

Strengthening Green Islamic Values to Realize Eco-Pesantren: A Study on the Tahfidzul Qur'an Islamic Boarding School of Integrated Islamic Boarding School

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Abstract

Islamic boarding schools, as Islamic educational institutions, have a strategic role in shaping the character of caring for the environment through the integration of Islamic values in daily life. One approach that can be applied is to strengthen Green Islamic values to realize the concept of Eco-Pesantren. The Tahfidzul Qur'an Islamic Boarding School of SMA IT Ibnu Abbas Klaten has the potential to develop this concept; however, not all aspects of environmental management are optimal, particularly in waste management, the internalization of ecotheological attitudes, and the active involvement of students. This study aims to: (1) Describe the actual condition of environmental management, especially waste management, at the Tahfidzul Qur'an Islamic Boarding School of SMA IT Ibnu Abbas Klaten, (2) Analyze the understanding and attitude of students towards Green Islamic values, and (3) Formulate a strategy to strengthen Green Islamic values towards Eco-Pesantren. This study employs a mixed-methods approach, incorporating in-depth interviews, observations, and documentation methods. The analysis is conducted through a SWOT approach, which combines internal and external factors, as well as supporting theories such as Islamic Ecotheology, Environmental Literacy, and the Theory of Planned Behavior. The results of the study showed that the survey (n=126) yielded an average score of 4.3 (86.6%), indicating that students already possess a good theological understanding of the importance of protecting the environment as a form of servitude to Allah and as a responsibility of caliphs.

Keywords

Eco-Islamic Boarding School; Green Islamic; Islamic Boarding School; Islamic Ecotheology; SWOT

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1. INTRODUCTION

Environmental awareness and education should be introduced from an early age, including in religious-based educational environments such as Islamic boarding schools. *Pesantren* plays a strategic role as an educational institution that not only conveys religious knowledge but also shapes the character and values of individuals with social and ecological concerns. As an institution close to the community and possessing high moral authority, *pesantren* can be a pioneer in instilling the values of love for the environment (Arifah et al., 2022; Fatkhurrohim et al., 2021; Fauziah, 2022; Habibah et al.,



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2022; Hayati & Handayani, 2021). The concept of environmental education has been present in Islamic teachings since the time of the Prophet PBUH, emphasizing the importance of balance (*mīzān*), responsibility, and the prohibition of harming nature (*fasād*) (Munajat, 2021).

Although various Islamic boarding schools have begun to adopt environmentally friendly practices, such as waste bank management, tree planting, and energy-saving behavior (Lestari & Maulidah, 2020). Empirical literature indicates that the sustainability and integration of this practice into the formal curriculum of Islamic boarding schools remain suboptimal. Research by Anwar et al. (2019) highlights green *pesantren* initiatives in several areas that can increase the ecological awareness of students, but without institutional support and a structured monitoring system, student participation tends to fluctuate (Fadillah & Mustakim, 2021). Meanwhile, interventions carried out by boarding school-based *pesantren* are generally incidental and have not been systematically integrated into the curriculum and institutional governance (Isnaini, 2022; Kurniawati, 2023). Further studies also emphasized that teachers and administrators need guidelines for the integration of Green Islamic materials so that environmental education runs simultaneously in learning and daily activities of the boarding school (Baiquni, 2024). Lack of synergy between divisions, lack of peer supervision, and weak role of administrators were identified as the main inhibiting factors in the habit of clean behavior and caring for the environment (Siahaan & E., 2024; Supriatna & A., 2022; Wahyuni & Wahyuni, 2021; Yuliani & Yuliani, 2021).

The latest research in 2024–2025 even adds that the achievements of Islamic boarding schools in internalizing Green Islamic through the Eco-Islamic Boarding School model are greatly influenced by the existence of an explicit environmental curriculum, multi-actor collaboration, and the development of sustainable environmentally friendly student cadre regeneration programs (Baiquni, 2024; Indonesian Ministry of Religion, 2025). Thus, the research gap lies in the lack of studies that specifically examine the integration of Green Islamic values into the formal curriculum of Islamic boarding schools at the high school/*tahfidz* level, especially through a systematic approach—Involving institutional evaluation, longitudinal monitoring of student participation, the preparation of SOPs, and cross-sectoral collaborative strategies. This research aims to bridge the gap by developing and testing a measurable, sustainable, and effective Green Islamic strengthening model that incorporates the active involvement of all *pesantren* residents.

However, several Islamic boarding schools have begun taking concrete steps to preserve the environment. For example, the Annuqayah Latee I Islamic Boarding School, which applies the principle of "back to nature" by accustoming students to reduce the use of plastic, plant trees, vegetables, and medicinal plants, and manage waste independently (Habibi et al., 2022; Sari et al., 2020; Yuliani, 2021). These practices show that strengthening the character of students who love nature can be done through habituation and example in the daily life of the *pesantren*.

