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## Green Mosque: A Living Nexus

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### Abstract

Traditionally, mosques, especially in the Middle East perform more functions than just being a place of worship. A mosque is also a place to generate economy, education and social cohesion of the community. In this paper, it is aimed to explore the potential of a green mosque in a small newly developed neighbourhood which is Masjid as-Siddiq in the State of Perak as a case study to become a living nexus by focusing on three main aspects of sustainability which are environmental, social and economic. Lastly, new recommendations will be suggested for Masjid as-Siddiq to become a greener mosque.

*Keywords:* Green mosque; community centre; neighbourhood; sustainability

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### 1.0 Introduction

A mosque has always been known as a centre of a Muslim community. Traditionally, mosques, especially in the Middle East perform more functions than just being a place of worship. A mosque is not only for the Muslims to perform prayer in the congregation but also as a place to generate economy, education and social cohesion of the community. Hence, a mosque can be considered as a living nexus; the mosque itself is living and bringing life to the community it serves. Therefore, both mosque and its surroundings are living symbiotically together. A green mosque is defined as a multifunctional community centre that is strategically located, accessible, environmental-friendly, support local business, increase social interaction and exploration of knowledge. In this paper, it is aimed to explore the potential of a green mosque in a small newly developed neighbourhood which is Masjid as-Siddiq in the State of Perak as a case study to become a living nexus.

The focus of this paper encompasses three main aspects of sustainability which are environmental (site location, accessibility, green space, resource conservation), social (activities, communal space, and collaborative participation) and economic (local business and cost saving). Firstly, the functions of a mosque as a living nexus was analyzed; from the Prophet's time compared with the current situations. Secondly, qualitative data on spatial characteristics of a green mosque were studied based on various literature reviews. Thirdly, descriptive analysis was done to analyze the green aspects potentials of Masjid as-Siddiq. Primary data was obtained through site observations and photographs of the site. Secondary data of site plan, reports, and newspaper articles were also analyzed to achieve the aim of this research. Lastly, new recommendations will be suggested for Masjid as-Siddiq. As a conclusion, mosques have always been green historically and indeed, mosques in the modern days have many alternatives to be greener today and for the future.

#### 1.1 Mosque's Functions: From the Prophet's Time to the Modern Era

According to Omer, S. (2016), the Prophet's Mosque has seven functions where it is a religious centre, a place for learning, the Prophet's government centre, a place for welfare and charity, a detention and rehabilitation centre, a place to provide medical care and a place to

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socialize leisurely. However, there is an additional function of a mosque which is as a centre of economic activities as mentioned by Oloyede, I.O (2014) and Muhammad Rasdi, M.T (1998). Between these three authors, Omer.S. (2016) focuses on the Prophet's Mosque. Therefore, it can be seen that the function of a mosque as a detention and rehabilitation centre especially for war prisoners during the Prophet's time was not mentioned by Oloyede, I.O (2014) and Muhammad Rasdi, M.T (1998) where they focus on more contemporary issues. In contrast, Omer.S (2016) did not mention the function of a mosque as a centre of economic activities as part of mosque's main function based on hadiths where trade is prohibited within the Prophet's Mosque while not prohibited outside the mosque. It is recorded that during that time, trading activities on a very limited scale outside the Mosque and markets were later added to the morphology of Islamic cities where trading activities tolerable visual, sound, aromatic and crowd-oriented consequences for everyday city-life takes place.

Oloyede, I.O (2014) mentions that there are eight functions of a mosque which are as the first worship centre, as a training centre for good virtues, as a learning centre for spreading knowledge, as a court for judicial activities, as a place for accommodation, as a centre for healing, as a centre for socializing and as an economic centre. Most of the functions intersect with the functions stated by Omer, S. (2016). Muhammad Rasdi, M.T (1998) however discusses the mosque's functions in two main perspectives; mosque as a house of God and mosque as a community development centre. The first perspective focuses more on the religious aspects and sanctity of a mosque while the second perspective is more holistic covering all aspects of a Muslim's life. Muhammad Rasdi, M.T (1998) shows that both perspectives have their proponents. The function of a mosque as a place of worship is undeniable. From the time of the Prophet (PBUH), the Prophet's Mosque is a place for different kinds of religious activities such as reciting and studying the Qur'an, dhikr(remembering and glorifying God), i'tikaf (retreat in mosques during the last third of the holy month of Ramadan for worship), meditation including the most basic prayers (solah) (Omar, S., 2016). This perspective is also supported by a study conducted by Mohd Taib, M.Z and Rasdi, M.T (2009) to study the perception of users towards sacredness or sanctity space in a mosque, 96% of the respondents agree with the propositions that mosque is ritual prayer and meditation centre for Muslim. Based on Muhammad Rasdi, M.T (1998), the perspective of a mosque should function as a community development centre was supported by the imam of the Malaysian National Mosque at that time who suggested that mosque should include recreational facilities for adults and children, provides travellers accommodation, rooms for rental, clinic, office for public welfare and shops to cater for modern lifestyle. According to Drs. Sidi Gazalba mentioned by Mohd Taib, M.Z, and Rasdi, M.T (2009), a mosque is a place for worship and a centre of Muslim culture where worship is part of Muslim culture that connects mosque with politics, social interaction, knowledge, art, economy, philosophy and ritual worship.

