) Center for Islamic Studies – have facilitated training activities for conservationists as the implementation of Fatwa No. 4/2014 concerning the Protection of Endangered Animals to Maintain the Balance of Ecosystem, in addition to training for the implementation of Fatwa No. 30/2016 on Peatland and the Implementation of Mosque-Based Peatland Conservation. The clerics being trained total 381 people in Riau, Jambi and South Sumatra, West Kalimantan, South Kalimantan, and Central Kalimantan. Meanwhile, conservation preacher registrations totalled more than 400 people spread across Riau, Lampung, and Banten (Ujung Kulon National Park). Imams in mosques are community leaders who need attention and capacity-building in understanding the environment. To follow up on this, PLH-SDA has established branches in

[22] https://www.antaranews.com/berita/1878616/brg-gandeng-masjid-sebagai-penjaga-ekosistem-gambut [Accessed 12.12.2021].

[23] Cordova, M. R., & Wahyudi, A. (2016). Microplastic in the deep-sea sediment of Southwestern Sumatran Waters. Marine Research in Indonesia, 41(1), 27-35.

[24] https://www.antaranews.com/berita/2130878/klhk-masjid-bisa-berkontribusi-dalam-isu-pengelolaan-sampah [Accessed 12.12.2021].

the province to strengthen understanding and resources for implementing dawah related to the environment. Moreover, MUI is a place for scholars and Islamic activists who can unite to mobilize knowledge and change behavior to benefit the environment. Starting in 2018, the Indonesian Restoration Peatland Agency (BRG) trained hundreds of imams, mostly taken from the provincial level. Together with the Universitas Nasional and the Indonesian Ulema Council (MUI), they trained another 163 imams from several different backgrounds, such as teachers, community leaders, and traditional leaders (Mangunjaya, 2018). In their training activities, they were provided with Islamic teachings on nature and an Islamic moral ruling (fatwa), especially MUI Fatwa No. 30/2016 about the Law on the Burning of Forests and Land and their Management. Through this program, the people who live around mosques in areas adjacent to forest and peatland areas receive enlightenment that they can attend a well-known mosque as a help center for those in need.

6. The Pilot Green Masjid Azzikra, Bogor

Azzikra Mosque is located in Bogor, West Java, and it has a prayer capacity of 30,000 worshipers. Every month, a zikr[25] gathering is held that accommodates thousands of worshipers from various regions. Due to its intensive use, this mosque has become a hub for implementing an environmentally-friendly mosque concept.

This mosque has several ablution-wastewater treatment facilities in the form of ablution-wastewater reservoirs, which are then recycled using water filters, bacterial cleaners and re-collections of re-use water. Recycling is only undertaken during summer and when there is a water shortage. The manager also reserves thousands of liters of rainwater for ablution, with a capacity of 30,000 worshipers. There are also ten back-up reservoirs to hold rainwater with a capacity of 41,000 liters.[26]

The Azzikra Mosque is a model especially in terms of activities for saving ablution water and the design of mosques in tropical areas. In 2016, this mosque was proclaimed as an eco-mosque example where the national Islamic leaders' representatives such as Din Syamsuddin of Muhammadiyah, Azzikra chairman Arifin Ilham, Masdar Mas'udi from NU, and Muhyidin Junaidi of MUI agreed and gave presentations at the inauguration of the Azzikra Green Mosque. This is part of implementing the Islamic Declaration on Global Climate Change after it was announced in Istanbul in 2015. In addition, this mosque was visited by people from all over Indonesia to hold zikr and prayer and Islamic Qur'an recitation activities, especially during the holy month of Ramadhan.

The Azzikra Mosque is unified with its real estate or housing area, qur'anic school (madrasa), and markets. Therefore, the design and facilities also adjust to the principles of environmentally friendly mosque services by minimizing the use of resources and energy as a platform for ummah education. The congregation of the Azzikra Mosque also joined in the Green Hajj initiative publicized at this mosque, which was actively involved in the process of launching Green Hajj apps[27] in 2016, at COP 18 in Marrakech, Morocco. In addition, the mosque has set up a pilot to save water and biogas and create a permaculture garden.

