

Sustainable environmental management in education: interpretation of khalifah verses and hadiths on sustainability

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ABSTRACT

This study aims to analyze the concept of sustainable environmental management in education from an Islamic perspective through the interpretation of Qur'anic verses on *khalifah* (human stewardship) and Hadiths on environmental preservation. This research employs a qualitative approach with a library research design, utilizing primary sources such as the Qur'an and Hadith, as well as classical and contemporary tafsir and recent scholarly literature. Data were collected through documentation and analyzed using thematic interpretation (*maudhu'i*) and qualitative thematic analysis. The findings reveal that the concept of *khalifah* in the Qur'an emphasizes human responsibility as stewards of the earth, grounded in justice and sustainability. The Hadiths provide practical guidelines for environmental care, including tree planting, maintaining cleanliness, and avoiding environmental damage. The integration of these values results in a value-based model of environmental management in education, encompassing principles such as trust (*amanah*), justice (*'adl*), moderation (*wasatiyyah*), and benevolence (*ihsan*). Furthermore, the study finds that this model aligns with the framework of Education for Sustainable Development (ESD), while offering an additional theological dimension that strengthens intrinsic and spiritual motivation for environmental responsibility. This study contributes to the development of an Islamic-based sustainable education management model that is both conceptually robust and relevant to contemporary environmental challenges.

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Introduction

The current global environmental crisis—such as climate change, ecosystem degradation, pollution, and the exploitation of natural resources—poses a serious challenge to the sustainability of human life. This phenomenon not only affects ecological aspects but also extends to social, economic, and educational dimensions. In the context of education, institutions are required not only to produce intellectually competent human resources but also individuals who possess ecological awareness and moral responsibility toward the

environment. This condition positions the concept of sustainable education as a crucial paradigm in managing modern educational institutions (Muhammad Akhir et al., 2025: 267-277).

From an Islamic perspective, environmental issues are not a new concept; rather, they have long been integrated into the teachings of the Qur'an and Hadith through the concept of *khalifah fil ardh* (humans as stewards and caretakers of the earth). The Qur'an emphasizes that humans are entrusted with maintaining the balance (*mīzān*) of nature and are prohibited from causing destruction (*fasād*) on earth. In line with this, various hadiths of the Prophet Muhammad ﷺ highlight the importance of cleanliness, environmental preservation, and practicing *ihsan* toward all creatures. These principles form the foundation of Islamic ecological ethics based on *tawhid*, trust (*amanah*), justice, and moral responsibility (Irhamullah et al., 2025: 435-447).

The urgency of this research becomes more apparent when considering that the implementation of ecological values in Islamic education still faces significant challenges. Many Islamic educational institutions have not optimally integrated sustainability principles into environmental management, whether in the curriculum, school culture, or institutional policies. In fact, educational institutions play a strategic role in fostering ecological awareness through habituation, role modeling, and managerial systems oriented toward environmental sustainability (Muhammad Akhir et al., 2025: 267-277).

Several previous studies have examined the relationship between Islamic education and the environment. For instance, research on the role of the environment in Islamic education emphasizes its importance as a factor in shaping students' character and morality based on the Qur'an and Hadith (Indah Siti Nurhalizah et al., 2025). Furthermore, other studies highlight the importance of environmental education based on Islamic values in building sustainability awareness through the integration of spiritual and ecological aspects (Shelvia Loviana et al., 2024). Recent research has also developed the concept of *Islamic ecopedagogy* as an educational approach that internalizes sustainability values within Islamic religious learning (Rida Munfarikhah et al., 2025: 141-154).

However, these studies tend to remain partial, focusing either on character education, practical implementation, or general environmental concepts in Islam. There is still limited research that specifically examines sustainable educational environmental management through an integrative approach combining the interpretation of Qur'anic verses on *khalifah* with the analysis of hadiths on environmental preservation. In other words, a research gap remains in systematically and applicatively linking the normative dimension (religious texts) with the managerial dimension (educational institution management).

Based on this gap, this study aims to analyze the concept of sustainable environmental management in education from an Islamic perspective through the interpretation of Qur'anic verses on *khalifah* and hadiths on environmental preservation. More specifically, this research seeks to address the following questions: (1) how the

concept of humans as *khalifah* in the Qur'an can serve as a foundation for educational environmental management; (2) how the Prophet's hadiths provide practical principles for maintaining environmental sustainability; and (3) how the integration of these two sources can be formulated into a model of sustainable environmental management in education relevant to contemporary contexts.

