

# MODERN ISLAMIC BOARDING SCHOOL WITH GREEN BUILDING CONCEPT IN KUDUS REGENCY

Ahmad Almahdi<sup>1)\*</sup>, Hermawan<sup>2)</sup>, Adinda Septi Hendriani<sup>3)</sup>

<sup>1)2)3)</sup> Universitas Sains Al-Qur'an, Indonesia

<sup>1)</sup>[almahdiahmad1998@gmail.com](mailto:almahdiahmad1998@gmail.com), <sup>2)</sup>[hermawanarsit@gmail.com](mailto:hermawanarsit@gmail.com), <sup>3)</sup>[adinda@unsig.ac.id](mailto:adinda@unsig.ac.id)

\*[almahdiahmad1998@gmail.com](mailto:almahdiahmad1998@gmail.com)

**Submitted** : 2 October 2024 | **Accepted** : 25 October 2024 | **Published** : 31 October 2024

**Abstract:** The planning and design of a modern green building Islamic boarding school in Kudus Regency is a place for Islamic education with a combination of learning special skills such as language learning. Planning for a modern green building cottage is a new breakthrough in the world of Islamic education in Kudus Regency. Modern Islamic boarding schools have Islamic teachings as their main and there is additional learning skills such as language in the process. With the concept of green building can provide more comfort, because it can minimize the impact of weather that occurs in the region. It is hoped that the green building concept can make building users comfortable in carrying out their activities in the building area. Facilities in the Islamic boarding school area include comfortable dormitories, special laundry rooms, special cooking areas, halls, guest houses, large parking lots, and a visiting garden for parents who want to see their children. Taman jenguk is intended so that users from outside the area can feel as comfortable as guardians of students who have traveled long distances. Modern green building Islamic boarding schools in Kudus Regency are expected to become educational areas that prioritize Islamic teachings with the addition of skill-based learning. Skill-based learning is intended so that students who study at the Islamic boarding school do not only have religious knowledge, but also world knowledge.

**Keywords:** Islamic boarding school, Kudus, green building

## 1. INTRODUCTION

Modern Islamic boarding schools with a green building concept in Kudus Regency are Islamic educational institution facilities for students/students to live/settle in boarding houses or dormitories that are provided temporarily until they complete their education and which have an educational curriculum that combines the national curriculum with a building concept idea that pays attention to aspects of the surrounding natural environment such as utilizing natural resources around, saving and reducing the use of natural resources, all of which are based on the principles of sustainable development in Kudus Regency. Education is an important part of life that also distinguishes humans from other living things. Education is a systematic conscious effort to develop all the potential that exists in humans to become whole humans (Ulwan, 1999). In Islam, education is something that is very important in relation to educating someone to become a faithful, pious, and moral human being. That is the concept of Islamic education taught by Allah subhanahu wa ta'ala through the Prophet sallallaahu 'alaihi wa sallam 1437 years ago. There are various kinds of educational facilities/institutions, namely schools, and educational institutions that specifically teach about Islamic law and knowledge, one of which is the Modern Islamic Boarding School.

Modern Islamic boarding schools are a combination of the Islamic boarding school curriculum with the national education curriculum, so that even though the format is an Islamic boarding school, in addition to boarding school/dormitory education, students also obtain knowledge and graduation standards like students who attend public schools (Hakim, 2018). Thus, the teaching hours at a modern Islamic boarding school are denser than public schools. Islamic boarding schools, which are also one form of educational institution in Indonesia, should also have graduation standards that also follow educational developments that are in accordance with the national education curriculum. Furthermore, the problem in general is buildings that are wasteful of energy. Not only are the operational costs expensive but also produce greenhouse gas emissions that damage the environment. The types of buildings that are still wasteful of energy include offices, government buildings, shopping centers, educational facilities, health facilities and hotels (Wen et al., 2023).

