

IJoRCE MEP

04 IJoRCE 3(2) 83-90 new rev ID 132

 IJoRCE Cek Akhir ID 132

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Integration of SDGs in Pesantren: Building Ecological Awareness among Santri

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Abstract

Islamic boarding schools (Pesantren) in Indonesia have begun integrating the principles of the Sustainable Development Goals (SDGs) into their educational systems to promote ecological awareness and sustainable living among students (Santri). The aim is to explore the integration of the Sustainable Development Goals (SDGs) in the education and environmental framework at one of Pesantren in Lombok, with a focus on developing ecological awareness among Santri. This research highlights the important role of quality education, particularly in Pesantren, in addressing contemporary environmental challenges. Using a qualitative research approach with a case study methodology, data was collected through interviews with alumni and a literature review. The results showed that Islamic boarding schools have successfully implemented various programs, such as environmentally friendly policies, Islamic-based environmental curriculum, and extracurricular activities centered on nature contemplation. These initiatives not only promote environmental stewardship, but also empower students to actively participate in sustainability efforts. This study concludes that the integration of SDGs in Pesantren education practices significantly contributes to building ecological awareness and is aligned with the broader goals of sustainable development. This research makes a real contribution to the development of sustainable education and environmental conservation practices in Pesantren. The results of this study are not only academically relevant, but can also serve as a concrete example for other Pesantren that want to implement the principles of the SDGs.

Keywords: Sustainable Development Goals, Ecological Awareness, Islamic Education, Islamic Boarding School, Environmental Sustainability.

SDGs: Goal 3 (Healthy and Prosperous Living), Goal 4 (Quality Education), Goal 13 (Climate Action)

Manuscript History

Received: April, 19 2025

Revised: July 25, 2025

Accepted: August 4, 2025

How to cite:

Fitriani, N., et al. (2025). Integration of SDGs in Education and Environment: Building Ecological Awareness among Santri. *International Journal of Research and Community Empowerment*, 3(2), 83-90. DOI: <https://doi.org/10.58706/ijorce.v3n2.p83-90>.

INTRODUCTION

The Sustainable Development Goals (SDGs) is an important agenda developed by various countries to achieve global prosperity. The program consists of 17 goals and 169 measurable targets, which have been approved by 193 member states, including Indonesia. One of the main aspects of the SDGs is quality education, which emphasizes the importance of inclusive education and lifelong learning opportunities for all (Maryanti et al., 2022). To achieve this goal, it is crucial to encourage research that can inform all related areas, including the role of education. The goal of the sustainable development initiative is to achieve inclusive growth, prosperity and social transformation for all by 2030 (Erin et al., 2022).

The Sustainable Development Goals (SDGs) are a global call to protect the environment, tackle climate change, eradicate poverty, and ensure access to a good quality of life and well-being for all people (Mishra et al., 2024). Islamic boarding schools are educational institutions that have an important role in shaping the

character and morals of the younger generation. In the current era of globalization, environmental challenges are increasingly urgent, and the Sustainable Development Goals (SDGs) are a relevant framework for achieving sustainable development (Baiquni, 2025). This research focuses on the principles of SDGs in education and the environment, as well as efforts to build ecological awareness among *Santri*. In the context of education, the SDGs emphasize the importance of quality education, gender equality, and environmental awareness (Nainggolan, 2025).

In the era of globalization and rapid technological advances, the challenges of mankind are increasingly complex, including in the education sector. The contribution of Islamic boarding school education has received less attention in the academic literature. This study aims to explore the important role of the Islamic boarding school education system in achieving the SDGs (Asdlori, 2023). The image of this Islamic boarding school shows that they not only understand environmental conservation as a religious teaching, but also successfully implement it (Muis et al., 2025). With the growing number of Islamic boarding school institutions, they serve as new stakeholders in achieving sustain able economic development and green economy resilience in the Global South.

This research aims to examine the role of Islamic boarding schools in advancing the Sustainable Development Goals (SDGs), with a particular focus on how these institutions integrate ecological awareness, religious values, and sustainable practices into their education systems. By analysing Islamic boarding school's eco-friendly policies, Islamic-based environmental curriculum, and nature-centered activities, this research seeks to show how *Pesantren* contribute to sustainability while addressing gaps in the existing literature regarding their impact on achieving the SDGs. It also explores the relationship between Islamic education, science and technology in promoting sustainable development and economic resilience through models such as eco-*Pesantren* and smart farming initiatives.