[25] *Zikr* means remembrance of God.

[26] Menengok Masjid Az-Zikra, masjid ramah lingkungan di Bogor (Seeing Azzikra mosque, eco mosque in Bogor) https://www.aa.com.tr/id/nasional/menengok-masjid-az-zikra-masjid-ramah-lingkungan-di-bogor/1643433 [Accessed 12.12.2021].

[27] Green Hajj apps. https://play.google.com/store/apps/details?id=com.sygmacorp.greenhajj&hl=en&gl=US [Accessed 12.12.2021].

7. Mosques and Poor Communities

In its original function, the mosque is the center of Muslim activities, where knowledge is disseminated (*ta'lim* assembly) about religious teachings and recitation of the Koran. Adjacent to the mosque, there are usually supporting institutions such as educational institutions, hospitals, and social activities.

During the Covid-19 pandemic, the mosque became a multifunctional help center, providing protection to the community. For example, the Raudhatul Jannah Mosque in Tanjung Priok, North Jakarta, provided rice assistance through ATMs taken from mosque communities' shadaqah or donations.[28] In some areas, special ATMs for rice have emerged that provide assistance to the poor and free them from difficulties due to the recession during the pandemic, such as the Al Mukarramah mosque in Bekasi, as well as the Sabilal Muhtadin mosque in Banjarmasin. Moreover, many mosques have been providing rice ATMs from 2020 to date. [29]

As already mentioned in the introduction, mosques can be an important source of hope for sustainability because sharing activities and sincerity in good deeds are strongly supported. Mosques require effective and competent management and can empower the community by becoming a public space and a forum of deliberation for various activities in the communities or congregations.

Opinions about the function of the mosque include:

1) a place of prayer;
2) zikr (remembrance of God) and other sunnah worship;
3) education;
4) a place for deliberation;
5) arbitration, courts;
6) receiving messengers and dissemination of messages;
7) social (*ahl suffah*);
8) marriage;
9) spread/defense of religion;
10) supporting converts to Islam, etc.

Some examples of eco-mosques are outlined in Table 2 below.

No	Masjid name	Activities
1	Masjid Azzikra, Bogor	Savings on the use of ablution water, biogas programs, recycling ablution water, recycling garbage, etc.
2	Central Muhammadiyah Mosque, Jakarta	Solar energy use.
3	National Grand Mosque Istiqlal, Jakarta	Using solar panels, comprising 580 solar panels, each with a capacity of 325 WP, can meet 10% of overall electricity use, including energy-efficient lightbulbs. Currently registering with the Indonesian green building council (GBCI) and participating in the eco-masjid program.

Table 2: Examples of eco-mosques

[28] ATM Bersa di Masjid utuk Kaum Dhuafa https://megapolitan.kompas.com/read/2019/02/28/07430781/atm-beras-di-masjid-untuk-kaum-duafa?page=all [Accessed 12.12.2021].

[29] Dhuafa Bekasi dapat Kartu ATM Beras Gratis. 2020. https://ramadan.tempo.co/read/1454910/50-dhuafa-bekasi-dapat-kartu-atm-gratis-tarik-sedekah-masjid-besar-al-mukaromah [Accessed 12.12.2021].

8. Conclusion

In Islamic civilization, the mosque is an important base that becomes a place for deliberation and initiating da'wah (Islamic call) and a center of activities. This is where all diaspora of good morals (moral) begins. Moral improvement activities start with changing spirituality, human hearts, and minds. The moral blessing that comes from the mosque is naturally inspired by the teachings of Islam, which are mercy for all creatures (*rahmatan lil 'alamin)*. Therefore, the improvement of the environment, moral improvement, best practices and examples can be started from the mosque. However, the empowerment should not stop with mosques as an institution but rather should be in line with the capacity of knowledge and practice, as behavior change will take time and habituation. Based on this practice, sermons and efforts to improve the environment can be achieved through mosques. Indonesia has started these activities, and we hope that the Indonesian[30] green mosque program can be an example for the rest of the Islamic world.