Table 1. Comparison of Mosque's Functions

Functions	Omar, S. (2016)	Oloyede, I.O (2014)	Muhammad Rasdi, M.T (1998)
A centre for worship (religious activities)	/	/	/
A learning centre	/	/	/
As administration and judicial center	/	/	/
As a welfare and charity centre (including as a place of accommodation)	/	/	/
As a detention and rehabilitation centre	/	X	X
As a place for medical treatment and healing centre	/	/	/
As a centre of socialization (leisure activities)	/	/	/
As a centre of economic activities	X	/	/

(Source: Author, 2018)

## 1.2 A Mosque Has Always Been Green

By embracing the true concept of Islam, a mosque has always been green. The concept of green or sustainability is based on the idea of meeting the needs of the present without compromising the ability of future generation to meet their own needs regarding environmental, social and economic. This statement teaches us the concept of responsibility of every human being to sustain and administer not just for ourselves but everyone and not just for now but also for the future. This concept is parallel with Islamic teaching. According to Mamat, M.N et al., (2012) human being is elected as caliph by Allah to administer the whole ecological system and always correlated to other environmental entities. Mamat, M.N et al., (2012) added that therefore, human interaction is divided into three categories in Islam; interaction with Allah (the Creator), interaction with human beings (an environmental entity of the same species) and interaction with the environment (entities other than human beings).

### 1.2.1 Environmental

A green mosque is a mosque that emphasizes the environmental stewardship. A mosque that considers the local microclimate in the design of the building, using local materials, respecting the surrounding environment, reducing negative impacts to the quality of life and environment and providing a comfortable environment for users can be considered as having green characteristics in the spirit of stewardship responsibility given by Allah. Mamat, M.N et al., (2012) mentions that sustainable environmental management and

conservation cover any theories and ideologies applied in environmental science, as long as it is based on the concept of stewardship (Khilafah) that carries the responsibilities (Amanah) assigned by Allah in implementing the Syariah application. Therefore, a mosque that functions as a place for Syariah application and exhibits environmental stewardship has always been considered as a green mosque. Traditionally, mosques around the world were built using the folk architecture that considers the local microclimate, uses local materials, respects the surrounding environment, reduces negative impacts to the quality of life and environment and provides a comfortable environment for users. For example, the Prophet's Mosque was built using the same materials used in the construction of local houses where the mosque also considers the current principles of economy in connection with design, construction and maintenance, which was an extremely important factor given the economic condition of the first Muslims at that time (Omer, S., 2016). Traditionally, mosques in Malaysia were also built using the local materials such as timber and considers the hot and humid climate through the implementation of cross ventilation of large, tall windows and air vents abundantly available at the mosque structure. The use of local materials, suitability of the building to its surroundings, the flexibility to adapt and the rich variety of spaces extending from interior spaces to open spaces through a variety of semi-open spaces are important in green architecture (Oktay, D., 2012). Based on Farrag, E. (2017), traditional mosques especially in Asia and Africa frequently used local materials and considers the environment. Shah, M.A et.al (2014) also compiled in his research that most traditional mosques in Malaysia uses local materials available around the community.