The Ministry of Environment and Forestry (MoEF) also initiated the Eco-*Pesantren* program in 2008 as a form of recognition of the role of Islamic boarding schools in environmental conservation. Islamic boarding schools that are actively engaged in natural resource conservation, waste management, and community empowerment can earn this title. Mangunjaya (2014) said that Eco-*Pesantren* is a concrete form of integrating Islamic values with ecological awareness, which is realized through environment-based policies, culture, and real actions (Munajat, 2021; Nasution et al., 2020; Nurjannah & Nurjannah, 2020).

The *Tahfidzul Quran* Islamic Boarding School of SMA IT Ibnu Abbas Klaten has great potential in strengthening Green Islam and implementing the concept of Eco-*Pesantren*. Currently, this *pesantren* has around 722 students living in the dormitory. The daily food menu consists of side dishes, vegetables, and occasionally fruits, but the management of food waste is still not optimal. The garbage in the women's dormitory has started to be sorted, but the accumulation of food debris near the sink is still visible. Every month, there is cooperation with the Environment Agency (DLH) in collecting plastic

bottles, but further management has not been maximized due to internal constraints. The Creative Economy Sector, under the foundation, also has the potential to develop waste management and reforestation initiatives, such as catfish nursery plans and yard utilization, but these efforts are still underutilized. Therefore, this research is important for identifying the potential to strengthen Green Islamic values in the lives of Islamic boarding schools that integrate religious and environmental education (Habibi et al., 2022; Munajat, 2021; Supriatna, 2022).

The purpose of this study is to describe in depth how the integration of Green Islamic values is implemented in the culture and daily activities of the *Tahfidzul Qur'an* Islamic Boarding School of SMA IT Ibnu Abbas Klaten, understand the level of understanding and attitude of students and teachers towards Islamic-based environmental care values, and identify strengthening strategies that can be applied so that the culture of environmental care is more optimal and sustainable in the environment Boarding.

2. METHODS

This study employs a mixed-methods approach, combining qualitative descriptive methods with quantitative surveys. The research location is the *Tahfidzul Qur'an* Islamic Boarding School of SMA IT Ibnu Abbas Klaten, which combines the *pesantren* education system with the formal high school curriculum. The selection of the location is based on the relevance of Islamic educational values to the concept of Green Islam. It is considered representative to observe environmental care behavior based on religious values in both real and controlled settings.

The research was conducted for two months (January–February 2025), after the semester exam schedule and when *pesantren* activities were relatively stable. During the study, data were collected through participatory observation, in-depth interviews, and questionnaire surveys. The research subjects, including students, teachers, and *pesantren* administrators, were selected to get a comprehensive visualization of the culture and environmental habits in the *pesantren*.

The respondents in this study were students from the *Tahfidzul Quran* Islamic Boarding School of SMA IT Ibnu Abbas Klaten. Data were obtained from 126 respondents selected through proportional random sampling techniques from classes X, XI, and XII. Respondent profiles are categorized into three main groups: class, age, and gender. The research population consists of all students, totaling 722 individuals. The sample was determined by the probability proportionate random sampling technique using the Slovin formula, and (error tolerance rate of 10%), so that a minimum sample of 88 people was obtained. However, in implementation, the valid questionnaire responses reached 126 students (a high response rate due to oversampling to account for anticipated dropout data), so all incoming data were analyzed $N = 722e = 0,1$.

The data collection procedure was carried out directly (face-to-face at the *pesantren*). The distribution of questionnaires was coordinated with homeroom teachers. At the same time, in-depth interviews were conducted with 10 students, four teachers, and two administrators who were selected purposively based on their level of involvement in the environmental program. Quantitative data analysis used the latest version of SPSS for descriptive statistics (mean, median, SD, category scores, percentages) and scale reliability tests (Cronbach's Alpha). If a group comparison is performed, a t-test or Mann–Whitney test is used, depending on the data distribution. Qualitative analysis was conducted using manual coding techniques, including the data reduction stage, categorization of themes (e.g., understanding, obstacles, motivation), triangulation of sources (interviews, observations, field notes), and narrative preparation of each main theme using a thematic matrix.

3. FINDINGS AND DISCUSSIONS

The Concept of Green Islam is Applied in the Lives of Students at the Tahfidzul Quran Islamic Boarding School of SMA IT Ibnu Abbas Klaten

To find out an overview of students' attitudes and behaviors towards the environment based on *Green Islamic values*. The instruments used consist of four main dimensions, namely: theological-Islamic dimension, ecological knowledge, awareness and attitude towards the environment, and environmentally friendly behavior. All statements were assessed using a 5-point Likert scale, ranging from Strongly Agree (SS) to Strongly Disagree (STS).

