ISLAMIC HOUSING PROJECTS AND ENVIRONMENTAL AWARENESS: INVESTIGATING THE CONCEPTS AND IMPLEMENTATIONS BEHIND THE NOTION OF 'ISLAMIC ENVIRONMENT'

Sukmayati Rahmah[a], Yulia Eka Putrie[a*], Aisyah Nur Handryant[a], Luluk Maslucha[a]

[a]Architecture Department, Faculty of Science and Technology, UIN Maulana Malik Ibrahim, Malang, Indonesia
*Corresponding Author: ekaputrie.yulia@arch.uin-malang.ac.id

ABSTRACT

Islamic housing developments have become more popular in recent years, driven by a range of factors, including religious, economic, and socio-cultural considerations. The widespread availability of Islamic mortgages from Islamic banks and finance institutions also contributed to the rise of the Islamic housing market for people looking to buy a house while complying with Islamic principles. One of the key selling aspects of Islamic housing projects is their notion of an 'Islamic Environment,' which implies sustainability in the social and natural environments. However, mass housing projects' emphasis on market demand and financial viability often sets aside broader social and ecological considerations during implementation. These phenomena have raised questions about how Islamic housing projects conceptualize and implement the notion of an 'Islamic Environment.' An exploratory study was conducted by analyzing both qualitative and quantitative visual and textual data from interviews, field observations, architectural drawings, and marketing materials. The findings showed that, at the conceptual level, a partial understanding of Islamic values of environmental awareness remains the main issue, also impacting implementation at the practical level. Understanding of the Islamic environment is limited to the socio-religious aspects, focusing on places of worship and religious activities. At the practical level, the selling point of the green atmosphere remains limited to the visual pleasures of distant mountains and gardens outside the residential area. Hence, efforts to rethink the concept and application of the Islamic environment are imperative to ensure genuine environmental sustainability, and 'nature' transcends being merely a marketing strategy for Islamic housing projects.

Keywords:
Housing Projects; Islamic Environment; Sustainability; Concept; Implementation

1. INTRODUCTION

The phenomenon of Islamic housing in Indonesia has experienced rapid development over the past decade. Islamic housing projects flourish in big cities such as Jakarta, Bandung, Bogor, Banjarmasin, Makassar, Surabaya, Yogyakarta, and Malang. Many developers and investors perceive people's growing desire for housing that reflects Islamic principles with Sharia-compliant financing as a sizable market opportunity. Sharia-compliant financing has become increasingly popular since it is competitive, efficient, and adheres to the principle of prudence [1]. In addition, the availability of Sharia-compliant banking facilitates financing for Islamic real estate. The growth in Muslim communities' desire to own homes with an Islamic concept can also be attributed to the development of Islamic lifestyles introduced and promoted by Muslim influencers, with social media as a powerful marketing tool [2][3].

Researchers from various scientific disciplines have been interested in studying the emergent phenomena of Islamic housing. The Open Knowledge Maps visualization of the 100 most relevant research documents shows that

finance and architecture are two areas of research that have received significant academic attention in Islamic housing (Figure 1). Other research areas are business and investment, Sharia law, sociology, public policy, and education.
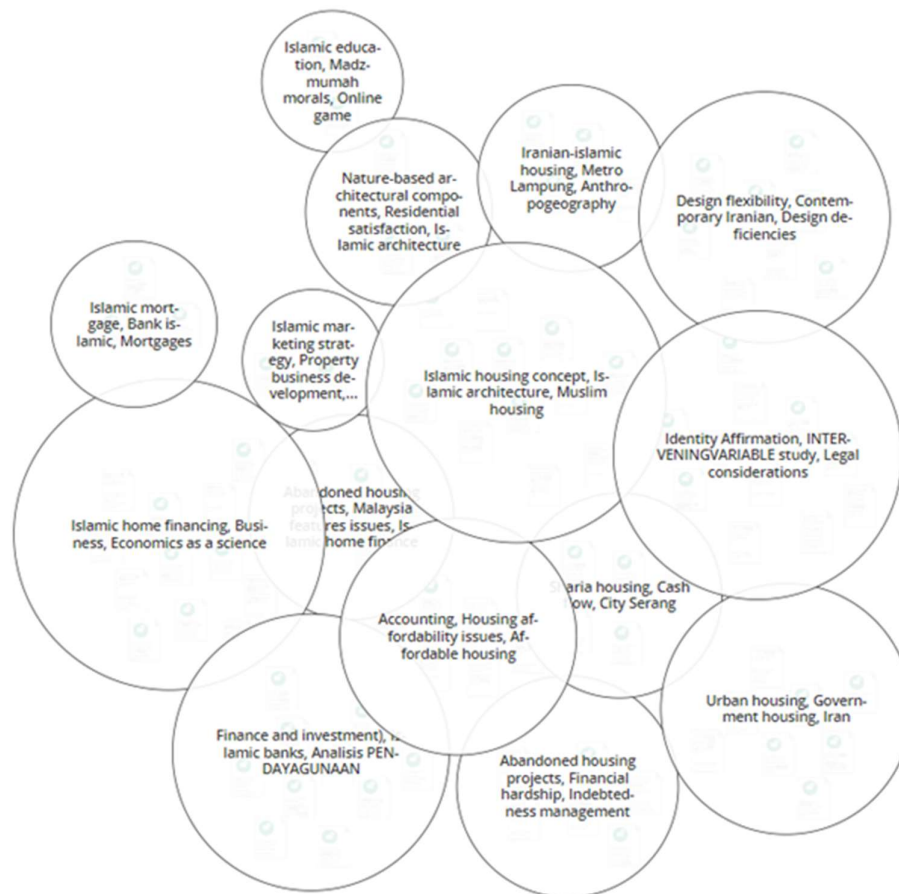

Figure 1. Knowledge Map for Research on Islamic Housing
Source: Open Knowledge Maps (2024) [4]

Within the discipline of architecture, a range of research topics pertains to the phenomenon of Islamic housing. These topics encompass the investigation of Islamic design principles and aesthetics as they relate to housing [5], [6], [7], [8], [9], [10], the examination of cultural diversity in the context of different regional settings [11], [12], the exploration of privacy and social interaction within private and communal spaces in Islamic housing [11], [5], [13], [14], [15], the consideration of public facilities that align with the Sunnah-based lifestyle [16], and the spatial quality of Islamic housing [17]. The spatial arrangement within the types of houses is the primary focus of several architectural studies of the concepts and applications of Islamic principles in Islamic housing projects.