METHOD

The researcher employed a qualitative research with a case study or field study approach to study the environmental interactions, position, and conditions of a research unit, such as a social or educational unit, in its actual state (Harahap, 2020). This research will explore how Haramain Islamic boarding school, a *Pesantren* in Lombok, integrates the Sustainable Development Goals (SDGs) in the education curriculum and environmental practices, and how this shapes the ecological awareness of *Santri*. The research subjects, which include two alumnis and 4 teachers, although relatively small in number, allow researchers to focus on broad variables, such as the effect of education on environmental behavior and *Santri* participation in environmental conservation activities. Thus, this research can provide deep insight into the effectiveness of SDGs integration in the context of education and the environment at the Haramain Islamic Boarding School.

Data collection techniques: (1) Primary data: is the main source of information collected directly by researchers in the research process. (Sulung & Muspawi, 2024). Primary data was obtained through interviews with 4 resource persons who were two alumnis and two teachers of the Nurul Haramaian *Pesantren*. Online interviews were conducted due to time and distance limitations, and to obtain supporting data, researchers distributed questionnaires to 5 respondents regarding the hygiene program at the nurul haramain Islamic boarding school. (2) Secondary data: is a source of research data obtained indirectly through the media. Researchers obtain data through several sources of literature both from books, articles and the web that can support researchers in obtaining data.

RESULTS AND DISCUSSION

Explanation of the Sustainable Development Goals (SDGs)

The UN conception of education dates back to the Universal Declaration of Human Rights in 1948 (article 26, paragraph 2), before the development goals project. The declaration states that education should aim to develop the whole person and strengthen respect for human rights and fundamental freedoms. Education is also expected to promote understanding, tolerance and friendship among nations, racial groups and religions, and support the UN's efforts to maintain peace (Kushnir & Nunes, 2022). The economic, social and environmental issues facing society today are of major concern to government agencies. Education for Sustainable Development and the integration of the SDGs into the education system are considered key to addressing these issues (Baena-Morales & and Ferriz-Valero, 2025).

The Importance of Environmental Awareness in the Context of SDGs

By integrating Islamic teachings into the environmental education curriculum, students not only gain scientific knowledge, but also spiritual and ethical awareness regarding responsibility for the earth. This process aims to create a generation that is skilled and committed to protecting the environment, making Islamic education a bridge between religious teachings and sustainability practices (Firdaus, 2024). Education should focus on character building so that students can contribute to the future without neglecting noble values. Islamic religious education also emphasizes the interconnectedness of religion, science and technology (Arifudin et al., 2020). Efforts to strengthen student character include religious values, honesty, discipline, independence, responsibility, as well as patriotism (Hubbul Wathan), communication, and interest in reading (Hanafiah et al., 2022). *Pesantren* explores the values of unity in Islam and the importance of living in social and spiritual balance. This concept evolved into efforts to maintain balance in social life as well as ecology. In Islamic teachings, all life is interconnected, and no creation is separate from God. Therefore, ecological obedience is understood as a form of obedience to God (Athoillah et al., 2024).

Integration of SDGs in the Haramain Islamic Boarding School Curriculum

The integration of SDGs in education and the environment at Haramain Islamic boarding school can be seen through NH-Mart's efforts in building ecological awareness among students. By emphasizing the importance of cleanliness and good environmental management, NH-Mart not only contributes to economic empowerment, but also educates students about environmental responsibility, in line with global sustainability goals (Rahman et al., 2023). The concept of *Eco Pesantren* education is unique to Haramain Islamic boarding school Nahdlatul Wathan Narmada, making it a pioneer of modern Islamic boarding schools in West Lombok and West Nusa Tenggara. *Santri* here are active in environmental activities, such as producing tree seedlings for donation, waste recycling, as well as freshwater fish hatcheries and animal husbandry in the Haramain Integrated Farming program.

What environmental programs have you participated in at the pesantren?