[30] Up to 2020, the BRG still engages with the eco-mosque program and is implemented in some local mosques. See: https://brgm.go.id/brg-kenalkan-eco-masjid-di-desa-desa-gambut/?lang=id [Accessed 21.02.22].

References

Bentley, Chris (2017). *Muslim environmentalists give their religion — and their mosques — a fresh coat of green.* January 04, 2017 https://www.pri.org/stories/2016-12-30/muslim-environmentalists-give-their-religion-and-their-mosques-fresh-coat-green [Accessed 12.12.2021].

Ceurstemont, Sandrine (2017). *The mosque that powers a village*. https://www.bbc.com/future/article/20170927-can-a-place-of-worship-power-a-village , [Accessed 10.11.2020].

ISESCO (2019*). Draft Strategy for the Activation of the Cultural and Religious Roles towards the Protection of the Environment and the Achievement of Sustainable Development in the Islamic World* . 13-14 Sha'ban 1440 a.h/19-20 April 2019 ISESCO Headquarters, Rabat, Kingdom of Marocco.

Mangunjaya, Fachruddin M. (2018). *The Implementation of Preacher (Da'i) Capacity Building on Peatland Restoration in South Kalimantan and Riau. Individual Consultant Report to UNDP &BRG* (unpublished).

Mittermaier, Amira (2021). *Non-compassionate care: a view from an Islamic charity organization.* In: Cont Islam 15, [139–152]. https://doi.org/10.1007/s11562-020-00457-9

Pickthall, Muhammad W. (1999). *The meaning of the glorious Qur'an: text and explanatory translation.* Amana Publications.

Spahic, Omer (2020). *The Form and Function of the Prophet's Mosque during the Time of the Prophet*. https://muslimheritage.com/function-of-the-prophet-mosque/ [Accessed 15.02.22]

Tohid, Zainon & Abdul Rahim, Asiah (2016). Sustainable Masjid Architecture and Public Buildings. In: Environment-Behaviour Proceedings Journal. 1(1), [88-93].

Videos

YouTube. 2014. Dubai's environmentally-friendly mosque - BBC News. (https://www.youtube.com/watch?v=5yS-m-L4884) [Accessed 12.12.2021] .

YouTube. 2012. Sustainable Mosque https://www.youtube.com/watch?vr=ReS0cS4XCzM Anonious. 2012 [Accessed 12.12.2021]

YouTube. 2020. Konsep Eco Masjid Gresik, https://www.youtube.com/watch?v=obXNlcwuQjg [Accessed 12.12.2021]

Websites

BBC.com. 2019. 'Eco mosque' opens for prayers in Cambridge https://www.bbc.com/news/uk-england-cambridgeshire-48044025 Diakses, [Accessed 12.06.2021].

Dw.com. 2020. Masjid Ekologis Memberi Teladan Manajemen Air Cerdas https://www.dw.com/id/masjid-ekologis-memberi-teladan-manajemen-air-cerdas/av-52182599 [Accessed 29.05.2021].

Jawapos.com. Dilengkapi Teknologi Arsinum, Is tiqlal Siap Jadi Green Mosque. https://www.jawapos.com/nasional/18/08/2020/dilengkapi-teknologi-arsinum-istiqlal-siap-jadi-green-mosque/ [Accessed 12.12.2021].

Eco-masjid website. 2020. http://www.ecomasjid.id/ [Accessed 12.12.2021].

Greenprophet.com. 2012. Eco-Mosque Checklist. https://www.greenprophet.com/2012/06/the-eco-mosque-checklist-7/ [Accessed 12.12.2021].

PPI.unas.ac.id The GreenHajj http://ppi.unas.ac.id/wp-content/uploads/2015/09/Factsheet-GreenHajj-FINAL.pdf [Accessed 12.12.2021]