Buildings, facilities and educational facilities in the future must implement the concept of green buildings. This means that starting from the design, construction of building structures, selection of operating locations, maintenance, renovation, and others must be environmentally friendly, socially friendly and energy efficient (Shofiyah et al., 2019). With the concept of green building or green building, namely the concept of sustainable buildings that lead to structures and use of processes that are environmentally responsible and resource efficient throughout the life cycle of the building, from site selection to design, construction, operation, maintenance, and renovation. This practice expands and complements building design in terms of economy, utility, durability, and comfort. Therefore, the author chose this title. In this design, the Modern Islamic Boarding School will later become a means of educational facilities that specifically educate and teach morals and character that are basically in accordance with Islamic law and in addition, this building will apply the concept of green building, a building that pays attention to the environment and nature around it for the future (Ryandono, 2018).

Formulation of the problems in the Modern Islamic Boarding School with the Green Building Concept in Kudus Regency: 1. Non-architectural a. How to plan an Islamic boarding school with a green building concept approach in Kudus Regency that can meet the needs of local community educational facilities? 2. Architectural a. Macro problems • How to determine the appropriate location and potential site/footprint for designing Islamic boarding schools with a green building concept approach in Kudus Regency? b. Micro problems • How to determine the zoning of public areas for the public, semi-public for learning facilities and private zones for student dormitories? • How to determine the spatial arrangement of learning facilities, worship facilities and dormitory facilities of modern Islamic boarding schools? • How to apply the green building concept to modern Islamic boarding school buildings so that they become a reference for other buildings in implementing this concept? • How to design the physical form of modern Islamic boarding school buildings in accordance with the green building concept and local climate conditions so that they are safe, comfortable and beautiful in accordance with architectural principles? • How to plan the arrangement of the mass layout of modern Islamic boarding schools in accordance with the discipline of architecture?

The goal to be achieved is to compile a conceptual basis for planning and designing a modern Islamic boarding school, namely: 1) As a place for educational facilities for generations and studying religious knowledge as well as general knowledge in accordance with Islam and Islamic law. 2) As a place for developing, studying and teaching religious knowledge, Islamic jurisprudence and hadith and general knowledge in accordance with Islam and Islamic law. 3) As a place for sharing knowledge and information within the boarding school environment or interconnected through the use of technology. 4) The target of the discussion is to review the specifics of designing a modern Islamic boarding school in an architectural study that will be poured into the form of a physical design as a result of the study that has been carried out in the design concept as follows: Study of macro physical layout which includes location selection, determination and site processing, study of micro physical layout that describes the design of the facade of the Islamic boarding school building, study of the green building concept that will be applied in the design of the Islamic boarding school according to architectural principles, study of the form of the space program design that is in accordance with user needs, study of the form of the building mass layout that is in accordance with architectural principles, study of the form of building facade design that is in accordance with architectural principles, study of the design of form and function that supports the form and space of Islamic boarding school buildings in accordance with local climate conditions so that they are safe, comfortable and beautiful in accordance with the discipline of architecture.

## 2. METHOD

The discussion method used in this writing is a descriptive method, namely studying, collecting and explaining the data and facts that have been obtained. This data collection is through literature studies, field observations, to

then be analyzed and an approach is carried out which is the basis for compiling the design of a modern Islamic boarding school with a green building concept approach. The following is the data collection process: a. Literature Study Conducting a literature study, namely studying literature references both from books and from the internet regarding the theory, concepts and standards for planning and designing modern Islamic boarding schools with a green building concept approach. b. Comparative Study Conducting a comparative study, namely comparing similar building typologies. The things needed are the type of function, type of activity, dimensions of space and buildings, appearance, technology, and so on against the results of observations carried out in several areas and buildings that have the same function to be analyzed and the criteria that will be applied to the design of the building. c. Field Study Direct observation to the selected location to find out the actual conditions at the location, the environment around the site, to recognize the potential, and problems that exist around the location according to the discipline of architectural design. After the data has been successfully collected, it is continued with the data processing stage. The data obtained qualitatively and quantitatively are analyzed, grouped, and arranged according to the approaches, then become interrelated results and can be used as a reference for planning and design. Next is the planning program stage, the planning stage transforms the basic concept obtained into a problem solver in relation to the planning of a modern Islamic boarding school with the concept of green building. Then the design stage is carried out, namely realizing the transformation into a design that is actually in accordance with the conceptual basis.