However, studies on environmental sustainability in Islamic housing grounded in the Islamic concept of man as the vicegerent on earth are still in their early stages. Harmony with the natural environment is one of the Islamic ideals that plays a significant role in value-based design in Islamic architecture. Incorporating environmental sustainability into architectural designs involves more than preventing physical harm or gaining physical benefits. It also embodies the immaterial and spiritual relationship between the Creator and His creations. Being trusted by God as the custodian of the earth, human beings have a responsibility to protect the planet, utilize its resources with a sense of justice, preserve the ecological balance, be moderate in everything, and avoid anything that causes harm to nature [18]. On a philosophical level, the principle of environmental sustainability in Islamic architecture departs from the Islamic worldview on the relationship between God, humans, and nature. In Islam, the concept of responsibility towards the environment is profoundly emphasized due to its pivotal role in shaping the attitudes and conduct of Muslims towards God, themselves, society, and nature. Through the lens of responsibility, Muslims are endowed with the agency to engage with nature in ways that uphold its integrity and foster a harmonious equilibrium [19]. The Qur'an and the Sunnah of the Prophet have emphasized aspects of sustainability, including

trusteeship, justice, balance, moderation, cleanliness, preventing harm, and benefiting from advantageous science and technology [18]. Preserving the environment is recognized as one of the six dimensions of Maqasid Shariah, thereby providing a framework for developing an Islamic housing concept [10]. On a practical level, however, a wide range of design strategies and policies can be implemented as long as they align with or do not conflict with other Islamic values as a worldview. It shows the breadth of environmental sustainability as a fundamental principle in the value-based design approach to Islamic architecture.

The establishment and development of Islamic housing projects are presumed to be driven by religious values and multiple considerations beyond purely financial ones. As one of the basic principles of Islam, concerns for the sustainability of the natural environment should have been incorporated into the concepts and implementations of Islamic housing projects. A study on this topic would be very engaging, as sustainable and eco-friendly housing designs are another positive trend in conventional housing projects, with architects and developers aiming to incorporate eco-friendly materials, energy-efficient systems, and sustainable landscaping. On the other hand, an initial observation of several Islamic housing projects showed that they also highlight the notion of an 'Islamic environment' as a selling point. Therefore, this study aims to explore conceptualizations and examine the implementation of basic Islamic principles of environmental sustainability in Islamic housing projects.

2. METHODS

This study employs a mixed-method approach, commencing with a qualitative-exploratory phase to delve into the conceptual nuances of environmental sustainability within Islamic housing projects, followed by a quantitative phase aimed at scrutinizing the application of fundamental principles of environmental sustainability in their project implementations. The qualitative phase entails the analysis of textual data derived from interviews with owners and management, conceptual books, and printed and digital marketing materials for the Islamic housing projects, including social media, brochures, catalogs, and posters. Due to the exploratory nature of this research, conceptual categories were not predetermined in the early phase of the analysis. Still, they were instead derived from the data through open, axial, and selective coding procedures. Open coding facilitates the exploration and identification of key terms and pivotal assertions, while axial coding systematically categorizes these keywords within the structured conceptual categories of Islamic housing projects. Selective coding is then used to focus on the specific issue or topic within the identified conceptual categories: the natural environment as an important aspect of the Islamic environment.

On the other hand, the quantitative phase uses criteria derived from a study of a green design concept grounded in a thematic interpretation of the Qur'an to investigate the implementation of environmental sustainability in Islamic housing projects. This study identified two prerequisite criteria for sustainable development: appropriate site development and water conservation [20]. Additionally, the study highlights four supporting criteria that contribute to sustainable development: Energy efficiency and conservation, material resources and cycle, indoor health and comfort, and building environment management. The two prerequisite criteria, i.e., Appropriate Site Development (ASD) and Water Conservation (WAC), were used in this research phase. In comparison, four other supporting criteria were excluded due to limitations in data from field observation, mapping, and documentation. Site mapping is carried out to identify gaps between site planning and implementation. This mapping utilizes a Geographic Information System (GIS) with satellite imagery in ArcGIS 10.8 to identify green open space, built-up areas, and paved areas (residential roads).
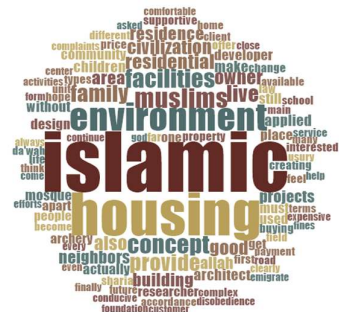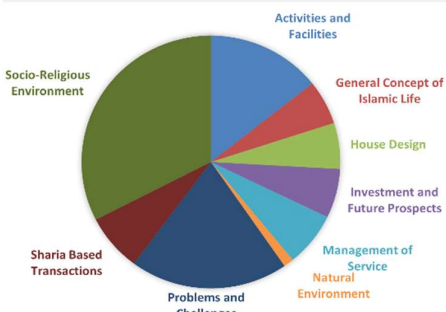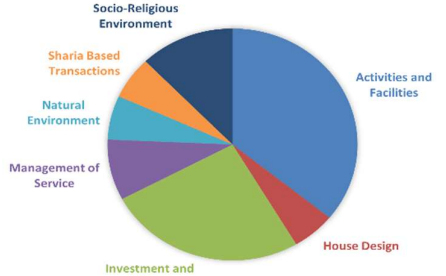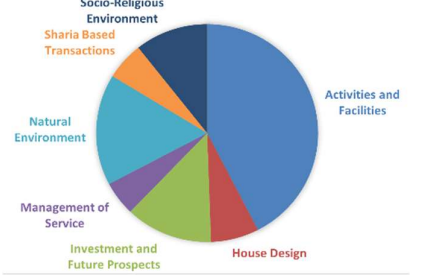
The scope of the data is limited to the meso-scale space of the housing complexes and does not encompass the micro-level, which pertains to individual buildings. The Appropriate Site Management (ASD) and Water Conservation (WAC) categories play a crucial role as the finest ecological balancers in the built environment through basic design strategies such as green open spaces, landscaping patterns, and water management. These categories are essential for preserving and promoting the well-being of the natural environment [20]. The fulfillment of these two fundamental criteria within the Islamic housing projects would facilitate more comprehensive and focused research, enabling further development of the current investigation's findings.

This study examined a sample of six Islamic housing projects in East Java, encompassing small-, medium-, and large-scale projects. East Java is characterized by a variety of Islamic communities. The region already has notable examples of Islamic housing projects that can serve as case studies for this study. In a broader context, the interaction among diverse Islamic cultures in East Java offers a unique opportunity to examine how different religious interpretations and cultural practices shape housing design and community life. However, due to the limitations of this study, the selection of the six projects in this region was primarily based on their emphasis on the concept of an 'Islamic environment' as a prominent aspect of their housing developments. At the behest of the housing management, the identities of all Islamic housing projects are being withheld to maintain confidentiality. The primary objective of this investigation is not to undermine the Islamic housing projects in particular but to contribute constructively to the overall progress of Islamic housing developments.