Also, environmental aspect of green mosque also means more emphasis must be placed on eco-centrism to fit in with Islamic teachings where green space should be developed; renewable energy should be utilized while green transportation and green architecture can be opted (Jamalinezhada, M. et al., 2012). Besides that, mixed activities of housing types, educational facilities, retail, entertainment, cultural institutions, playgrounds, etc. within a walkable distance to a set of residential units promote community livability, transportation efficiency, and walkability (Oktay, D. and Saeidi, S., 2012). Therefore, the location of a mosque in a mixed-use neighbourhood is also an important factor for a green mosque to ensure a lively and inviting mosque that will benefit the community. The strategic location of a mosque can be seen in the Islamic city of Isfahan where the central mosque (Masjid Jame) with an attached Madrassa providing religious and scientific teaching is surrounded by bazaar (Assari, A. et al., 2012).

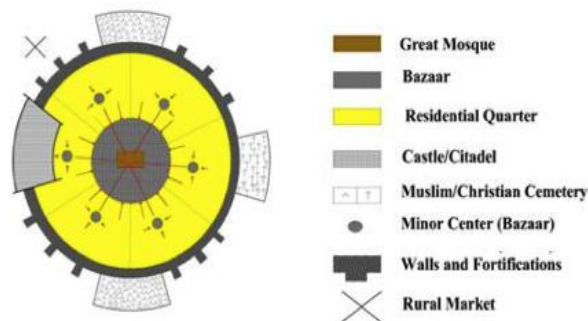


Fig. 1: Iranian traditional cities.  
(Source: Ehlers, E. and Floor, W. in Assari, A. et al., 2012)

### 1.2.2 Social

To ensure a socially sustainable mosque, a mosque should provide diverse activities, contains communal space and communal feeling and fosters collaborative participation. Concerning providing diverse activities and containing communal space, a mosque should be multi-functional and has an open feeling. Besides the abundance of open space inside the mosque structure, an open functional green space is a great addition to cater to this function instead of a traditional green space that only functions aesthetically. An open functional green space can either be a playground, a game court or an edible garden to provide diverse activities at the mosque. Then, the mosque will become more socially active. Historically, both the inside and outside of the Mosque of the Prophet (PBUH) was a place for sport and recreation activities (Omer, S., 2016). A'ishah, the Prophet's wife, narrated that once during an 'Id festival, she saw the Prophet (PBUH) at the door of their house watching some Ethiopians who were playing in the Mosque proper displaying their skill with spears, after which she joined him (al-Bukhari, 1981, Hadith No. 445). With the addition of green functional open space, it can serve as a focal point for some informal social interaction to strengthen social ties and social cohesion and creates the feelings of safety (Khotdee, M. et al., 2012). Again in the case of ancient Islamic city of Isfahan, the central area where the mosque and bazaar were located, was also the gathering of other public activities such as social services, administration, trade; arts and crafts and baths. It was, therefore, a place for shopping, walking, social dialogue, and cultural interaction of people (Assari, A. et al., 2012). Hence, the diverse activities of a mosque to ensure social sustainability can also be achieved through the location of the mosque in the mixed-use development. Diverse, dense and pedestrian-friendly mixed use conditions provide inhabitants with the chance for making effective neighbourhood transactions and having pleasant social life, which altogether enhances the quality of community life (Oktay, D. and Saeidi, S., 2012). Lastly, a green mosque should foster collaborative participation to support the physical, social and economic development of the mosque in specific and the community in general. Collaborations are proof of support in helping everyone in the community. The benefits of collaborative participation can create social support which can reduce stress and disease while contributing to positive adjustment in children and adults (Khotdee, M. et al., 2012)

### 1.2.3 Economic

A green mosque should be able to economic support business and save cost. Oloyede, I.O (2014) stated that a mosque functions through the collection of Zakat and Sadaqah while serves as a centre for sharing wills (Wasiyah) and endowments (Waqf). Also, Oloyede, I.O (2014) added that there are mosques which have shops within their premises or even attached to the mosque but commercial transaction should not be allowed inside the mosque, as this is against the spirit of Islam. Omer, S. (2016) said that the Prophet (PBUH) explicitly prohibited conducting trade within his Mosque, and other mosques (Abu Dawud, 1997, Hadith No. 1074), but he did not prohibit it outside the Mosque (al-Bukhari, 1981, Hadith No. 782). Iranian traditional city located outside the main mosque provided the economic activity in the town. Goods sold were usually spatially distributed corresponding to their nature. (Assari, A. et al., 2012).