5 jawaban

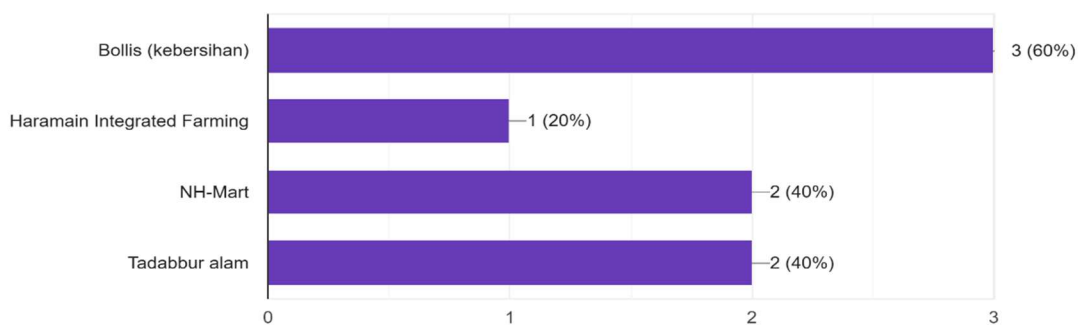


Figure 1. Haramaian Islamic Boarding School Environmental Program

In Figure 1, regarding environmental programs around the Nurul Haramain Islamic Boarding School based on responses from respondents that the environmental program that best supports the cleanliness program is Bollis, which the Bollis (Cleanliness) program is one of the environmental initiatives at the Nurul Haramain Islamic Boarding School which focuses on cleanliness, waste management, and environmental awareness among students. Based on participation data, this program recorded the highest level of involvement (60%) compared to other environmental programs, indicating that Bollis is well received by *Santri*. The Bollis program has successfully instilled a clean culture at *Pondok Pesantren* Nurul Haramain, but it needs to continue to be strengthened with innovation and evaluation of participation so that the impact is more sustainable. The scope of Bollis activities at *Pondok Pesantren* Nurul Haramain includes four main activities: (1) Routine Community Service such as cleaning the environment every Friday morning; (2) Waste Sorting with the application of the 3R system (Reduce, Reuse, Recycle) like in figure 1 and separate bins; (3) Environmental Education through lectures and posters that link cleanliness with Islamic values; and (4) Award Systems such as inter-dormitory cleanliness competitions and the title "*Santri* Teladan Kebersihan". This program successfully instills a clean culture while integrating religious values with daily environmental practices.

Based on the theory of SDGs in building education and the environment at the Nurul Haramain boarding school, the researcher found several conclusions from the interview process with two female students who are alumni of the Nurul Haramain boarding school:

"There is a program called Bollis which is specifically implemented on guard nights, with the Munazzofah section responsible for maintaining cleanliness. Our leaders are very concerned about cleanliness, so not a single piece of garbage can be left on the field; all must be picked up immediately. If any garbage is left behind, we have to record it in a book, otherwise we are considered a waste of paper. In addition, any leftover gelas water must also be taken care of, as it could result in a big scolding from the leadership. He strongly emphasized the importance of the environment and cleanliness. A waste incinerator is also already available at Pondok Putra, so every day the garbage is transported by the cottage's private truck in tons. Thus, no garbage is left to accumulate in Haramain. (interview via WA)"

Haramain Islamic boarding school has a Bollis program that focuses on cleanliness and waste management, with close supervision from the leadership. This effort includes regular garbage collection and the provision of burning facilities, thus keeping the environment clean and organized. Tuan Guru Hasanain Juaini applies systematic and persuasive ecological da'wah communication at Haramain Islamic boarding school Nahdlatul Wathan Narmada. The goal is to achieve success in ecological da'wah through persuasive methods, focusing on internal management and the formation of Santri attitudes to actively participate in environmental conservation. As a facilitator, Tuan Guru Hasanain educates Santri on the importance of protecting the environment, supported by greening facilities and the Haramain Integrated Farming program. With an emotional approach and high work ethic, he succeeded in inviting Santri and the community to voluntarily participate in ecological da'wah activities (Pujiantara, 2023).

The students' environmental awareness character shows that education in Pesantren is effective in shaping environmental awareness. The Pesantren integrates spiritual, religious, cognitive, and psychomotor aspects to teach environmental management. As the oldest educational institution in Indonesia, Pesantren play a strategic role in environmental protection by combining religious and moral values. Besides focusing on religious aspects, Pesantren also raise social and environmental awareness. Other research confirms the role of Pesantren in environmental conservation based on Islamic values (Suharini et al., 2024).