3. RESULTS AND DISCUSSION

A. THE CONCEPTUAL ASPECT OF THE ISLAMIC HOUSING PROJECTS

A qualitative analysis of the conceptual aspect of environmental sustainability in six Islamic housing projects was conducted to explore views expressed in their conceptual and philosophical statements. Keywords and conceptual categories identified from the text data are shown in Table 1.

Table 1. Text analysis of the conceptual and philosophical statements of the Islamic housing projects

Housing Projects	Keywords (Word cloud)	Conceptual Categories
Project A	 Keywords related to this housing project's concept are Islamic environment, civilization, Muslims, facilities, family, neighbors, children, community, supportive, comfortable, Sharia, mosque, da'wah, and emigrate (hijra).	 The "Socio-Religious Environment" is the dominant category in the conceptual discussion of this Islamic housing project. The Islamic environment is mentioned mainly in the context of the "Socio-Religious Environment." On the contrary, there is little discussion of the "Natural Environment," given the limited land and high costs if Islamic concepts are fully applied to the project.
Project B	 Keywords related to this housing project's concept are Islamic house, strategic location, city, campus, investment, security, facilities, environment, complete activities, combination boarding house and residential, jogging track, fitness, mosque, exclusive, modern, garden, beautiful.	 The "Activities and Facilities" and "Investment and Future Prospects" are two dominant categories in the conceptual discussion on this Islamic housing project. The "Natural Environment" concept centers on the beautiful garden with a cool breeze and a jogging track, along with other enjoyable and advantageous activities.
Project C	 Keywords related to this housing project's concept include Islamic housing, complete facilities, archery, horse-riding area, swimming, indoor pool, strategic location, city, sunnah sports, comfortable, family, luxury, healthy living, morning view, villa, mosque, and activities.	 "Activities and Facilities" is the most dominant conceptual category of this housing project. The "Natural Environment" category is derived from the discussion about the mountain view, the sunrise and the sunset view, an exotic country garden concept, the countryside vibe in the middle of city life, a garden with cool photo spots, the leisurely walk

to see the beauty of the premium living in the luxury villa, and the clean and healthy environment.

Project D

Keywords related to this housing project's concept are Islamic system, boarding house, security, investment, purchasing without usury, strategic location, city, near campuses, access, contracts, residential area, blessings, child-friendly, and value system.
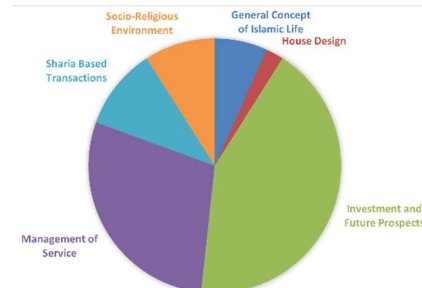
The "Investment and Future Prospects" and the "Management of Service" are two dominant conceptual categories discussed in this housing project. No discussion can be categorized as the "Natural Environment" category. Related to the socio-religious environment, this housing project emphasizes the concept of a child-friendly environment, convenience and security, and a blessed environment.
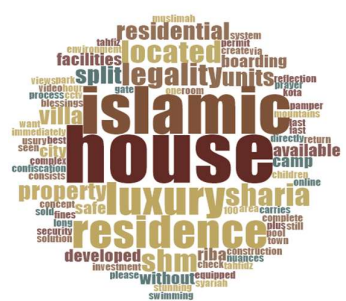
Project E

Keywords related to this housing project's concept include Islamic housing, Sharia, facilities, development, environment, comfort, orange plantations, roads, mosque, beauty, blessing, atmosphere, without usury, and location.
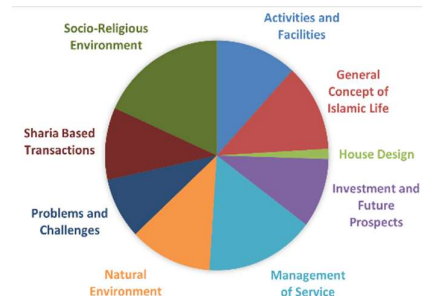
Categories arising from the conceptual discussion of this housing project are diverse and balanced. The "Natural Environment" category is derived from the discussion of the orange plantations near the housing complex and the distant views of the mountains. In addition, this housing's environmental concept emphasizes creating a green, aesthetically pleasing environment with a comfortable atmosphere in naturally shaped terrain.

Project F

Keywords related to this housing project's concept are Islamic house, luxury, sharia property, boarding units, legality, located (in the) city, facilities, villa, safe, camp, *tahfiz* program, and children.
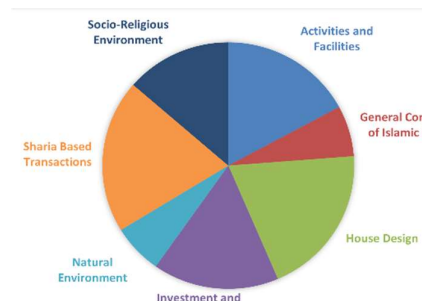
The conceptual statement of this housing project highlights the prominence of the "Sharia-Based Transactions" and "House Design" categories as the most widely discussed subjects. Conversely, there is less discourse regarding the natural surroundings; the focus is mainly on the breathtaking mountain scenery seen from the property, which enhances the value of its luxury Sharia housing concept.

There are nine conceptual categories arisen from the text data, i.e.: (1) Socio-religious environment, (2) Activities and Facilities, (3) Investment and Future Prospects, (4) Sharia-based Transactions, (5) House Design, (6) Management of Service, (7) Natural Environments, (8) Problems and Challenges, and (9) General Concept of Islamic Life. The socio-religious environment category emerged from discussions about the Islamic environment within the community, family, children, and the neighborhood. The activities and facilities category emerged from the offerings of the housing projects. The investment and prospects category

developed from conversations about the advantages developers promise for the present and the future. The Sharia-based transactions category originated from discussions about the buying and selling process. The house design category emerged from discussions about the concept of the house offered by the projects. The service category management developed from discussions about how the housing projects provided excellent service to their customers. The natural environment category emerged in discussions regarding the Islamic environment within the scope of interaction between nature and human beings in housing projects. Discussions about the dynamics of present and future development have led to the emergence of the problems-and-challenges category. Lastly, broader conversations about Islamic values give rise to the general concept of the Islamic life category. Table 2 below summarizes the overall conceptual categories and their keywords in each housing project.