Table 1. Concept *Green Islamic*

No.	Indicators	Code	Max Score	Total Score	Average
1	Theological Understanding	PT1	630	620	4.9
2		PT2	630	623	4.9
3		PT3	630	613	4.9
4		PT4	630	618	4.9
5		PT5	630	613	4.9
6		PT6	630	589	4.7
7		PT7	630	547	4.3
8		PT8	630	565	4.5
9		PT9	630	548	4.3
10	Ethical Behavior	PE1	630	619	4.9
11		PE2	630	568	4.5
12		PE3	630	482	3.8
13		PE4	630	469	3.7
14		PE5	630	470	3.7
15		PE6	630	544	4.3
16		PE7	630	513	4.1
17		PE8	630	517	4.1
18		PE9	630	509	4.0
19		PE10	630	540	4.3
20		PE11	630	503	4.0
21	Social-Ecological Action	ASE1	630	609	4.8
22		ASE2	630	558	4.4
23		ASE3	630	575	4.6
24		ASE4	630	587	4.7
25		ASE5	630	592	4.7
26		ASE6	630	617	4.9
27		ASE7	630	619	4.9
28		ASE8	630	578	4.6
29		ASE9	630	588	4.7

No.	Indicators	Code	Max Score	Total Score	Average
30		ASE10	630	591	4.7
31		ASE11	630	574	4.6
32		ASE12	630	565	4.5
33		ASE13	630	374	3.0
34		ASE14	630	397	3.2
35		ASE15	630	509	4.0
36		ASE16	630	439	3.5
37		ASE17	630	420	3.3
38		ASE18	630	479	3.8
Overall Score			23940	20741	4.3
Overall Score Percentage				86.6%	
Information				Excellent	

Based on the results of the descriptive analysis in Table 1, it is known that the highest score in the dimension of theological understanding was obtained in the PT2 item (Protecting the environment is part of worship) with a score of 623 out of 630 (average 4.9). These findings indicate that students possess a solid understanding of the spiritual obligations associated with protecting the environment, in line with the principles of Islamic Ecotheology. Islamic ecotheology views that man's relationship with nature is not only ecological, but also spiritual and moral, because humans have a role as caliph fil ardh (leader on earth) who is responsible for protecting Allah's creation (Nasr, 2003; Suryanto, 2019). This theological understanding reflects the high level of literacy of the spiritual environment. However, there is still an uneven understanding, as evident in items PT7 and PT9, which suggests a dichotomy between religious rituals and ecological practices. This shows the importance of curriculum integration between the teachings of worship fiqh and Islamic ecological principles, so that students not only understand Islam as a ritual religion, but also as a religion of *rahmatan lil 'alamin* that includes the balance of nature.

The dimension of ethical behavior shows the tendency that the students have habits that reflect ecological moral values in daily life (Al-Muta'aliyah & Nugraha, 2025; Fitriani & Mahmudah, 2025; Hudha et al., 2025; Mukhlis, 2023; Syahroni & Rofiq, 2025; Syawaluddin, 2023; Zulkifli et al., 2024). Item PE1 (Saving water and electricity is part of Islamic morals) obtained a very high score (619), reflecting an awareness of the value of israf (excess), which is prohibited in Islam. This aligns with the principles of environmental stewardship in Islam, where the practice of conserving and utilizing resources wisely is a form of piety (Akbar et al., 2023). However, a lower score was found on item PE4 (I have always rejected the use of single-use plastics), which scored only 469 (an average of 3.6), indicating that awareness of the issue of plastic waste and concrete actions to reduce it still needs to be improved. According to Environmental Literacy theory, environmentally conscious behavior is influenced by the interaction between knowledge, attitudes, and skills (Roth, 1992). In this case, although positive attitudes are beginning to take shape, ecological skills and sustainable habits still require strengthening through hands-on education and training.

The dimension of ecological social action refers to the extent to which students are actively involved in collective actions that promote environmental sustainability. High scores were found on items ASE6 and ASE7 (617 and 619, respectively), indicating that most students have actively participated in green activities and environmental campaigns based on Islamic values. This is a good indicator of the internalization of Green Islamic values, which have been translated into concrete

actions. However, low scores were found on items ASE13 to ASE17, e.g., ASE13 ("I am involved in the formulation of cottage environmental policies") with a score of only 374 (average of 3.0). This limitation can be explained through the Theory of Planned Behavior (TPB) developed by Ajzen (1991). According to TPB, behavior is influenced by three components: attitudes toward behavior, subjective norms, and perceptions of behavior control. In this context, students may have a positive attitude towards environmental conservation. Still, they often feel that they lack the authority or opportunity to participate in the formulation of environmental policies in Islamic boarding schools. Therefore, there is a need for structural involvement in policy planning and environmental leadership development for students.