Related to the integration of SDGs in realizing ecology in the Haramain Islamic boarding school environment, there are several program indicators, namely:

1. Development of environmentally friendly boarding school policies
The Pesantren has formulated specific policies that integrate sustainability principles in daily operations. This policy includes integrated waste management, water conservation, and energy efficiency in line with Islamic values on nature conservation.
2. Development of an Islam-based environmental curriculum.
Pesantren develop a curriculum approach that integrates Islamic ecological teachings with modern concepts of sustainability. Learning materials include not only environmental theory, but also practical applications related to Qur'anic verses about the universe.
3. Development of extra-curricular activities based on tadabbur nature
This program is designed to build ecological awareness through an experiential learning approach. Students are invited to make direct observations of the ecosystem, understand the balance of nature, and relate it to the concept of tawhid and human responsibility as khalifah on earth.
4. Development and/or management of supporting facilities and infrastructure of the boarding school.
(Nawawi et al., 2017)

The boarding school is actively developing supporting infrastructure such as: (1) Integrated waste management system. (2) Organic farming land (Haramain Integrated Farming) . (3) Water and energy conservation facilities. (4) Green open space as a nature laboratory. These four indicators form a holistic framework that not only supports the achievement of the SDGs (particularly goals 4, 11, 12, and 15), but also strengthens the identity of Pesantren as educational centers that combine religious knowledge with contemporary ecological awareness. The implementation of these programs shows how traditional

educational institutions can adapt to modern environmental challenges while still maintaining their Islamic values.

The da'wah communication applied by Tuan Guru Hasanain Juaini at Nurul Haramain boarding school Nahdlatul Wathan Narmada is a systematic and persuasive ecological da'wah communication, aiming to succeed in ecological da'wah in the eco *Pesantren* sector. Internal management and the formation of *Santri* attitudes as implementers of environmental conservation activities are key to encouraging the active participation of *Santri*. Tuan Guru Hasanain acts as a facilitator with programs that increase environmental awareness. The boarding school supports this by providing greening facilities, garbage burning stoves, and land for Haramain Integrated Farming. With a persuasive approach and high work ethic, Mr. Guru Hasanain succeeded in inviting *Santri* and the community to participate without coercion, so that the goal of ecological da'wah could be achieved (Zuhaeriah, 2019).

Based on the factors that support the success of the environmental program at *Pondok Pesantren* Nurul Haramain, it is supported by three main factors: kyai leadership (40%), *Santri* participation (100%), and adequate infrastructure (20%). The percentage was obtained from 5 respondents. This is in line with the ecological da'wah model applied by Tuan Guru Hasanain Juaini, where persuasive and systematic communication is the main driver. Collaboration between inspirational kyai leadership, total *Santri* participation, and infrastructure support creates an effective ecological da'wah ecosystem at *Pesantren* Nurul Haramain. Mr. Guru Hasanain's persuasive approach, without coercion but based on a high work ethic, proves that the integration of religious values with environmental action can be successful when these three factors complement each other. Thus, the purpose of ecological da'wah-both as an environmental movement and character education-is achieved sustainably.

Eco*Pesantren* shows a vital role in realizing SDG 3 (Healthy and Prosperous Living) through the integration of Islamic values and ecological practices. By applying the servant leadership model and transformational leadership, eco*Pesantren* not only teaches environmental theory, but also actively involves students in its implementation ranging from the utilization of biogas, organic waste processing, to sustainable food crop cultivation. This approach creates a collective culture that balances individual well-being with environmental health, in line with the principles of eco-fiqh. Through the example of its leaders, eco*Pesantren* has succeeded in building an educational ecosystem that combines healthy lifestyles, sustainable sanitation, and responsible management of natural resources-while becoming a replicable model for other educational institutions (Kejora et al., 2025).

The study findings reveal two strategic challenges to achieving the SDGs: (1) the low internalization of the SDGs in higher education (Manolis & Manoli, 2021), where *Pesantren* can play a role as literacy agents; and (2) the limited innovation of interactive SDGs delivery methods for *Santri* is a gap that is still not discussed in empirical studies. The three dominant environmental threats today are climate change, biodiversity extinction, and cross-sector pollution. So that IEP (2021) in the Ecological Threat Report identifies the correlation between environmental degradation (natural disasters, resource deficits, and climate disruption) with the escalation of conflict and refugee flows. Global policy recommendations emphasize three pillars: climate adaptation, disaster mitigation, and ecological restoration (Hastangka & Salman, n.d.). Fostering eco*Pesantren* is often considered a taboo because an environmental audit of 15 *Pesantren* (2023) confirmed that 80% of cleaning activities were applied as sanctions. This pattern decreases the effectiveness of environmental education by 40% based on students' ecological awareness scale.