Table 2. The conceptual categories and the keywords derived from the open and axial coding process

Conceptual Categories	Keywords of the Housing Projects					
	A	B	C	D	E	F
Socio-Religious Environment	Islamic environment, neighbors, shared values, remembrance, child-friendly	Islamic values, a place of worship, Islamic environment	Islamic residence, Islamic environment, comfortable, family, friends	Islamic housing, child-friendly, muslim residence	Sharia residence, da'wah value, environment for family, neighbors	Islamic environment, Islamic nuances, safe, child-friendly
Activities and Facilities	Mosque, da'wah, Qur'an reading parks, playground, swimming pool, archery, sports recommended by the Prophet	Mosque, complete activities, jogging track, fitness center, CCTV	Mosque, religious activities, Sunnah sport, horse racing, archery, jogging track, Pondok Qur'an	-	Mosque, congregational prayers, routine Islamic gathering, road quality, CCTV	Mosque, Tahfiz camp program, reflection park, kids' swimming pool, CCTV
Investment and Future Prospects	Strategic location, city, facilities, supportive community, near educational facilities, comfortable	Strategic location, city, campus, investment, security, facilities	Complete facilities, strategic location, city, comfortable, security, near toll exit, and campuses	Boarding house, access, security, city, strategic location, near campuses and major roads	Construction quality, close to educational institutions and tourism, city, children's growth and development	Location, city, Sharia property, boarding house
Sharia-Based Transactions	Sharia payment methods, no banks, no usury, no fines, no confiscation, Islamic manner in the selling process	Sharia scheme without usury or fines, providing choices to ease the buyers	Buying process directly from the developer, without a bank, cash/credit, no interest	Islamic system, contracts, purchasing without usury	Usury-free scheme, the contract complies with Sharia, without a bank mortgage	Complete legal permit, split certificate, usury-free, no fines, no confiscation
House Design	Reflecting the characteristics of Muslims in the Middle East, it can be changed accordingly to the initial concept.	Combines boarding house and residence, exclusive, modern, elegant, and Islamic values	Premium, exclusive, elegant, luxury, cozy villa, comfortable living	Modern minimalist design	Classy resort-style design, Sharia, and beautiful	Luxurious Islamic house, villa house
Management of Service	Quick response service, transparency, and family-friendly	Excellent security service	Housing security system	Fast and easy process, good security service	Maintaining the contract commitments, management's religious culture	-
Natural Environment	Green area	Garden, a beautiful environment	healthy living, morning view of sunset and sunrise, mountain views, garden	-	Beautiful view of the mountain and orange plantations, cool green atmosphere	Stunning mountain views
Problems and Challenges	Pessimistic views, Islamic concepts are not fully applied, site limitations, and high cost	-	-	-	Housing prices, social facilities, and communication between the developer and owners	-

General Concept of Islamic Life	Islamic civilization, emigrate (hijra), muslims, family, community	-	-	The value of the blessings in life and in the hereafter	Goodness and blessings for many people, a Sharia lifestyle	Blessings with Sharia

In general, the discussion about Islamic housing concepts is dominated more by the socio-religious environment, activities and facilities, and investment and prospects (Figure 2). The socio-religious environment, investment, and prospects are also among the four categories discussed in the data for all six housing projects. The other two categories are the Sharia-based transaction category and the house design category.
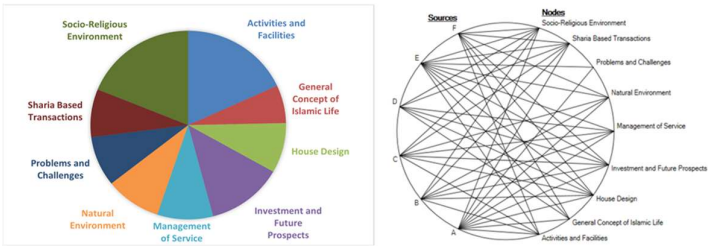

Figure 2. The overall conceptual categories of six Islamic housing projects (left) and the distribution of categories of each source (right)

The last step of the qualitative analysis is selective coding. In this paper, selective coding focuses on the natural environment category as an important aspect of the Islamic environment. The investigation of the six residence complexes reveals that these developers have incorporated the natural environment as an integral component of the Islamic housing concepts (Fig. 2). Five of the six Islamic housing projects addressed the concept of the natural environment in their conceptual statements. One project made no statements about the concept of the natural environment. However, basic environmental considerations may still be implemented in this project. Further investigation of the implementation of environmental considerations for the six projects will be addressed in the next part of this paper.

When the environment is highlighted, the focus is primarily on socio-religious aspects rather than the natural environment (Figure 3). The Islamic environment discussion revolves around the neighborhood, the Muslim community, civilization, family, a child-friendly environment, influences from the external world, a supportive, conducive, and comfortable environment for religious activities, and being surrounded by good neighbors who remind them of God.
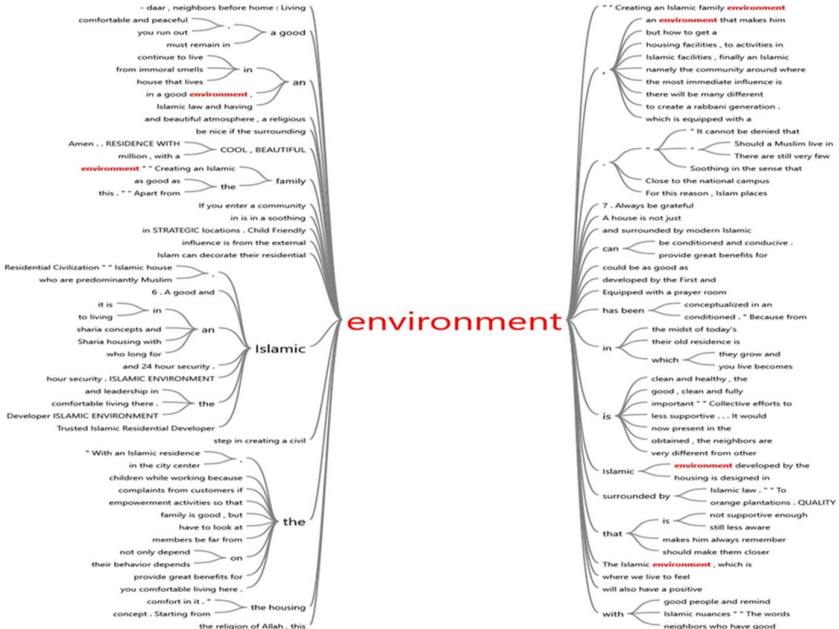

Figure 3. Word tree - the text search query of the notion of Islamic environment in the conceptual statements of the Islamic housing projects

On the other hand, the conceptual statements arising from the discourse on the significance of the natural environment are limited to aesthetically pleasing landscapes of mountains and plantations situated outside residential areas. The focus on incorporating the natural environment into the residential area still revolves around the aesthetically pleasing and shaded gardens. The residence "with a cool, calm, and beautiful environment," "surrounded by orange plantations and mountain views," and "has a clean and healthy environment" are statements related to the natural environment conceptualized in these housing projects (Figure 4). Little consideration has been given to conserving or managing water, vegetation, landscape patterns, and other elements of the natural environment to prevent harm and achieve broader advantages for the built environment and its society.