While, Abdul Razak, A. et al. (2014), suggested that mosque has a potential to help to solve the economic crisis. Mosque management costs can be reduced by supporting and venturing into local business and other sustainable methods of cost savings such as energy conservation and local food production. As the centre for economic development, mosques had ventured into certain social entrepreneurship and economic activities mainly to create a new source of income for their survival as well as to encourage entrepreneurial activities among small entrepreneurs within their vicinity (Ahmad Rafli et al., 2015). However, based on current economic development and constraints, mosques' management committee are encouraged to creatively involve in entrepreneurship and economic activities as a new fund-raising method. It is not to deny the availability of public funding, but mosques economic activities will foster additional capabilities of the mosque in pursuing various socio-religious activities within their respective area. For example, most of the mosques major economic activities were the rental activities on their assets such as multi-purpose hall, hearse van, shop lots or bazaar and space for telco tower (Abdul Razak, A. et al., 2014).

### 1.2.4 Green Mosque: Defined

As a conclusion, the statement, "a mosque has always been green" is derived because a mosque's functions and design should be parallel with the spirit behind Islamic teaching and the environmentally, socially and economically sustainable. However, if a mosque does not follow this principle, it shows that the mosque does not fully embrace the true spirit of a 'mosque.' Therefore, although a mosque has always been green, if today's mosque has to be redefined as a green mosque, it can be defined as a muslim religious building which is environmentally friendly (uses local materials, consider local climate), socially and economically sustainable for muslims to perform duty as caliphs of Allah. Green mosque can be defined in two ways, the first is to focus on the building aspect (shown in Figure 1) and the second is to focus on the buildings aspect and also its surroundings (shown in Figure 2). Many researchers have been studying the green mosque by looking at the building or architecture. Therefore, this study will focus more on the mosque surroundings with less concentration on the building aspect by considering limitations of time.

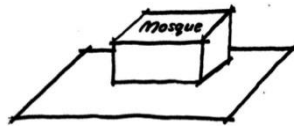


Fig. 2: Mosque building as a green mosque focuses on its architectural features.  
(Source: Author, 2018)

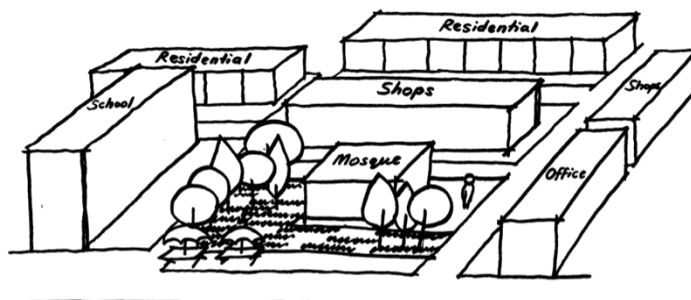


Fig. 3: Mosque building and its surroundings as a green mosque focuses on the architectural features and the mosque's surrounding environment.  
(Source: Author, 2018)

## 1.3 Green Aspects of As-Siddiq Mosque: Analysis & Discussions

### 1.3.1 Environmental

The selection of a site for a mosque is crucial for the most part as it affects the ability of a mosque to become a living nexus. As-Siddiq Mosque is strategically located in the heart of a small community surrounded by mixed land use of residential, commercial and institutional. There is a row of shops next to the mosque where the residents get their everyday necessities from. Besides, the mosque is situated just 50 meters from a primary school which is Sekolah Kebangsaan Iskandar Perdana. There are also an Islamic primary school and a community hall neighbouring the mosque. Besides that, a commercial centre is located in 200 meters from the mosque, and a public university, which is Universiti Teknologi MARA is located in 800 meters from the mosque. Residential area housing about 5000 people is located in 1 kilometres radius around the mosque making it a go-to mosque for Friday prayer. This mix of land use

surrounding the mosque captures the essence of a green mosque which prioritizes on the site selection. A mosque should be strategically located in a mixed-use development. This will ensure the liveliness of the mosque as the heart of the community.