### 3. RESULT AND DISCUSSION

The comparative study was conducted at the Gontor and Nurul Huda Munjul Islamic boarding schools. From each of the Islamic boarding schools that were used for comparative studies, both online and offline, both institutions have the same goal of developing high-achieving Muslims. This can be seen from the schedule of activities that prioritizes the amount of study time. Modern Islamic boarding schools also teach general knowledge such as language in addition to religious studies as the main subject. Furthermore, regarding the layout of the building. The Gontor Islamic boarding school appears to be more organized in the arrangement of its buildings. Meanwhile, the Nurul Huda Munjul Islamic boarding school tends to be like the Salaf Islamic boarding school in terms of building arrangement. Kudus Regency is one of the regencies in Central Java. Kudus Regency is located at 11.036° - 110.50° East Longitude and 6.51° - 7.16° South Latitude. Kudus Regency borders Jepara Regency and Pati Regency to the north, Demak and Jepara Regencies to the west, Grobogan Regency and Pati Regency to the south, and Pati Regency to the east.

Kudus Regency is an area with a majority of lowlands. The highest land elevation is located at the peak of Saptorengga, Mount Muria with an altitude of 1,602 meters above sea level. Next is the peak of Rahtawu (1,522 meters above sea level) and the peak of Argojembangan (1,410 meters above sea level). 17 The largest river is the Serang River which borders Kudus Regency and Demak Regency. In addition, Kudus Regency is the smallest area in Central Java Province. Statistically, Kudus Regency consists of 9 sub-districts, 123 villages, 9 urban villages. In terms of RT & RW areas, Kudus Regency is divided into 707 RW, 3,698 RT, and 4343 Dukuh. 18 In general, Kudus Regency has an area of 42,516 Ha. This amount is only 1.31% of the total area of Central Java Province, making Kudus Regency the smallest area in Central Java Province. The sub-district in Kudus Regency with the largest area is Dawe Sub-district, which is 20.19% of the total area or 8,584 Ha. While the smallest sub-district is Kota Sub-district which is only 1,047 Ha. Of the total 42,516 Ha of Kudus Regency, 20,687 Ha is rice field agricultural land, 7,563 Ha is non-rice field agricultural land, the remaining 14,266 Ha is non-agricultural land. The climate in Kudus Regency has a tropical climate and is divided into two seasons, namely the rainy season and the dry season. According to the central statistics agency, Kudus Regency has a moderate air temperature with low rainfall. According to data from the Kudus Agricultural Meteorology Station, the most rain occurs at the end of the year or in December. While the highest rainfall usually occurs in February. In addition, Kudus Regency has an air temperature ranging from 19.7 degrees Celsius to 29 degrees Celsius. Meanwhile, air humidity ranges from 72.50% to 77.83%.

The determination of the location for planning and designing modern Islamic boarding schools in Kudus Regency is based on various aspects. These aspects include the function of the building, namely facilities and infrastructure that can accommodate activities in the Islamic boarding school. In addition, the location must consider the ease of users in reaching the location, the fulfillment of facilities, and so on. Based on several aspects above, the location is expected to be easily accessible for users and the outside community. On the other hand, the rice field area has more value in terms of the comfort of students to study.

**Location requirements:** The site must pay attention to the ease of access for both internal and external users. Factors that must be considered are road quality, security, circulation flow that does not interfere with the use of the building. The Islamic boarding school building is used for education, especially Islam. Usually, Islamic boarding schools are dominated by students who come from outside the city. It is hoped that the location can accommodate security, comfort, and ease of access to learning for users. There are public facilities and social facilities that support learning. The location can be accessed or utilize city infrastructure such as clean water networks, electricity, and drainage to support the function of the building. The building is intended for the education of students. Therefore, the building is expected to obtain aspects of comfort and attractiveness so that students are comfortable in studying. Islamic boarding schools require relatively large land and can be easily accessed for incoming and outgoing vehicles. Based on the above considerations, the location chosen for the planning and design of a modern Islamic boarding school with a green building concept in Kudus Regency is Klaling village. The location is located in Klaling village right in front of the Klaling village hall. The site can be easily accessed by the community and newcomers. The site also has beautiful land because it is adjacent to a rice field area. This provides comfort for newcomers who want to study at that location.