Figure 4. The word cloud of the 'natural environment' conceptual category

B. THE IMPLEMENTATION OF THE BASIC PRINCIPLES FOR SUSTAINABLE DEVELOPMENT

The quantitative analysis is carried out to investigate the implementation of environmental considerations in these Islamic housing projects. This study used the fundamental principles of sustainable development based on Islamic values established by Aulia et al. [20]. The implementation of these basic principles is investigated across the six Islamic housing projects. Although only five of the six Islamic housing projects incorporated the natural environment in their conceptual statements, environmental considerations were likely implemented in all of them. As a result, this analysis did not exclude any projects that did not explicitly describe their concept of the natural environment.

Two prerequisites for sustainable development from an Islamic perspective are Appropriate Site Development (ASD) and Water Conservation (WAC). The Appropriate Site Development (ASD) factor consists of Basic Green Area (ASD 1) and Site Landscaping (ASD 2) criteria. Meanwhile, the Water Conservation (WAC) factor consists of Rainwater Management (WAC 1) and Clean Water Management (WAC 2) criteria. According to the study, these are the vital factors that should become requirements for sustainable development [20]. Table 3 presents the implementation of this sustainable development framework for Islamic housing projects at the meso-scale of space, particularly the environmental relationship between open spaces and buildings.

Table 3. Sustainable Development Framework and the Implementations in Islamic Housing Projects

Prerequisite criteria for sustainable development based on Islamic values [20]		Meso-Scale Implementations on the Islamic Housing Projects
Appropriate Site Development (ASD)	Basic Green Area (ASD 1)	Percentage of the built-up area, paved area, and green spaces area
	Site Landscaping (ASD 2)	Diversity of vegetation, arrangement of the buildings according to the site conditions
Water Conservation (WAC)	Rainwater Management (WAC 1)	Rainwater absorption is a mechanism for collecting and utilizing rainwater
	Clean Water Management (WAC 2)	Water consumption monitoring, water reducing, water recycling management

Table 4 presents the findings of a quantitative analysis of the implementation of the two prerequisite criteria (ASD and WAC) and their four components in six Islamic housing projects studied in this research. The left column contains the master plan mapping, the project implementation mapping, and a photograph illustrating the green area condition for each housing project. Meanwhile, the right column contains assessments of the implementation of four components against the two prerequisite criteria.

Table 4. The Results of Quantitative Analysis on the Implementation of the Prerequisite Criteria in the Islamic Housing Projects

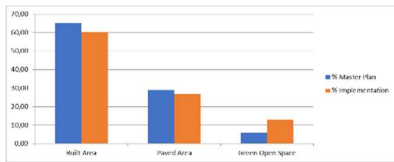| Islamic Housing Projects' Land Cover Maps	The Assessment of Prerequisite Criteria for Sustainable Development

Project A
Master plan:

Project implementation:

Documentation:

ASD 1. Basic Green Area

	Master Plan	Project Implementation:
Built-up area	65,16 %	60,34%
Paved area	28,84%	26,74%
Green space	6%	12,92%

Green spaces are dominated by private yards in front of the houses. Paved areas of residential streets dominate public open space. The only green public space found is narrow plant strips along the road.

ASD 2. Site Landscaping
No vegetation diversity, only one or two types of trees are planted on the site. The arrangement of the housing units follows the site contour.

WAC 1. Rainwater Management
Rainwater absorption is carried out through the use of paving as a residential road material. There is no mechanism for collecting and utilizing rainwater in this housing complex.

WAC 2. Clean Water Management
No water consumption monitoring, water reducing, or water recycling management in this housing complex.

0 Not Found
1 Poor
2 Fair
3 Good
BGA (ASD 1) Basic Green Area
SL (ASD 2) Site Landscaping
RM (WAC 1) Rainwater Management
CWM (WAC 2) Clean Water Management

Project B
Master plan:

Project implementation:

ASD 1. Basic Green Area

	Master Plan:	Project Implementation:
Built-up area	53,22%	21,82%
Paved area	33,96%	33,69%
Green space	12,82%	44,49%

Green space areas have seen a significant increase in project implementation because they are housing units that have not yet been built (private open spaces) and are not public green spaces. According to the master plan, the planned public open space is 46.78%, most of which is paved. 12.82% of the green open space areas are planned for residential parks.

ASD 2. Site Landscaping
Diverse types of vegetation were planted on the site. The arrangement of the housing units follows the site contour. The green area along the riverside is well preserved.

WAC 1. Rainwater Management
Rainwater absorption is carried out through the use of paving as a residential road material. There is no mechanism for collecting and utilizing rainwater in this housing complex. Rainwater that is not absorbed is channeled directly into the river through the site.
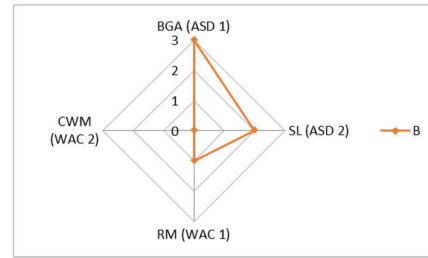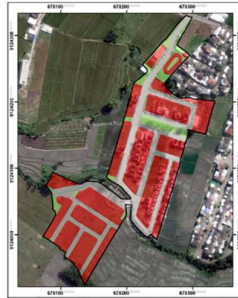
WAC 2. Clean Water Management
No water consumption monitoring, water reducing, or water recycling management in this housing complex.

Documentation:

0 Not Found
1 Poor
2 Fair
3 Good
BGA (ASD 1) Basic Green Area
SL (ASD 2) Site Landscaping
RM (WAC 1) Rainwater Management
CWM (WAC 2) Clean Water Management

Project C

Master plan:

Project implementation:

Documentation:

ASD 1. Basic Green Area

	Master Plan:	Project Implementation:
Built-up area	59,45%	14,75%
Paved area	32,30%	18,96%
Green space	8,25%	66,29%
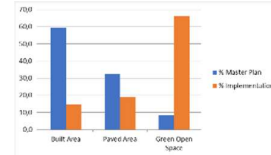
Extensive public green open spaces are spread across this housing complex, including a road median greenery, the horse racing area, and gardens along the riverside. Green space areas have seen a significant increase in project implementation because these areas are housing units that have not yet been built.

ASD 2. Site Landscaping

Diverse types of vegetation were planted on the site. The arrangement of the housing units follows the site contour. The green area along the riverside is well preserved.

WAC 1. Rainwater Management

Rainwater absorption is carried out through the use of paving as a residential road material. There is no mechanism for collecting and utilizing rainwater in this housing complex. Rainwater that is not absorbed is channeled directly into the river through the site. Green public areas help absorb rainwater.

WAC 2. Clean Water Management

No water consumption monitoring, water reducing, or water recycling management in this housing complex.