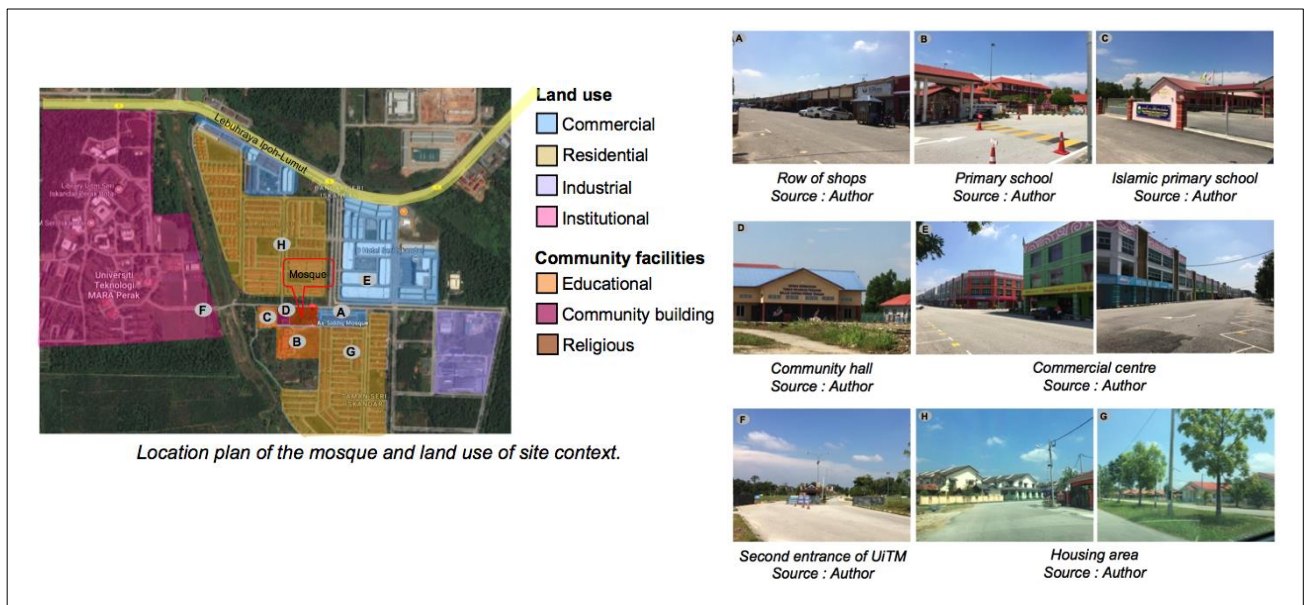


Fig. 4: Site context of As-Siddiq Mosque.  
(Source: Author, 2018)

The site selection directly influences the accessibility of the mosque. Regarding accessibility, besides the strategic location mentioned before, the mosque is also surrounded by local roads at all four sides. This ensures high visibility from the road towards the mosque which increases the accessibility. Therefore, visitors feel welcomed to the mosque because they can see the mosque from all directions. In the case of As-Siddiq Mosque, finding the entrance is not a problem. There are two main entrances accessible for vehicles and pedestrians and another entrance accessible only for pedestrians. The accessibility is further increased by the proximity between the mosque entrance to the main road. This proximity allows the main entrance to be seen clearly by the road users. Due to the multiple speed bumps, the smaller width of the main road and medium volume of traffic, calmer traffic is created. Hence, the community can easily visit the mosque by any mode of transportation, either by car, motorcycles, bicycles and even by walking. The ease of walking also creates a better social environment as mentioned by Mansor, M. et al. (2012), streets and comfortable pedestrian spaces in neighbourhoods allow the community to meet and chat with one another. Lastly, the accessibility is increased by the transparent view towards the mosque creating an open feeling. The openness of As-Siddiq Mosque is created by the transparent anti-climb fencing surrounding the mosque. It creates transparency and unobstructed view towards the mosque inner compound compared to opaque concrete walls which cause the feeling of seclusion, privacy, and mystery. As a result, a mosque which is surrounded by concrete walls is seen as an exclusive private entity instead of a public communal space where all are invited. At As-Siddiq Mosque, people are more drawn towards the mosque because of the high visibility that creates the high accessibility.

The next environmental factor that adds to the mosque's function as a green nexus is the amount of functional green space available. Besides having a tree-lined open space to be used space for qurban (slaughtering animals as a sacrifice) during the celebration of Aidiladha, As-Siddiq Mosque has a small community edible garden. The existence of an edible garden takes the definition of a green mosque to its core. An edible garden located in the front area of the mosque, to the direction of qiblah shows that green space is not just an area with merely just turf and trees. Unlike most mosques which may have trees and other plants as part of aesthetically pleasing landscape design, As-Siddiq Mosque has a functional edible garden with the size of a 180-meter square where the community can come to plant, maintain and harvest local edible plants such as pandan, lemongrass, chilli, and other local herbs. In fact, there are 47 species of plants available at the edible garden. Besides, the mosque community can harvest the plants from the garden to be used in the preparation of food for the congregation, especially during the fasting month of Ramadhan. Therefore, a truly functional green space is an added value for a mosque to become a green mosque. Edible landscapes and the vegetable patch could provide solutions for increasing food supply, flooding, and landslide as observed in the Ottoman settlements which reveal an ideal integration with the natural environment (Oktay, D., 2012).