The calculation of the building layout follows the regulations set by agrarian and spatial planning or the head of the national land agency. These guidelines are as follows: a. Building Boundary Line (GSB), The building boundary line is an indication of the safety boundaries of residents and their environment. In addition, the building boundary line has several positive impacts such as providing space for light to enter and aesthetic considerations. The building boundary line is calculated from 4 visible sides, namely the building front boundary line, the right side boundary line of the building, the left boundary line of the building, and the rear boundary line of the building. The following are regulations regarding building front boundary lines: • Primary arterial roads, ranging from 30-50 m from the road axis • Secondary arterial roads, ranging from 20-30 m from the road axis • Primary collector roads, ranging from 20-30 m from the road axis • Secondary collector roads, ranging from 18-30 m from the road axis While the regulations for the side and rear boundary lines of buildings are as follows: • For single non-storey buildings, they can overlap or be 1.5 m apart For buildings in rows up to a height of 3 floors, they can overlap.

The site location is in Klaling Village, Jekulo District. The site is a rice field area with a village road as the main access. In addition to being quiet, the site is easy to reach because it is not far from the Pantura road. The site is also passed by transportation routes, making it easier for the public to access it. In accordance with the purpose of education, this site is an ideal area for education. Moreover, the environment with a rice field nuance will make it comfortable because it is not noisy. The selected site area is 68,900 m<sup>2</sup>. The current condition of the site is an empty land with a flat land contour. The boundaries of the site are as follows: • North: Rice fields • East: Rice fields • South: Rice fields and Truck Parking Lot • West: Residential. The basic shape of the building mass is square and triangular. A triangle is a flat shape that has an easy structure with moderate aesthetics. While a square has flexibility and a structure that is easy to work on. The triangular and square shapes will be the main considerations in determining the visual form of the building. Green Building or often called green building has several important aspects that make a building environmentally friendly. In this case, the planning and design of modern Islamic boarding schools with the concept of green building in Kudus Regency will consider several aspects. These aspects include: Sustainable land design, Saving energy resources, Maintenance of water resources in ensuring the sustainability of clean water availability, Use of environmentally friendly and recyclable materials, Consideration of health and comfort of space for building users, Building system management that supports environmental sustainability. Based on the various approaches and analyses above, the basic references in the planning and design of modern green building Islamic boarding schools in Kudus Regency are as follows: Islamic boarding school buildings must be able to accommodate the function of the building and fulfill various activities in it. In addition, the building is able to provide convenience, security, and comfort for users and managers to the maximum, Buildings as places of education must be able to provide comfort, tranquility, and security adjusted to the learning process that applies in Islamic boarding schools, Modern green building Islamic boarding schools in Kudus Regency must have a structure that meets standards so that it can guarantee safety in the educational process at the Islamic boarding school. Sustainable architectural approach is a style that needs to be applied in architectural design. Sustainable architecture has many varieties. Green building is one of the varieties that is often used in the application of architectural design (Hermawan et al., 2023).