0 Not Found
1 Poor
2 Fair
3 Good
BGA (ASD 1) Basic Green Area
SL (ASD 2) Site Landscaping
RM (WAC 1) Rainwater Management
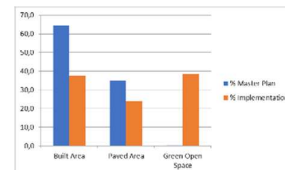CWM (WAC 2) Clean Water Management
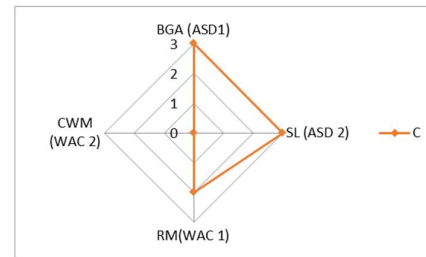
Project D

Master Plan:

ASD 1. Basic Green Area

	Master Plan:	Project Implementation:
Built-up area	65%	37%
Paved area	35%	24%
Green space	0%	39%

Green space areas have seen a significant increase in project implementation because they are housing units that have not yet been built (private open spaces) and are not public green spaces. Green spaces are dominated by private yards in front of the houses. Public open space is dominated by paved areas of residential streets. The only green public space found is a small garden in front of this housing complex.

ASD 2. Site Landscaping

No vegetation diversity, only one or two types of trees are planted on the site. The arrangement of the housing units follows the site contour.

Project Implementation:
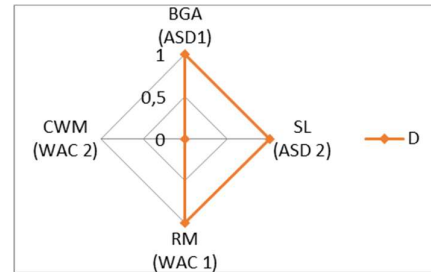

Documentation:

WAC 1. Rainwater Management

Rainwater absorption is carried out through the use of paving as a residential road material. There is no mechanism for collecting and utilizing rainwater in this housing complex.

WAC 2. Clean Water Management

No water consumption monitoring, water reducing, or water recycling management in this housing complex.

0 Not Found
1 Poor
2 Fair
3 Good
BGA (ASD 1) Basic Green Area
SL (ASD 2) Site Landscaping
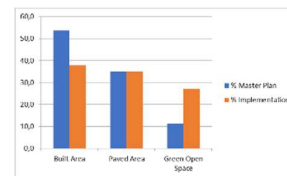RM (WAC 1) Rainwater Management
CWM (WAC 2) Clean Water Management

Project E

Master Plan:

Project Implementation:

Documentation:

ASD 1. Basic Green Area

	Master Plan:	Project Implementation:
Built-up area	54%	38%
Paved area	35%	35%
Green space	11%	27%

There is sufficient green open space in the public areas of this housing complex. Green space areas have seen a significant increase in project implementation because these areas are housing units that have not yet been built (private open spaces).

ASD 2. Site Landscaping

Diverse types of vegetation were planted on the site. The arrangement of the housing units follows the site contour. The green area around the small lake is well preserved.

WAC 1. Rainwater Management

Rainwater absorption is carried out through the use of paving as a residential road material. A small artificial lake is a mechanism for collecting and utilizing rainwater.

WAC 2. Clean Water Management

No water consumption monitoring, water reducing, or water recycling management in this housing complex.
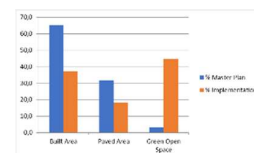
0 Not Found
1 Poor
2 Fair
3 Good
BGA (ASD 1) Basic Green Area
SL (ASD 2) Site Landscaping
RM (WAC 1) Rainwater Management
CWM (WAC 2) Clean Water Management
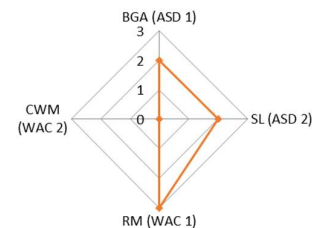
Project F

ASD 1. Basic Green Area

	Master Plan:	Project Implementation:
Built-up area	65%	37%
Paved area	32%	18%
Green space	3%	45%

Green space areas have seen a significant increase in project implementation because they are housing units that have not yet been built (private open spaces) and are not public green spaces. Public open

Master Plan:

Project Implementation:

Documentation:

space is dominated by paved areas of residential streets. No green public space is found in this housing complex.
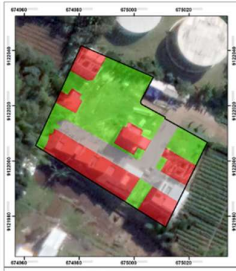
ASD 2. Site Landscaping
No vegetation diversity, only one or two types of trees are planted on the site. The arrangement of the housing units follows the site contour.

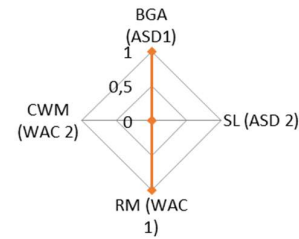### WAC 1. Rainwater Management
Rainwater absorption is carried out through the use of paving as a residential road material. There is no mechanism for collecting and utilizing rainwater in this housing complex.

WAC 2. Clean Water Management
No water consumption monitoring, water reducing, or water recycling management in this housing complex.

0 Not Found
1 Poor
2 Fair
3 Good
BGA (ASD 1) Basic Green Area
SL (ASD 2) Site Landscaping
RM (WAC 1) Rainwater Management
CWM (WAC 2) Clean Water Management

Based on the analysis results in Table 4, the Basic Green Area (ASD 1) criteria generally obtained an average score of 1.83 (close to fair). The three housing complexes studied showed that the basic green areas were significantly underrepresented. In contrast, one housing complex had an adequate basic green area, and two housing complexes had well-maintained basic green areas that exceeded the minimum required percentage. Meanwhile, the Site Landscaping category (ASD 2) also showed an average score of 1.5 (between poor and fair) due to the lack of vegetation diversity. Even though the arrangement of housing units follows the site's contours, vegetation used for soil protection on sloping land has been replaced by concrete sheet piles, except for a few areas along watercourses.

Furthermore, the average score for Rainwater Management (WAC 1) is 1.5 (between poor and fair). Of the six housing complexes, only one has adequate rainwater management, with a retention lake. There is no mechanism for collecting and using rainwater in these housing complexes beyond paved roads and a few public green spaces. Finally, Clean Water Management (WAC 2) received a score of 0 (not found) due to the absence of water consumption monitoring by the housing complex as the first step in water reduction and water recycling management across the six housing complexes. In conclusion, the studied projects fail to implement fundamental environmental criteria.