Furthermore, a green mosque also depends on resource conservation as part of the environmental factor. As-Siddiq Mosque fits these criteria where the mosque practices water and energy conservation through the community edible garden. Water conservation is done through the channelling of rainwater from the roof gutter into a water tank at the garden. Then, the collected rainwater is used to water the plants in the garden through a watering system throughout the garden to ensure healthy plant growth. Also, another resource conservation initiative includes energy conservation where the edible garden at As-Siddiq mosque is equipped with two solar powered lighting. Both of this rainwater and solar energy harvesting take advantage of the local microclimate where rain and sunshine are available all year round. This is parallel to sustainability through energy and water conservation, recycling, green consumption that

improves quality of life without damaging the environment (Oktay, D., 2012). Furthermore, the mosque does not have to depend on the municipal centralized water and electrical supply that leads to the reduction of utility bills.



Fig. 5: Main entrance of As-Siddiq Mosque.  
(Source: Author, 2018)



Fig. 6: Second entrance of As-Siddiq Mosque.  
(Source: Author, 2018)



Fig. 7, 8 & 9: Local roads leading to the mosque entrance.  
(Source: Author, 2018)



Fig. 10: Edible garden as a functional green space at As-Siddiq Mosque.  
(Source: Author, 2018)

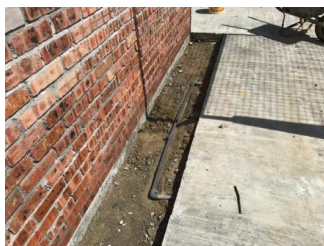


Fig. 11, 12 & 13: Rainwater is harvested from rain gutter to be used to water the plants at the edible garden.  
(Source: Author, 2018)



Fig. 14: Solar powered lighting is used to light the signage area at the edible garden.  
(Source: Author, 2018)

### 1.3.2 Social

Social sustainability plays an important role as another criterion of a green mosque. Religious activities conducted at the mosque also increase the social and spiritual sustainability of the community. Like most mosque, there are many religious activities conducted at As-Siddiq Mosque fulfilling mosque's function as a centre of worship and learning. Hajj preparation class is organized at this mosque. Besides, public lectures are organized almost every night at the mosque covering various aspects of a Muslim's life ranging from the topics of worships, inheritance, marriage, Prophet's history, Quranic studies and many more. Besides that, classes that teach fiqh, tauhid, tajwid, Prophet's hadith and Arabic language is being held every Sunday at the mosque, especially for women. This shows that community development at As-Siddiq Mosque is inclusive of women's intellectual development. Study circles over which the Prophet (PBUH) often presided, intellectual discourses, meditation, devotion to learning on an individual basis, etc., made the Mosque virtually never devoid of people. Neither women nor children were overlooked in the process. The Prophet (PBUH) allocated some time during every week for teaching women exclusively, since they had their subjects and issues which they wanted very much to bring up and gain knowledge of, but in a comfortable and conducive atmosphere away from men (Omar, S., 2016). The Mosque of the Prophet (PBUH) played the role of the seat of the first Islamic government. In the Mosque, the Prophet (PBUH) used to spend long hours on a daily basis discussing, deciding and executing many affairs related to administering the state. (Omar, S., 2016). Furthermore, the diverse activities around As-Siddiq Mosque were created by the addition of functional green space which is an edible garden. A functional green space creates extra activities like gardening, relaxing and playing for various ages. Community integration, sense of belonging and attachment were achieved through the social experience of green infrastructure (Mansor, M. et al., 2012).