The overall score of the instrument for the implementation of Green Islamic values at the *Tahfidzul Qur'an* Islamic Boarding School of SMA IT Ibnu Abbas Klaten is 20,741 out of a maximum score of 23,940, with an average score of 4.3 and an achievement percentage of 86.6%. This figure indicates that, in general, the application of Green Islamic values at the *Tahfidzul Qur'an* Islamic Boarding School of SMA IT Ibnu Abbas Klaten falls into the very good category. The dimension of theological understanding and ethical behavior of students showed very positive results. However, the dimension of socio-ecological action still needs strengthening, especially in the aspects of institutional participation and environmental advocacy. With the integration of Islamic Ecotheology, Environmental Literacy, and the Theory of Planned Behavior approaches, *pesantren* can continue to evolve as Eco-*Pesantren*, which not only teaches the memorization of the Qur'an but also fosters a generation of Muslims who are environmentally aware and actively contribute to the sustainability of the earth.

Analyzing Students' Understanding and Attitude Towards Green Islamic Values

The analysis of internal and external factors aims to identify strengths, weaknesses, opportunities, and threats that affect efforts to strengthen *Green Islamic values* at the *Tahfidzul Qur'an* Islamic Boarding School of SMA IT Ibnu Abbas Klaten. Internal factors include conditions originating from within the Islamic boarding school institution, such as resource support, internal policies, and the involvement of Islamic boarding school residents. Meanwhile, external factors come from outside the Islamic boarding school, including regulations, potential cooperation, and social and environmental challenges. Based on the results of observations, interviews, and questionnaire data processing, the IFAS (Internal Factor Analysis Summary) and EFAS (External Factor Analysis Summary) matrices were prepared to inform the development strategy formulation. The assessment is conducted based on the weight, rating, and scores obtained from each factor.

Analysis of Internal Factors for Strengthening Green Islam

Internal factor analysis is the initial stage in developing a strategy to strengthen *Green Islamic values* at the *Tahfidzul Qur'an* Islamic Boarding School of SMA IT Ibnu Abbas Klaten. Internal factors include elements of *strengths* and weaknesses that originate from within the *pesantren* environment and can be directly controlled. The assessment was carried out based on the data from questionnaires and interviews, which were then analyzed in the form of an *Internal Factor Analysis Summary* (IFAS) Matrix, as shown in the following Table 2:

Table 2. Matrix Internal Factor Analysis Strategic (IFAS)

Internal Factors	Weight	Rating	Score
Strengths			
Santri is happy with environmental activities	0.12	4	0.48
Active garden and greenhouse facilities	0.11	4	0.44
Teacher support in environmental activities	0.12	4	0.48
Subtotal Strengths	0.35		1.4

Internal Factors	Weight	Rating	Score
Weaknesses			
Lack of waste technical training	0.11	3	0.33
Limited time for environmental activities	0.12	3	0.36
Not all students are actively involved	0.12	2	0.24
Subtotal Weaknesses	0.35		0.93
Total	0.7		2.33

From the results of the IFAS calculation above, the total score for strengths is 1.40, while the total score for weaknesses is 0.93, resulting in an overall total score of 2.33. This value shows that the aspect of internal strength in *pesantren* is relatively more dominant than its weakness. This means that internally, the *Tahfidzul Qur'an* Islamic Boarding School of SMA IT Ibnu Abbas Klatten has great potential to develop *Green Islamic* values more broadly.

The main strength of the *pesantren* lies in the high enthusiasm of students for environmental activities, with the highest score (0.48). This is a crucial aspect of social capital in fostering a sustainable ecological culture. In line with the *theory of Environmental Behavior* in the study of environmental literacy, positive attitudes and active involvement are early indicators of environmentally friendly behavior (Febriyanti & Rahmadani, 2024).

Additionally, the availability of garden and greenhouse facilities that are actively used is also an advantage (score of 0.44), as these facilities provide physical support for nature-based learning. This is in line with the concept of *Eco-Pesantren*, according to Arifa et al. (2023), which states that green infrastructure, such as planting land and conservation facilities, is the hallmark of environmentally friendly *pesantren*.

The full support of the coaching teacher (score 0.48) is also a strong foundation. From the perspective of the Theory of Planned Behavior, normative support from authoritative figures, such as teachers, has a significant influence on strengthening students' attitudes and intentions to behave in an ecologically responsible manner (Ajzen, 1991).

The weaknesses that need to be addressed immediately include the lack of technical training in *waste* management (score 0.33) and the limited time and involvement of students in environmental programs (scores of 0.36 and 0.24). This highlights the need for a strengthening strategy that involves increasing technical capacity and allowing for more flexible implementation timelines of environmental activities, thereby making them more equitable and sustainable.