C. DISCUSSING THE CONCEPT OF ISLAMIC ENVIRONMENT IN HOUSING PROJECTS: DEEPENING UNDERSTANDING, IMPROVING IMPLEMENTATIONS

Differs from the more affirmative studies on Islamic housing development [8], [9], [13], [14], [15], [17], this study aimed to investigate the conceptual and practical aspects of environmental awareness behind the notion of 'Islamic Environment' that was brought up by developers of Islamic housing projects in a critical manner. Even so, the main objective of this investigation is not to discredit the idea of Islamic housing in particular but rather to contribute positively to the overall advancement of Islamic housing developments. Two crucial findings from the quantitative and qualitative analyses of environmental awareness in the Islamic housing projects are presented in this study.

Firstly, the conceptual understanding of the terms 'environmental awareness' and 'Islamic environment' used by the Islamic housing projects in this research is only partially connected to the Islamic principles of man as the vicegerent on earth. The Islamic environment created by these housing projects is primarily discussed in terms of the socio-religious context, embodied in the presence of mosques, the religious demographics of their occupants, and the provision of socio-religious facilities. However, the idea presented for the natural

environment is limited to a beautiful garden and far-off views of mountains and orange fruit trees outside their residential sites, and therefore falls outside the authority of their design scope. This finding indicates that the developers need to be aware of the fundamental Islamic understanding of environmental values. The Islamic concept of environmental sustainability underscores the interconnectedness and mutual dependence of all living beings, each with an ecological role and intrinsic value that safeguard environmental equilibrium and promote the well-being of humanity as a whole [21]. Regrettably, adopting environmentally conscious practices remains largely overlooked as a fundamental aspect of the development of Islamic housing and communities. Hence, recent research endeavors focusing on fostering environmental awareness within Muslim communities through formal and informal education [22], [23], [24], [25] underscore the emerging significance of this area of inquiry. Within Islamic teachings, the imperative of environmental protection holds considerable weight, emphasizing that environmental education is equally important to science and technology [26].

Secondly, the lack of conceptual depth is also reflected in the inadequate implementation of basic environmental criteria in the studied projects. The fundamental requirements for sustainable development—Basic Green Area, Site Landscaping, Rainwater Management, and Clean Water Management—have not been sufficiently implemented. The issue that came up in one of the interviews is the enormous expense of administration, building, and maintenance needed to implement this fundamental idea. While understandable, it is important to note that implementing these fundamental ideas does not necessarily require cutting-edge technology; more straightforward strategies can suffice, such as building compactness [27], car-free areas and walkability [28], bioclimatic considerations and construction systems [29], cooperative models of shared energy, resources, and spaces [30]. Moreover, the concept of a green environment for housing can be a selling point, fulfilling its philosophical and practical value. The 'green branding' of the housing projects responds to the residential demands of eco-conscious urban communities [31]. Several conventional housing developers have even promoted this approach in their housing projects. Thus, embracing environmental awareness in housing aligns with philosophical and practical values and responds to the growing demand from eco-conscious urban communities.

Indeed, looking back at the nine themes that emerged in the conceptual categories at the beginning of the analysis, the natural environment received little attention from developers, both conceptually and practically. The socio-religious environment, activities and facilities, and investment and prospects were the themes that drew the most attention in their descriptions of their Islamic housing projects. Other themes, such as Sharia-based transactions and house design, although not discussed in depth, received attention across all housing projects studied. It is interesting to note that there is generally less intellectual and philosophical discussion of Islamic life as a whole, which aligns with a need for more conceptual and practical attention to environmental considerations in these projects. The implications of environmental issues in Islamic housing projects, along with some strategies for addressing them from the managerial and architectural perspectives, have been explained in the previous paragraph. However, the developers of Islamic housing projects must strengthen their practical strategies with a more comprehensive philosophical understanding of the Islamic worldview.

4. CONCLUSION

In contrast to several other studies that have an affirmative attitude towards the development of Islamic housing, this study critically investigates the concept and implementation of its environmental considerations. This paper challenged the environmental awareness of Islamic housing projects, examining their conceptual statements and practical implementations. The findings demonstrated a partial understanding of the notion of an 'Islamic environment' at the conceptual level and a lack of basic implementations of environmental awareness at the practical level. These two crucial findings showed that efforts to redefine the notion and implementation of the Islamic environment are critical to ensuring environmental sustainability, so the promotion of 'nature' goes beyond being an advertising tool for Islamic housing developments.

Nevertheless, it is important to note that these findings are not intended for broad generalization beyond the scope of this research. Given the multidisciplinary nature of this subject, more extensive research is required to broaden the scope and context of Islamic housing studies. The interplay among various Islamic cultures offers a unique opportunity to examine how different theological interpretations and cultural practices shape the development of Islamic housing projects. In the future, collaborations between practitioners and academics will also play a pivotal role in rethinking how the profound and comprehensive Islamic environmental values can serve as the conceptual cornerstone of Islamic housing projects. These partnerships are vital for exploring implementation strategies that balance philosophical ideals and pragmatic necessities.

REFERENCES

[1] N. I. Saifuloh and A. I. Anwar, "Preferences of the Young Generation toward Housing: Is The Opportunity for Islamic Banks?" in Proceedings of the 1st Saizu International Conference on Islamic Philanthropy, July 2023, pp. 70-80. DOI: 10.24090/icip.v1i1.304

[2] C. Muali and K. Nisa', "Pemasaran Syariah Berbantuan Media Sosial: Kontestasi Strategis Peningkatan Daya Jual," An-Nisbah: Jurnal Ekonomi Syariah, vol. 5, no. 2, pp. 168-185, 2019. DOI: 10.21274/an.2019.5.2.168-185.

[3] A. K. Putri and Y. Sunesti, "Sharia Branding in Housing Context: A Study of Halal Lifestyle Representation," JSW (Jurnal Sosiologi Walisongo), vol. 5, no. 1, pp. 77-92, 2021. DOI: 10.21580/jsw.2021.5.1.7268.

[4] Open Knowledge Maps, "Knowledge Map for research on Islamic housing," Retrieved from https://openknowledgemaps.org/map/85b64c5ecd9ff84231cc5ff7c34d63dd, 2024.

[5] S. Omer, "Islamic Housing between Yesterday and Today," Journal of Islam in Asia, vol. 14, no. 1, June 2017. DOI: 10.31436/jia.v14i1.578

[6] A. S. Bokhari, M. T. M. Hammad, and D. Beggas, "Impact of Islamic Values and Concepts in Architecture: A Case Study of Islamic Communities," Sustainable Development and Planning XI, WIT Transactions on Ecology and the Environment, vol. 241, DOI:10.2495/SDP200311, 2020.

[7] A. Perdana, "Evaluation of Real Estate Development Process in Sharia Housing Based on The Application of The Ideal Islamic Housing Concept," IPTEK Journal of Proceedings Series, no. 6, pp. 156–160, 2020. DOI: http://dx.doi.org/10.12962/j23546026.y2020i6.9190.