Fig. 15: Public lectures are conducted every week.  
(Source: As-Siddiq Mosque Facebook Page, 2018)



Fig. 16: Al-Quran class for children is conducted during school holidays.  
(Source: As-Siddiq Mosque Facebook Page, 2018)



Fig. 17: 'Marhaban' and 'rebana' (Perak's traditional music instrument) classes were conducted at the mosque compound.  
(Source: As-Siddiq Mosque Facebook Page, 2018)



Fig. 18: Malay tradition of 'berkhatan' (circumcision) ceremony was held at the mosque.  
(Source: As-Siddiq Mosque Facebook Page, 2018)



Fig. 19: Community cook 'bubur lambuk' (rice porridge) during the fasting month of Ramadhan.  
(Source: As-Siddiq Mosque Facebook Page, 2018)

In the case of As-Siddiq Mosque, social interaction is also catalyzed by the communal space around the mosque. The communal space is induced by the feeling of openness through a transparent fencing and mixed land use mentioned earlier. 60% agree that the mosque area must be fenced to protect the sacredness of space. The proximity of schools, shops, and houses around the mosque together with the permeability created by not obstructing any view towards the mosque compound creates a very transparent and inviting feeling towards the mosque. All happenings that are taking place in the mosque can be seen from the roads. The open feeling is very typical in a Malay kampung setting where all outdoor space are considered as communal space. School children can be seen spending time at the edible garden or around the mosque compound after coming back from school or after finishing the prayer. According to a study done by Shamsuddin, S. et al. (2012) to measure the relationship between the outdoor physical environment and students' social behaviour in urban secondary school, students enjoy being at the park and the shelters at their school and do agree to have more green areas. The author also suggested that designers should take into consideration students' opinions on how to design a more conducive learning environment, not just the interior but the outdoor physical environment, as well. Therefore, it is not a surprise that the edible garden at As-Siddiq Mosque becomes one of the attractions for the neighbouring school children. The edible garden can become an outdoor learning area for the local school children. Next, the sight of men chatting after prayer, catching up with the fellow friends and neighbours, while boys ride their bicycles and chasing each other and people buying tea-time snacks from the stalls in front of the

mosque is a typical sight that shows that the mosque's space is a very lively communal space for the community. Either male or female, young or old, rich or poor, the mosque is open for everyone. As mentioned by Mohd Taib, M.Z and Rasdi, M.T (2009), a study of the perception of users towards sacredness or sanctity space in a mosque, 92% of the respondents agree with the propositions that mosque can operate other activity in a mosque. According to Oktay, D. (2012), places which support multiple public activities, recreation, and settings should be formed to encourage safe, and everyday, personal exchanges among people who might otherwise remain strangers.



Fig. 20, 21 & 22: Openness caused by the transparent anti-climb fencing demarcating the mosque compound produces inviting feeling. (Source: Author, 2018)



Fig. 23 & 24: Children from the nearby kindergarten visited the mosque and edible garden as part of academic trip. (Source: Author, 2018)



Fig. 25: Proximity and openness of the mosque to schools and halls create communal feeling. (Source: Author, 2018)

Collaborative participation is another factor contributing to the social sustainability of a green mosque. To optimize the function of a mosque as a centre for community integration and interaction, a mosque must include the community and other organizations to help the cause. Collaboration between different types of organizations and government agencies together with the local community will foster good relationships between the member of a community and also with the organizations. Besides strengthening the bond, this initiative will also lighten the burden of the mosque committee by sharing responsibilities among the community and the organization. Hence, sense of belonging and sense of responsibility is heightened and felt by all levels of society. Collaborations reduce selfish mentality and create selflessness and trust among the collaborators. In Islam, personal interests or minority entities should not precede social and general welfare (Mamat, M.N et al., 2012). Currently, As- Siddiq Mosque has already been organizing activities like 'qurban' every year involving the community as commonly found in other mosques in Malaysia. Uniquely, As-Siddiq Mosque conducted two activities in the making of the edible garden organized by the neighbouring Universiti Teknologi MARA which was funded by the University Community Transformation Center Fund, Ministry of Higher Education. This edible garden project involved collaborations with several agencies, schools, universities and the local community. In the construction of the edible garden, community events were organised with the collaboration of six collaborating partners including the local municipal council (Majlis Daerah Perak Tengah (MDPT)), Malaysian Agricultural Research and Development Institute (MARDI) Perak, Perak State Department of Forestry, Central Perak Agriculture Office, Cameron Highland MARDI Agrotechnology Park and Seri Iskandar Vocational College. Students and teachers from local primary and



secondary school also lent their hands in the construction of the edible garden. This collaborative participation portrays a good attempt of practical implementation of collaboration for social sustainability of a mosque. It is an initiative similar to the suggestion by Woodcraft, S. (2012) to pay closer attention to the practical and operational aspects of social sustainability to understand how the concept is translated by different actors.