These findings support the opinion of Akbar et al. (2023) that the success of environmental *education* in *pesantren* is highly determined by institutional commitment and equal participation of all elements, including students as the main actors. Therefore, the strengthening strategy must be directed at optimizing the strengths that already exist to close the existing weaknesses, such as increasing training, expanding activity time, and involving all students as a whole.

Analysis of External Factors for Strengthening Green Islam

External factors include conditions outside the internal environment of the *pesantren* that can affect the success of strengthening *Green Islamic* values, both as opportunities and threats. Opportunities are external conditions that can be used to support program strengthening, while threats are external challenges or obstacles that need to be anticipated and managed wisely. The analysis of external factors in this study was obtained based on the results of observations, interviews, and questionnaires, then analyzed using the EFAS Matrix (*External Factor Analysis Summary*) as presented in the following table:

Table 3. Matrix External Factor Analysis Strategic (EFAS)

External Factors	Weight	Rating	Score
Opportunities			
Opportunities for collaboration with agencies	0.12	4	0.48
Curriculum supports the environment	0.12	4	0.48
Guardian support of students	0.11	3	0.33
Subtotal Opportunities	0.35		1.29
Threats			
Limited environmental development funds	0.12	2	0.24
Dependence on a specific teacher	0.11	3	0.33
Risk of decreased interest	0.12	2	0.24
Subtotal Threats	0.35		0.81
Total	0.7		2.1

According to the EFAS analysis results above, the total score for opportunities is 1.29, while the score for threats is 0.81. This value indicates that the opportunities offered by Islamic boarding schools outweigh the existing threats. In other words, externally, the environment supports efforts to strengthen *Green Islam* and allows for sustainable program development.

The biggest opportunity identified is the potential for cooperation with environmental agencies and curriculum support that accommodates environmental education. This aligns with the view of Imran Rosidi, who stated that the integration of environmental education in Islamic educational institutions should be based on a curriculum approach and multi-stakeholder cooperation, ensuring that the program extends beyond the theoretical level to encompass social and ecological praxis.

Additionally, the support of the students' guardians is also a strategic strength. Guardians of students as part of the external community of the *pesantren* can contribute, both in moral and material support, to the sustainability of the *pesantren*'s green program.

On the other hand, the main threats to consider are the limited funds for developing environmental facilities and dependence on initiatives from specific teachers. This shows the importance of distributing responsibilities and regenerating internal environmental cadres. According to Ramadhan (2021), in the implementation of *Green Islam* in Islamic boarding schools, a collective role based on monotheistic values and ecological justice is needed, not just personal initiatives.

Additionally, the risk of decreasing students' interest in environmental activities if they are not updated regularly is also a significant concern. *The Green Islamic program* should be designed with a participatory and innovative approach to avoid saturation. This aligns with the Environmental Literacy theory, which emphasizes the importance of providing students with contextual, sustainable, and relevant learning experiences (Febriyanti & Rahmadani, 2024).

With a total EFAS value of 2.10, the strategy to strengthen *Green Islam* must prioritize the optimal use of existing external opportunities to anticipate or even reduce the impact of the identified threats.

SWOT Matrix

The SWOT matrix is a strategic analysis tool used to formulate the direction of an institution's or program's development based on the combination of internal factors (strengths and weaknesses) and external factors (opportunities and threats). In the context of this study, a SWOT analysis was conducted to formulate a strategy for strengthening Green Islamic values at the *Tahfidzul Qur'an* Islamic Boarding

School of SMA IT Ibnu Abbas Klaten, to achieve an Eco-Pesantren approach.

The results of the previous analysis showed that the total score on internal factors (IFAS) was 2.33, which resulted from a combination of strengths (1.4) and weaknesses (0.93). Meanwhile, in the external factor analysis (EFAS), the total score obtained was 2.10, derived from the accumulation of opportunity scores (1.29) and threat scores (0.81).

This score is then mapped in SWOT matrix coordinates, namely:

- X-axis (internal): $S - W = 1.4 - 0.93 = 0.47$
- Y-axis (external): $O - T = 1.29 - 0.81 = 0.48$

The SWOT coordinate point is in quadrant I, indicating that the institution is in very supportive conditions for growth and development. In this quadrant, the organization possesses strong internal strengths and significant external opportunities, making an aggressive strategy or a Strengths-Opportunities (SO) strategy the most appropriate approach. This strategy directs Islamic boarding schools to utilize all their strengths to optimize the opportunities available to them.