[8] M. S. Indraswara, G. Hardiman, R. S. Rukayah, and F. S. Hidayat, "Islamic Values in Muslim Housing Griya Sakinah Residence and Influence on the Behaviour of Its Residents," Journal of Architectural Design and Urbanism, vol. 4, no. 1, pp. 39-50, 2021.

[9] S. Aisha, M. Dwiputri, and R. Mentari, "Islamic Architectural Concept Implementation in Shari'ah Branding Housing at Barazaki Residence, Depok, West Java," Lakar: Jurnal Arsitektur, vol. 6, no. 2, pp. 256-270, 2023.

[10] A. Zulfan, M. Taufiq, G. Ashraf, and M. Rizky, "Developing Islamic Housing Index based on Maqasid Approach," Review on Islamic Accounting, vol. 3, 2023. https://doi.org/10.58968/ria.v3i1.336

[11] S. Malik and B. Mujahid, "Perception of House Design in Islam: Experiences from Saudi Arabia and Pakistan," Journal of Islamic Thought and Civilization, vol. 6, issue 2, Fall 2016. DOI: https://doi.org/10.32350/jitc.62.04

[12] A. A. A. Gaber and G. A. A. Saad, "Design Flexibility in Islamic Architecture as a Methodology for Treating Design Deficiencies in Governmental Housing Projects in Egypt," Journal of Engineering Sciences, vol. 51, no. 5, pp. 366-401, Sept. 2023. DOI: 10.21608/JESAUN.2023.209216.1225.

[13] H. Babangida and H. Sani-Katsina, "Integrating Islamic Design Principles for Achieving Family Privacy in Residential Architecture," Journal of Islamic Architecture, vol. 5, no. 1, pp. 1-10, June 2018.

[14] N. Hidayati, "Implementasi Konsep Rumah Islami pada Perumahan di Martapura," Jurnal Teknologi Berkelanjutan (Sustainable Technology Journal), vol. 7, no. 2, pp. 82-89, 2018.

[15] A. D. Zalva, S. A. Fikri, and A. Suprapti, "The Changes of House's Spatial Caused by The User's Religiosity in Pondok Indah Housing Estate Semarang," Journal of Architectural Design and Urbanism, vol. 1, no. 2, pp. 24-33, March 2019.

[16] B. P. Rizki, "Wajah Islam dalam Iklan Perumahan: Representasi Islam dalam Iklan Banner Perumahan Damai Islamic Living Yogyakarta," Universitas Islam Indonesia, Yogyakarta, 2019.

[17] A. Perdana, "A Comparative Study of Natural Lighting Quality in Sharia Housing Based on Daylight Factor Evaluation Using Autodesk Revit," Journal of Artificial Intelligence in Architecture, vol. 2, no. 1, February 2023.

[18] R. Othman, et al., "Ecological Indicators in Islamic Built Environment," ITBM, Kuala Lumpur, 2016.

[19] A. Le Duc, "Responsibility as a Primary Environmental Virtue in Islam," Asian Journal of Philosophy and Religion, vol. 2, no. 1, pp. 187-206, 2023. DOI: https://doi.org/10.55927/ajpr.v2i1.4821

[20] A. F. Muchlis, D. Larasati, and S. Triyadi, "Reaching the Understanding of the Green Building Concept in Islamic Value: Thematic Tafseer Study," Journal of Islamic Architecture, vol. 6, no. 4, pp. 321-330, December 2021.

[21] Y. A. Moneim, "The Green Islamic Approach on Environmental Sustainability: A Contemporary Perspective," Manchester Journal of Transnational Islamic Law & Practice, vol. 19, no. 2, pp. 43-68, 2023.

[22] R. N. Aulia, F. M. Jasin, S. Priyanto, M. Effendi, and I. Afifah, "Empowering Communities for Islamic Eco-Friendly House Development: A Case Study in a Tourist Village," Indonesian Journal of Cultural and Community Development, vol. 14, 2023. https://doi.org/10.21070/ijccd.v14i2.972

[23] J. Purnomo, S. Anantanyu, H. Saptaningtyas, and F. Mangunjaya, "Prophetic Approach in Environmental Education and Community Empowerment: A Case Study of Sustainable Pesantren Development," Revista de Gestão Social e Ambiental, vol. 18, p. e06259, 2024. https://doi.org/10.24857/rgsa.v18n8-047

[24] A. Nurkhin, S. Martono, N. Ngabiyanto, H. Mukhibad, A. Rohman, and A. Kholid, "Green-pesantren and environmental knowledge and awareness: case study at Pondok Pesantren As Salafy Al Asror Semarang," in IOP Conference Series: Earth and Environmental Science, vol. 1248, p. 012003, 2023. https://doi.org/10.1088/1755-1315/1248/1/012003

[25] B. Suwito, D. Irawan, Y. Kartini, L. Rizki, and A. Muhammad, "Environmental awareness movement to reduce environmental impacts on health in PP. Al Fitrah As-Salafiyah Surabaya," Community Service Journal of Indonesia, vol. 5, pp. 87-92, 2023. https://doi.org/10.36720/csji.v5i2.610

[26] A. Meraj, "Islamic Approach to the Environment and the Roles in the Environment Protected," JIP-Jurnal Internasional Ilmu Sosial, vol. 4, no. 1, pp. 14, Jan. 2016.

[27] A. P. Kern, R. Postay, E. R. Schneck, M. Mancio, M. A.S. González, and G. Guerra, "Cost and environmental impacts reduction through building compactness," Engineering, Construction and Architectural Management, vol. 28, no. 4, pp. 1176-1195, 2021. https://doi.org/10.1108/ECAM-03-2020-0147

[28] R. Cavicchia and R. Cucca, "Urban Densification and Its Social Sustainability," in The Palgrave Encyclopedia of Urban and Regional Futures. Cham: Palgrave Macmillan, 2022. Available: https://doi.org/10.1007/978-3-030-51812-7_156-1.

[29] A. P. Kern, V. de M. Netto, J. Cantarino, M. F. de Mendonça, E. Schneck, J. Pires, and M. A. S. González, "Urban, Environmental and Habitability Parameters for Social Housing," Revista De Gestão Social E Ambiental, vol. 17, no. 10, pp. e03617, 2023. https://doi.org/10.24857/rgsa.v17n10-024

[30] D. Hill and M. Mazzucato, "Modern housing: An environmental common good," Council on Urban Initiatives, 2024.

[31] M. Peverini, R. Cavicchia, M. Friesenecker, L. Munson, A. Susani, and K. Jesus, "Greener housing, but affordable? A study of synergies and conflicts between environmental policy instruments and access to housing," 2023. [Online]. Available: 10.13140/RG.2.2.36609.84325