

## The Application of Sustainable Architecture In Islamic University

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### ABSTRACT

Sustainability is a global issue that will continue to be a trend in society. While the impacts of global warming are still occurring, environmental damage, to the reduce of green space, sustainability is still encouraged and to be discussed. Even if the negative impact has been done, sustainability is still applicable as a deterrent to the damage. Architecture is one of the science areas that is very concerned about sustainability. Its act produces several isms, such as green architecture, ecological architecture, eco-friendly architecture, and so forth. The awareness for the sustainability movement not only in the realm of architecture, but to the realm of academia and produces some predicates, such as green campus, environmentally friendly campus, and so on. Islamic-based university also capable to embody the principles of sustainability by its Islamic values. Each variable in this study, that are sustainable architecture and Islamic campus firstly need to be understood of the theories. Then we can conclude them for the correlation so it can be concluded. Thus this research is appropriate using descriptive qualitative method. Aspects of sustainable architecture proposed by ASHRAE and Yudelson aligned with aspects that exist in a sustainable campus planning declared by Hatmoko. The values of Islamic architecture based on the Quran and Hadith also tune with aspects of sustainability and campus planning. Thus, an Islamic college is expected to practice the values of Islam as a whole, considering the Islamic values in accordance with sustainability values.

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## INTRODUCTION

Sustainability becomes a central issue in the context of the development of this century [10]. This concept is becoming a trend in the world of architecture in line with the global warming issue. Architecture experts promoting the sustainable architecture movement to reduce the global warming. The phenomenon that occurs is the increasingly number of population decreases open green space which then is being used to fulfilling the housing needs [3].

These negative phenomena, absolutely implemented the sustainability program. Sustainability can be applied in all fields of sciences, and architecture is one of them and usually called as sustainable architecture. Sustainable architecture even generates several isms such as ecological architecture, environmentally friendly architecture, energy-efficient architecture, bioclimatic architecture, and green architecture [8]. These isms are purposed to maintaining and restoring the environmet preservation to make it better.

The sustainability movement awareness can be initiated from the academia realm. University is a provider of human resources and technology science, while natural resources is the main capital in development [9]. Because Indonesian folks are predominantly Moslem, it is definitely a lot of Islamic-based universities are established.

It is interesting to be examined, whether Islam teaches about the concept of sustainability and the how far is its application in Islamic campus buildings.

### 2.0 Literature Review:

#### 2.1 Sustainable Architecture:

In terms of sustainability, architectural science contributes in it. Participation in sustainable architecture can be realized from the many theories such as, sustainable building, sustainable design, green architecture, energy-

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saving, compact city, earthbag, shared space, and so forth. Begins with so-called sustainable architecture in terms of sustainable development, then it develops until now as Green Architecture. Even the architecture has also become one of the important targets in the sustainability movement [8]. As sustainable development, sustainable architecture also has several definitions, among other things, green design / sustainable is a design that minimizes the negative impact on humans on the surrounding environment, materials, resources, and processes that apply in nature [1]. Another opinion by McLennan in Yudelson about sustainable design is an understanding of design that aims to maximize the quality of the environment, while minimizing or avoiding the negative impacts to the environment [12].

There are 5 parts to be consider in sustainable design that explained by ASHRAE and Yudelson, they are:

- Sustainable site planning
- Water preservation and efficiency
- Energy efficiency and its renewability
- Material conservation and resources
- Indoor environment quality

### 2.2 Sustainable Campus Planning:

A campus planning which is comprehensive planning for physical growth, that based on the assessment of the vision of the university, academic strategies, history, and culture [2]. Campus development plan requires proper planning of the various aspects. Proper planning will be followed by a conducive academic environment. The plan requires the appropriate systems and methods that will support campus facilities that will be planned [4].

According to Hatmoko [4], sustainable campus planning comes with several considerations, that are :

- Energy optimalization that empasizes in renewable energy,
- Distance planning between interconnected buildings integrated with a relatively affordable distance to support environmentally friendly transportation systems such as cycling or walking,
- Efficient water using and utilize rain as an additional source of water
- Selection of environmentally friendly building materials and easy maintenance
- Avoiding construction waste during construction

### 2.3 Islamic Architecture:

Islamic architecture literally means architecture that derived from Islamic culture. Because of this architecture based on the culture of Islam, while Islam based on the Quran and the Hadith, the Islamic architecture based on the Quran and Hadith. An expert's opinion on the definition of Islamic architecture that is part of the culture that is the result of human activity in the form of concrete in an effort to meet the physical and spiritual needs [7].

Then in her research dissertation [5] described Islamic architecture as an architecture that to be seen by the approach of Islamic values and not to be seen with the object approach. If Islamic values deemed subjectively, then the definition of Islamic architecture will be realized as the implementation of the values of the Qur'an and Hadith. But if Islamic architecture viewed objectively, the embodiment of the architecture will be mixed with the surrounding culture that is not necessarily meaningful Islamic. Definition of Nurjayanti [5] reinforced by the opinions of Nangkula Utaberta [11] which states that Islamic architecture has two approaches. The first approach the object as a product of the Islamic community, while the second approach looks at the basic principles of Islam which refers to the Quran and Hadith [11].