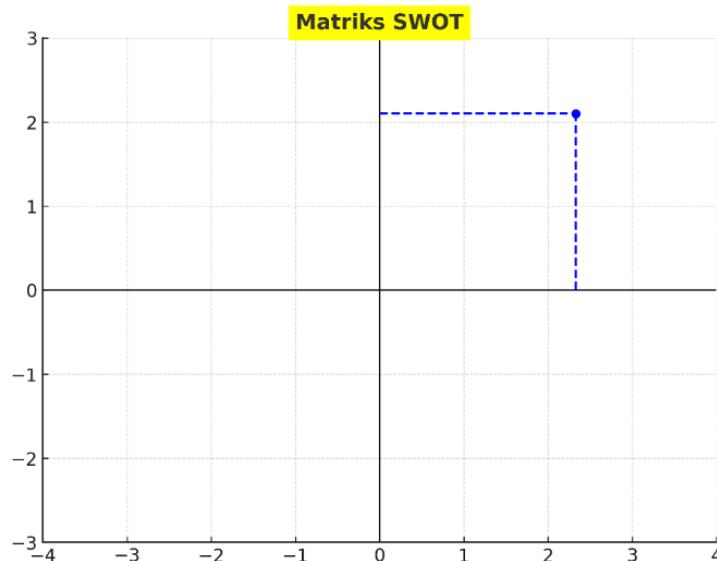


Figure 1. SWOT Matrix

The SWOT coordinate point is in quadrant I, indicating that the institution is in very supportive conditions for growth and development. In this quadrant, the organization possesses strong internal strengths and significant external opportunities, making an aggressive strategy or a Strengths-Opportunities (SO) strategy the most appropriate approach. This strategy directs Islamic boarding schools to utilize all their strengths to optimize the opportunities available to them.

Table 4. IFAS and EFAS Rating Weighting

$O = 1.29$		$T = 0.81$
$S = 1.4$	$SO = 2.69$	$ST = 2.21$
$W = 0.93$	$WO = 2.22$	$WTO = 1.74$

Based on the table above, the highest score was obtained in the SO strategy (2.69). Therefore, it can be concluded that the main strategy to be put forward is an aggressive one, utilizing the strength of the pesantren to respond to various opportunities that exist. Some of the main forces supporting this strategy are the high enthusiasm of students for environmental activities, the availability of garden and greenhouse facilities, and the active support of teachers in environmental programs. Meanwhile, external opportunities include a curriculum that supports environmental education, the potential for

collaboration with related institutions or agencies, as well as support from student guardians for ecology and Islamic-based programs. These results strengthen the theory of *Green Islamic Education* (Ahmadi et al., 2018) and the *Islamic Ecotheology* approach (Arifa et al., 2023), which states that the transformation of Islamic theological values into real behavior can be effectively achieved if supported by physical means, human resources, and a supportive social environment.

Strategy to Strengthen Green Islamic Values Towards Eco-Pesantren.

Based on the results of the combination of internal factor analysis (IFAS) and external factors analysis (EFAS) in Table 4.8, the order of priority for the strategy can be prepared by combining SWOT analysis, with the highest scores at the top and the lowest scores at the bottom first. This ranking facilitates the determination of a policy direction that strengthens Green Islamic values in a structured and sustainable manner.

Table 5. IFAS and EFAS Rating Weighting

Types of Strategies	Total Score	Priority
Strength - Opportunity (SO)	2.69	I
Weakness – Opportunity (WO)	2.22	II
Strength - Treats (ST)	1.57	III
Weakness – Threat (WT)	1.04	IV

Based on Table 5, it can be seen that the results of the interaction between internal and external factors, as presented through the IFAS and EFAS matrices, yield the main alternative strategy in the form of Strength–Opportunity (SO), with the highest total score of 2.69. This strategy demonstrates that Islamic boarding schools possess internal strengths that can be effectively leveraged to capitalize on various external opportunities. This reflects the institution's readiness to transform into an Eco-Islamic Boarding School by utilizing existing resources, such as teacher support, garden and greenhouse facilities, and students' enthusiasm for environmental activities.

Furthermore, the Weakness–Opportunity (WO) strategy occupies second priority with a score of 2.22. This strategy demonstrates that, despite several internal weaknesses, *pesantren* institutions, such as a lack of technical training or limited time for implementing environmental programs, still have considerable opportunities from outside, including support for environmental education curricula and collaboration with related agencies. Therefore, the WO strategy aims to address weaknesses by leveraging existing external opportunities.

The Strength–Threat (ST) strategy received a score of 1.57, ranking third. This strategy focuses on utilizing internal resources to mitigate potential external threats, such as dependence on specific teacher figures, insufficient funding, or the risk of declining student interest if activities are not renewed. Although not a primary strategy, ST remains important for maintaining sustainability and anticipating obstacles that may arise in the future.