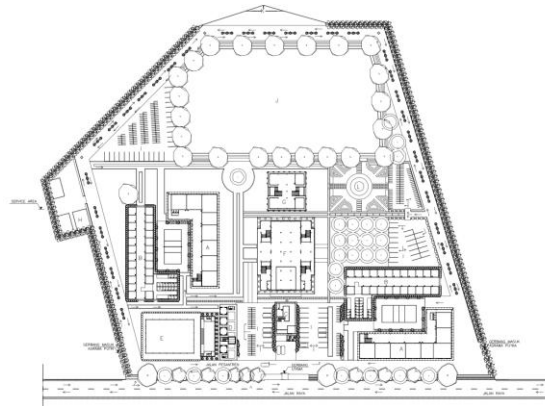


Fig 1. Floor Plan

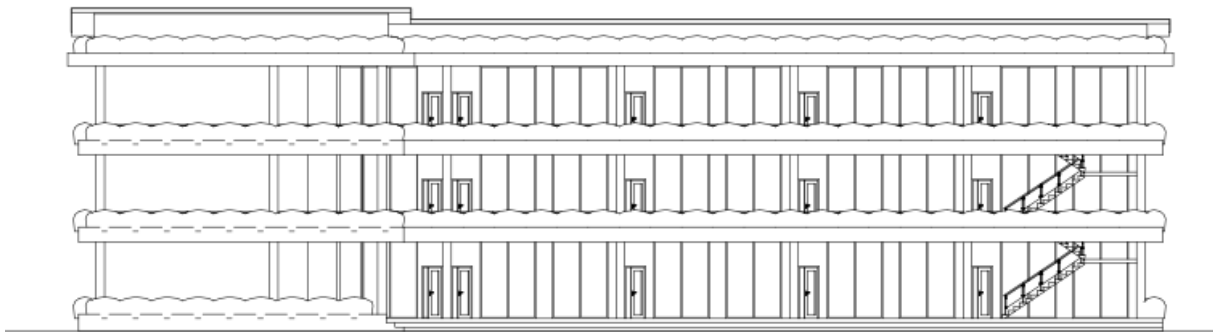


Fig 2. Front View of Building



Fig 3. Side View of Building

#### 4. CONCLUSION

The planning and design of a modern green building Islamic boarding school in Kudus Regency is a place of Islamic education with a combination of special skill learning such as language learning. The planning of a modern green building boarding school is a new breakthrough in the world of Islamic education in Kudus Regency. Modern Islamic boarding schools have Islamic teaching as their main focus and there are additional skill learning such as language in the process. With the green building concept, it can provide more comfort, because it can minimize the impact of the weather in the area. It is hoped that the green building concept can make building users comfortable in carrying out their activities in the building area. The facilities available in the Islamic boarding school area include comfortable dormitories, special laundry places, special cooking places, halls, guest houses, large parking lots, and visiting gardens for parents who want to meet their children. The visiting garden is intended so that users from outside the area get comfort such as guardians of students who have traveled far. The modern green building Islamic boarding school in Kudus Regency is expected to become an educational area that



prioritizes Islamic teachings with additional skill-based learning. Skill-based learning is intended so that students who study at the boarding school not only have religious knowledge, but also worldly knowledge.

Based on the planning and design that has been written above, the author provides the following suggestions: The modern green building Islamic boarding school area is an Islamic educational facility designed with a green building concept. This concept is intended so that the building can utilize natural lighting and ventilation to the maximum. In its planning, an attractive design is needed so that it can provide a new impression for visitors to the area, the modern Islamic boarding school area is an educational facility, so it must continue to follow the applicable government requirements and regulations in the development and education process, the Islamic boarding school area that accepts both male and female students, it is necessary to pay attention to the division of space between male and female students. This is intended so that students can study in a focused manner, as a designer of a modern green building Islamic boarding school, the author has tried as much as possible to be guided by the function of space, physical and thermal comfort, design character, materials, and others mentioned above. Therefore, these factors are expected to be important considerations in the design process

## 5. REFERENCES

- Hakim, Abdul, Herlina, N. Hani. Manajemen Kurikulum Terpadu di Pondok Pesantren Modern Daarul Huda Banjar. *Jurnal Penelitian Pendidikan Islam*, v. 6, n. 1, p. 111-132, may 2018.
- Hermawan, H., Fiyantoro, D., Arrizqi, A. N., & Svajlenka, J. (2023). Green Architecture of Nahdlatul Ulama Yogyakarta University Campus Building From Material and Energy Aspects. *Journal of Architectural Research and Education*, 5(2), 229–238. <https://doi.org/10.17509/jare.v5i2.62912>
- Ryandono, M. N. H. (2018). Peran Pondok Pesantren dalam Pemberdayaan Sosial Ekonomi di Jawa Timur pada Abad ke-20. *Mozaik Humaniora*, 18(2), 189–204.
- Shofiyyah, N. A., Ali, H., & Sastraatmadja, N. (2019). Model Pondok Pesantren di Era Milenial. *BELAJEA: Jurnal Pendidikan Islam*, 4(1), 1. <https://doi.org/10.29240/belajea.v4i1.585>
- Wen, Y., Lau, S. K., Leng, J., & Liu, K. (2023). Sustainable underground environment integrating hybrid ventilation, photovoltaic thermal and ground source heat pump. *Sustainable Cities and Society*, 90(2), 104383. <https://doi.org/10.1016/j.scs.2022.104383>