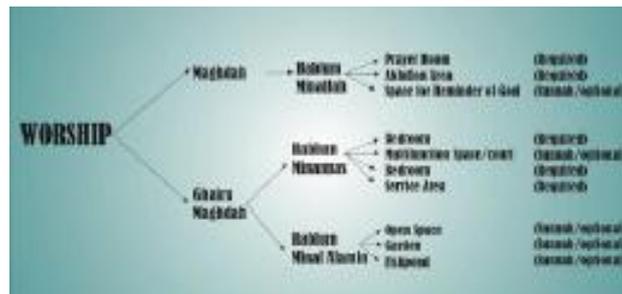
### 2.4 Characteristic Of Islamic Architecture:

The deepening of Islamic architecture that subjectively when applied to a building can be interpreted that the building could be used to support the inhabitant's Islamic way of life. In Islam, humans were created to worship Allah.

*"And I did not create the jinn and mankind except to worship Me". (Adh Dzariyat*

*"And it is not I only created jinn and man to worship Me melaikan". (Adh Dzariyat: 56). So, basically the life of Muslims is essentially to worship that practice Islamic values as a whole.*

In her dissertation, entitled Islamic Values in the Residential, [5] mentions the characteristics typical of Islamic housing. Although in this study the case raised is campus building, but the substance of residence (housing) can be applied. Because, campus building is a public building which has more macro level with heterogeneous inhabitants, while housing is a micro-level with homogeneous occupants. So that the application of Islamic dwelling characteristics can be applied to the case of Islamic campus. In hes dissertation mentioned that Islamic housing should be used for worship. Worship in this case is divided into two, namely worship maghdah and ghairu maghdah, it describes in Figure 1.



**Fig. 1:** Various kind of worships and their applications.

Ghairu maghdah is pure worship relates to God (*hablum minallah*), while *ghairu maghdah* is associated with the worship of fellow both human beings and animals and the universe (*hablum minannas* and *hablum minalalamin*).

In chapter sustainable architecture, is closely connected with the worship *ghairu maghdah* because they relate to humans and nature. Then worship *ghairu maghdah* most closely associated with sustainable architecture that is *hablum minal alamin*, because it deals with nature, and sustainable architecture was closely linked to the preservation of nature. This is reinforced by an opinion stating the physical embodiment *hablum Minal Alamin* is a relationship that is in harmony with our natural environment [6].

### 3.0 Methodology:

The purpose of this study is to determine whether the values of Islamic values in accordance with the sustainability architecture. This study using qualitative descriptive method which explores the theories of each variable in advance. Sustainable architecture is the first variable that needs to be sought for its understanding. The next step is to understanding about campus and planning then Islamic architecture is the next. An understanding of Islamic architecture is necessary because the second variables is an Islamic university. So the Islamic values in architecture need to be explored deeply. After obtained understanding of each variables then generated conclusions about the correlation between.

## RESULTS AND DISCUSSION

### *Sustainable Campus Planning:*

Points of the sustainable architecture from ASHRAE [1] and Yudelson [12], was in tune with the aspects that need to be considered in the Hatmoko's sustainable campus [4]. But there is a difference of two points that could be added to make it more complete. So that a sustainable campus has points of consideration, including:

- Sustainable site planning, that is integrating each buildings for easy access using eco-friendly vehicle (bicycle) or by walk.
- Saving the water and its efficiency, the efficient use of water and exploit the rainwater as an additional water supply for irrigation or plumbing and utilize water infiltration optimally.
- Energy efficiency and renewal, which reduces the use of electricity for lighting and artificial temperature. The utilization of sunlight for illumination in order to be maximized natural temperature lower.
- Conservation of materials and resources, the use of environmentally friendly and easy maintenance materials save energy and maintenance costs.
- The quality of indoor environments, the cozy interior is conducive for academic activities without ignoring the meaning of sustainability.
- Reducing construction waste during construction, by reusing construction waste as much as possible to reduce construction waste.

Quran and Hadith as a guide for Muslims have been taught how to live in harmony with nature means consistent with the principles of green architecture. It's just that the guidelines are not explained clearly or explicitly in the Qur'an and hadith. Al Quran was revealed 1400 years ago and also had predicted the destruction of nature is happening today. as has been described in Surah Ar-Rum 41-42:

“Corruption has appeared throughout the land and the sea by (reason of) what the hands of people have earned so He may let them taste part of (the consequence of) what they have done that perhaps they will return (to righteousness). Say, (O, Muhammad), “Travel through the land and observe how was the end of those before. Most of them were associators (of other with Allah).

Besides that, Allah also says in Surah Al Baqarah 205 about the environmental damage done by humans, that is:

“And when he goes away, he strives throughout the land to cause corruption therein and destroy crops and animals. And Allah does not like corruption.”

Then commands in preserving the environment written in Surah Al-A'raf 56-58 :

“And cause not corruption upon the earth after its reformation. And invoke Him in fear and aspiration. Indeed, the mercy of Allah is near to the doers of good. And it is He who sends the winds as good tidings before His mercy until, when they have carried heavy rainclouds, We drive them to a dead land and We send down rain therein and bring forth thereby (some)of all the fruits. Thus will We bring forth the dead; perhaps you may be reminded. And the good land –its vegetation emerges by permission of its Lord; but that which is bad – nothing emerges except sparsely, with difficulty. Thus do We diversity the signs for a people who are grateful.”

#### Conclusion:

Islam had been taught to live in harmony with nature, in this case the order is in line with the principles of sustainability. Islamic Campus should practice Islamic values as a whole in order to manifest the values of sustainable architecture on the buildings.

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