Finally, the Weakness – Threat (WT) strategy is ranked fourth with a score of 1.04. This strategy is defensive, meaning it aims to minimize weaknesses and carefully address threats. The WT strategy can be used as a complement if internal and external conditions are at a vulnerable point or do not support further development.

Thus, the results of the analysis indicate that the SO (Strength – Opportunity) strategy should be prioritized as a key approach to strengthening Green Islamic values in Islamic boarding schools. This strategy reflects a progressive and collaborative approach, in line with the principles of Islamic Ecotheology, which emphasizes the importance of the role of humans as caliphs in maintaining the balance of nature (Q.S. Al-Baqarah: 30). However, for optimal and sustainable results, the SO strategy still needs to be supported by the WO, ST, and WT strategies' synergism.

Table 6. SWOT Matrix of Strengthening Strategy *Green Islamic* at the *Tahfidzul Quran Islamic Boarding School of IT SMA Ibnu Abbas Klaten*

		Internal	Strengths (S)	Weaknesses (W)
External	Opportunities (O)	Strength–Opportunity (SO)	Weakness–Opportunity (WO)	
	<p>1. Opportunities for collaboration with agencies</p> <p>2. Curriculum supports the environment</p> <p>3. Guardian support of students</p>	<p>1. Integrating <i>Green Islamic</i> and Ecotheology values into the <i>pesantren</i> curriculum systematically and applicatively.</p> <p>2. Develop a cadre program for environmentally conscious students (e.g., <i>Green Santri Leader</i>) that utilizes the support of teachers and <i>pesantren</i> facilities.</p> <p>3. Collaborate with environmental agencies, universities, and NGOs to obtain training, resources, and support for sustainability programs.</p>	<p>1. Organizing periodic technical training on Islamic-based environmental management, such as waste management, water conservation, and greening.</p> <p>2. Optimizing the curriculum and habituation activities to increase the active participation of all students in environmental care activities.</p> <p>3. Building synergy with guardians of students to support the habituation of environmental care outside the <i>pesantren</i>.</p>	
Opportunities (O)		Strength–Threat (ST)	Weakness–Threat (WT)	
<p>1. Limited environmental development funds</p> <p>2. Dependence on a specific teacher</p> <p>3. Risk of diminishing interest.</p> <p>Curriculum supports the environment</p>		<p>1. Build a system of environmental teacher regeneration and drive regeneration to reduce dependence on one or two teachers.</p> <p>2. Develop alternative funding systems, such as environmental alms programs or green infaq from guardians of students and <i>alumni</i>.</p> <p>3. Utilizing the power of facilities to create environmental program documentation as material for socialization and promotion of <i>pesantren</i> to external parties.</p>	<p>1. Preparing environmental SOPs based on <i>Green Islamic</i> values as a standard guide for all students and teachers.</p> <p>2. Establish a regular schedule of environmental activities to prevent a decrease in participation and maintain consistency.</p> <p>3. Increase students' understanding of the role of the caliph in protecting the earth through lectures, ecological interpretation studies, and Islamic reflective approaches.</p>	

Table 6 presents a strategy matrix from the SWOT analysis, grouping alternative Green Islamic strengthening strategies into four main categories: SO (*Strengths–Opportunities*), WO (*Weaknesses–Opportunities*), ST (*Strengths–Threats*), and WT (*Weaknesses–Threats*) strategies. Each category reflects a different approach to addressing the internal and external challenges faced by the *Tahfidzul Quran Islamic Boarding School of SMA IT Ibnu Abbas Klaten* in its effort to realize the concept of Eco-Pesantren. The results of the SWOT analysis indicate that there are three alternative strategies for each SO and WO category, as well as two alternative strategies for each ST and WT category. These findings suggest that the SO strategy is a key focal point because it maximizes internal strengths in responding to external

opportunities that are open, such as curriculum support, strategic partnerships, and guardian participation. Furthermore, to determine which SO strategy is the most priority in the implementation of *strengthening Green Islamic values*, an assessment is carried out on the level of linkage between the factors of strength and opportunity in each strategy. This assessment is presented in Table 10, which contains the weight of the score and the ranking of the SO strategy based on the relevance and urgency of its application in the context of the *pesantren*. This prioritization is expected to serve as the basis for a more focused and effective sustainability strategy planning.