The implementation of the Eco-*Pesantren* program in a number of institutions still experiences obstacles in terms of curriculum and infrastructure, although internal policies have begun to adopt an environmental education approach. Research at *Pesantren* Nurul Haramain NW Lombok revealed that the leadership of kyai plays a key role in instilling ecological values derived from the Qur'an and Sunnah into the daily lives of *Santri* (Ainiyah & Awakachi, 2025). Eco*Pesantren* can pioneer SDGs with three core solutions: First, the integration of Islamic and environmental values through an ecological curriculum and a reward system in place of punishment. Second, innovative learning such as biogas workshops and the Green*Santri* application to increase *Santri* participation. Third, partnerships with stakeholders and the development of green infrastructure such as infiltration ponds. These strategic steps are supported by teacher leadership training and policy advocacy to create a sustainable model that is easily replicated in other *Pesantren*.

Improving the *Pesantren* environmental program requires: (1) exemplary teachers in environmentally friendly practices, (2) disciplined habituation of garbage disposal, (3) routine maintenance of environmental awareness, and (4) immediate waste handling. The participation of all teachers and the strengthening of the

environmental organization structure are the main supports. With this integrated approach, the environmental program can run more effectively and sustainably. The study also explored how Haramain boarding school integrates the SDGs into its education system through environmentally friendly policies, Islamic-based environmental curriculum, and nature activities. The findings show that these initiatives effectively build ecological awareness while aligning with SDG 4 (Quality Education) by improving sustainability literacy and SDG 13 (Climate Action) through practical environmental management. The eco-friendly *Pesantren* model also supports SDG 3 (Health and Wellbeing) by promoting sustainable living practices. However, the challenges faced are the limited internalization of the SDGs and the need for more interactive teaching methods. This research shows how religious education can advance sustainable development through curriculum integration, green infrastructure, and leadership training, offering a model that can be replicated by other Islamic institutions.

The results revealed that the integrated waste management system at *Pondok Pesantren* Haramain, including segregation and controlled burning, is an effective environmental innovation. This system is not only aligned with the principles of the SDGs (especially the 12th and 13th goals), but also succeeds in instilling ecological awareness, developing recycling skills, and creating a sustainable waste management model based on *Pesantren* values. This finding shows the potential of the model as a best practice that can be adapted by similar institutions, while contributing significantly to sustainable development.

CONCLUSION

This study demonstrates how Nurul Haramain boarding school serves as a pioneering model in advancing the Sustainable Development Goals (SDGs) through Islamic education, particularly in fostering ecological awareness among *Santri*. By integrating religious teachings with practical sustainability initiatives such as the Bollis program, Haramain Integrated Farming, and Tuan Guru Hasanain's ecological da'wah the *Pesantren* not only instills environmental stewardship but also actively engages students in conservation efforts. While gaps remain in academic discourse on *Pesantren*'s role in the SDGs, this research highlights the transformative potential of faith-based education in driving sustainable development. As such, Nurul Haramain offers a replicable framework for achieving ecological and social resilience in Indonesia's Islamic boarding schools.

AUTHOR CONTRIBUTION

Namiyah Fitriani: Conceptualization and Writing – Review & Editing; **Muhammad Zaky:** Writing – Original Draft; **Taqiyuddin Kabalmay:** Writing – Review & Editing; **Miftahul Huda:** Investigation and Writing – Original Draft; and **M Baihaki Hidayutullah:** Investigation and Writing – Original Draft. All authors have read and approved the final version of this manuscript.

DECLARATION OF COMPETING INTEREST

The authors declare no known financial conflicts of interest or personal relationships that could have influenced the work reported in this manuscript.

DECLARATION OF ETHICS

The authors declare that the research and writing of this manuscript adhere to ethical standards of research and publication, in accordance with scientific principles, and are free from plagiarism.

DECLARATION OF ASSISTIVE TECHNOLOGIES IN THE WRITING PROCESS

The authors declare that generative artificial intelligence (Gen AI) and other AI-assisted tools were used prudently, not excessively, during the research and preparation of this manuscript. Specifically, DeepL was used for translation and information retrieval; Blackbox AI for improving readability; DeepSeek for adding supporting material; and Grammarly for grammar checking and language refinement. All AI-generated material was reviewed and edited for accuracy, completeness, and compliance with ethical and scholarly standards. The authors accept full responsibility for the final content of the manuscript.

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