Fig. 26: Edible plants were planted by the community with nearby school students, university students and six collaborating partners. (Source: Author, 2018)

### 1.3.3 Economic

A mosque as a living nexus indeed has to be able to help generate the economy. Mosques like As-Siddiq Mosque supports local businesses with its strategic location as mentioned earlier. The proximity with a row of shops and high accessibility helped by located at an active junction makes the mosque a centre of attraction. By being so strategic, it attracts food stalls to be set up nearby the mosque entrance every day. The location of the mosque allows business activities to benefit from it. Consequently, the mosque takes advantage of the strategic location too by constructing double-storey shops and accommodations to be rented out. These shops and accommodations create a new business opportunity for the community at a lower price and generate income for the development of the mosque itself. Better economic performance can be achieved by the inclusion of mosques in strategic orientation practices, in particular, the capabilities to gain other financial income as compared to the government grant, waqf and public donation where engagement on social entrepreneurship activities helps mosques institution to move forward. (Che Omar, A.R. et al., 2017).



Fig. 27 & 28: Strategic location of the mosque attracts food stalls to generate businesses in front of the mosque. (Source: Author, 2018)



Fig. 29 & 30: A two-storey shops were built to generate income. (Source: Author, 2018)

Another way of economic sustainability at As-Siddiq Mosque beside government's funding and public contributions through waqf and sadaqah, management and development cost of As-Siddiq Mosque are reduced by the water and energy conservations mentioned earlier through the edible garden. As mentioned by Oktay, D. (2012), Ottoman cities integrated edible gardens of fruit trees and large allotments that reduce heating and cooling bills and lower food costs. The mosque committee has also reduced the food cost through the plants provided by the edible garden. The best of all, the community can reduce their living cost by benefiting from the edible plants

from the edible garden. An edible garden is a solution for urban food insecurity where it provides cheap food supply through interaction with nature (Agustina, I. and Beilin, R., 2012).



Fig. 31, 32 & 33: Most of the edible plants planted at the edible garden are local species commonly used in Malay cooking. (Source: Author, 2018)

Lastly, since the beginning of the formation of the edible garden itself, construction and maintenance costs were reduced with the contributions from the local community, nine local businesses (including grocery shops, hardware stores, and clinics) and six collaborating partners. These collaborators contributed in the form of physical items, garden and plant materials, equipment, professional consultations and even physical manpower during the day of cleaning and planting with the community. Piping materials, planting medium, trees, shrubs, wheelbarrow, gardening tools, brooms, food, and drinks were given for free by all of the collaborators. These contributions and donations can help mosques to carry out responsibility to promote socioeconomic development and new knowledge of Islamic finance principles (Abdul Razak, A. et al., 2014).



Fig. 34: Gardening and cleaning tools were contributed by local businesses for the cleaning activity at the mosque and edible garden. (Source: Author, 2018)



Fig. 35: Forest trees contributed by Perak State Forestry Department were delivered to the mosque to be planted at the edible garden. (Source: Author, 2018)

## 2.0 Conclusions

In this study, it can be concluded that there is a bigger perspective to the definition of a green mosque. A green mosque is not only a green building. A green mosque is a lively mosque filled with green environment, strong sense of community and vibrant economy. In that account, it is recommended that more communal activities such as a playground or sports facilities could be integrated into the design of green mosque to attract users of different ages especially children and youth as long as they do not go against Islamic teaching. Exclusiveness should not be created for a community center, especially for a mosque. Mohd Taib, M.Z, and Rasdi, M.T (2009) mentioned that over sanctification of mosque reduces the essence of a mosque as a centre for community development in Islam and more attention should be paid to the programs and functions of the mosque. Three main aspects of sustainability which are environmental (site location, accessibility, green space, resource conservation), social (activities, communal space, and collaborative participation) and economic (local business and cost-saving) match the essence of a mosque as a living nexus. However, although most key criteria of sustainability were studied in this paper, criterion of green building has not been touched in this study as it covers a very detail and wide scope on its own. Furthermore, green building has always been studied by researchers. Nevertheless, the importance of a green building for a mosque is undeniable. Therefore, a further study on the sustainability of As-Siddiq Mosque building should be carried out in the future. Once the sustainability of the building been assessed, then, green building aspects should be integrated into the mosque design. Finally, a study on producing a matrix to measure a green mosque could be conducted in the future to help building more holistic green mosques. A holistic design of a mosque, not just emphasizing on the mosque building will ensure a greener mosque in today's environment just like mosques in the early days of Islam.

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