Table 7. Prioritizing the SO Linkage Strategy (*Strength – Opportunity*)

Yes	Strategy (SO)	Attachment	Score	Ranking
1	Integration of <i>Green Islamic</i> and Ecotheology values in the <i>pesantren</i> curriculum systematically and applicatively.	S1, S3, O2	4.8	4.8
2	Developing a cadre program for students who care for the environment Development of a cadre program for students who care for the environment (<i>Green Santri Leader</i>) based on <i>pesantren</i> facilities and external networks.	S2, S3, O1	4.7	4.7
3	Establish partnerships with agencies, guardians of students, and the environmental community in supporting Islamic boarding school sustainability programs.	S1, S2, O3	4.6	4.6

Based on Table 7, the Strength–Opportunity (SO) strategy with the highest priority score is the strategy of integrating *Green Islamic* values and ecotheology in the *pesantren* curriculum systematically and applicatively. This strategy is related to internal strengths (S1 and S3), specifically students' enthusiasm for environmental activities and teacher support, as well as external opportunities (O2), namely the curriculum that supports environmental education. This strategy is highly relevant to the theory of Islamic Ecotheology, which posits that environmental education within the Islamic context must incorporate theological dimensions, ethics, and life practices, thereby producing a generation aware of their responsibility as stewards of the earth (Isnaini, 2022). Research by Harahap (2023) also shows that integrating ecological values into learning in *pesantren* can increase ecological awareness and promote active student involvement in environmental conservation.

The second SO strategy, with a priority score of 4.7, is the development of a cadre program for students who care for the environment (*Green Santri Leader*), which utilizes *pesantren* facilities and external support. This strategy is rooted in strengths, including garden and greenhouse facilities (S2), teacher support (S3), and partnership opportunities with external agencies (O1). This aligns with the Environmental Literacy theory, which emphasizes the importance of developing students' knowledge and skills in solving environmental problems independently (Febriani, 2022). Research by Arifa et al. (2023) also supports that the formation of *pesantren* environmental ambassadors increases the sustainability of green programs in *pesantren* based on the active participation of students (Arifin, 2025; Fithria & Rezekiah, 2025; Iqbal et al., 2024; Kholid, 2025; Nilasari et al., 2025; Risana et al., 2024; Sapitri et al., 2024; Syahputra, 2024; Triasmoro et al., 2025b; Wahdi & Affandi, 2024).

The third SO strategy, with a score of 4.6, involves establishing partnerships with agencies, guardians, and the environmental community to support *pesantren* sustainability programs. This strategy leverages strengths in aspects such as student enthusiasm (S1), the availability of facilities (S2), and opportunities provided by support from student guardians (O3). This is supported by the Theory of Planned Behavior (TPB), which states that social support from the surrounding environment, including families and institutions, has a significant influence on shaping environmentally friendly intentions and behaviors (Ajzen, in Febriyanti & Rahmadani, 2024). In addition, Ahmadi et al.'s (2018)

research shows that collaboration with the community and external institutions increases the effectiveness of environmental programs and extends their impact beyond the *pesantren* community (Erihadiana, 2024; Saputra, 2024; Silvi et al., 2025; Triasmoro et al., 2025a; Widodo, 2025; Wiranda et al., 2025). Thus, the three SO strategies show the synergy between internal potential and external opportunities in strengthening the practice of Green Islamic values in Islamic boarding schools. This priority strategy is not only oriented towards short-term results, but also leads to the transformation of *pesantren* culture towards a sustainable eco-*pesantren*. This approach is in line with the concept of value-based sustainability, where the transformation of behavior and education systems is based on the principles of monotheism, caliphate, and trust in protecting the environment as explained in Q.S. Al-Baqarah: 30 and Al-A'raf: 56. Therefore, the success of the Green Islamic strengthening strategy is highly dependent on curriculum integration, student capacity building, and sustainable cross-sector partnerships.

4. CONCLUSION

Based on research conducted at the *Tahfidzul Qur'an* Islamic Boarding School of SMA IT Ibnu Abbas Klaten, it was found that environmental management—especially waste management—has shown positive initiatives from students and teachers. Theological awareness of the importance of maintaining cleanliness as part of faith is embedded, but significant obstacles to implementation remain, including the lack of segregated waste bin facilities, limited time for program implementation, and inadequate student participation in environmental activities. Although students and teachers generally understand the concept of Green Islamic, the internalization of these values into the level of daily behavior, such as waste sorting habits, energy-saving behavior, and the use of environmentally friendly products, is still hampered by limited facilities and has not yet become a collective culture of Islamic boarding schools. To strengthen Green Islamic values towards Eco-*Pesantren*, a development strategy that can be pursued is the integration of ecological values into the curriculum and daily activities of Islamic boarding schools, both collaboratively and across sectors. The SWOT analysis recommends optimizing internal strengths, such as teacher support, garden facilities, greenhouses, and student enthusiasm, by increasing external partnerships, forming a cadre of students who care about the environment, and organizing routine training related to environmental management based on Islamic values. In addition, strengthening the role of guardians of students at home and preparing environmental SOPs that are integrated with religious teachings are believed to foster a habit of green behavior, thereby realizing a more sustainable environmental culture in the *pesantren* environment and at students' homes.

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