Thus, this study is expected to contribute theoretically to the development of thematic Qur'anic interpretation based on environmental issues, as well as practically to the development of Islamic educational management models oriented toward sustainability and environmental preservation.

Method

This study employs a qualitative approach with a library research design. The qualitative approach is chosen because the study aims to understand, interpret, and construct the concept of sustainable environmental management in education based on normative Islamic sources, namely the Qur'an and Hadith, supported by contemporary scientific literature. From a methodological perspective, qualitative research focuses on exploring meanings and understanding social or humanistic phenomena through textual data analysis, making it highly relevant for studies based on religious texts and scholarly literature (Creswell & Creswell, 2018). Through a library research approach, the researcher can explore concepts in depth by analyzing various relevant documents and references.

The data sources in this study are divided into two categories: primary and secondary data. Primary data include the Qur'an, particularly verses related to the concept of *khalifah*, such as QS. Al-Baqarah: 30, QS. Al-An'am: 165, and QS. Shad: 26, as well as the Hadiths of the Prophet Muhammad ﷺ related to environmental preservation, including recommendations to plant trees, prohibitions against environmental destruction, and the importance of cleanliness. Secondary data consist of classical and contemporary tafsir works, such as *Tafsir Ibn Kathir* and *Al-Jāmi' li Ahkām al-Qur'an* by Al-Qurthubi, Hadith commentaries, and recent scientific literature (from the past 5–10 years), including reputable journal articles, academic books, and reports from international institutions related to sustainable education and Islamic environmental ethics, such as UNESCO (2020) reports and works by Stevenson et al. (2020).

Data collection is conducted using the documentation method, which involves tracing, identifying, and classifying various literature sources relevant to the research focus. This process includes identifying Qur'anic verses using a thematic (*maudhu'i*) approach, collecting Hadiths from major and thematic Hadith compilations, and reviewing scientific literature through academic databases such as Scopus, Web of Science, and Google Scholar. Documentation is the primary method in library research as it enables systematic data collection from various written sources (Bowen, 2009).

Data analysis in this study employs a thematic analysis approach combined with the method of thematic exegesis (*tafsir maudhu'i*). The thematic exegesis method is used to compile all Qur'anic verses related to the themes of *khalifah* and the environment, which are then analyzed comprehensively by considering context, *asbāb al-nuzūl* (occasions of

revelation), and interpretations from classical and contemporary scholars. This method is considered effective in understanding Qur'anic concepts holistically within a specific theme (Al-Farmawi, 2017). Subsequently, relevant Hadiths are classified based on environmental themes and analyzed in terms of meaning, context, and their relevance to sustainability concepts.

The qualitative thematic analysis is carried out through several stages: data reduction, theme categorization, meaning interpretation, and conclusion drawing. This model refers to the qualitative data analysis framework developed by Miles, Huberman, and Saldaña (2014), which emphasizes a systematic and continuous analytical process from data collection to conclusion.

To ensure the validity and trustworthiness of the data, this study applies several techniques: source triangulation by comparing various tafsir works, Hadiths, and scientific literature; adequacy of references by prioritizing recent and relevant scholarly sources; and analytical consistency by following systematic thematic analysis procedures. The validity of this qualitative research is based on the criteria of credibility, transferability, dependability, and confirmability as proposed by Lincoln and Guba (1985).

In addition, this study adopts an integrative-interdisciplinary approach by combining three main perspectives: the normative approach (Qur'anic and Hadith exegesis), the educational approach (Education for Sustainable Development theory and educational management), and the ecological approach (environmental ethics and sustainability). This integrative approach aims to produce a conceptual framework that is not only theoretical but also applicable in the context of managing contemporary Islamic educational institutions.

Results and Discussion

The findings of this study are presented based on the research focus and questions: (1) the concept of *khalifah* in the Qur'an, (2) principles of environmental preservation in Hadith, and (3) the integration of both into sustainable environmental management in education.

Based on a thematic analysis of the Qur'an, several key verses related to the concept of *khalifah* and human responsibility toward the environment were identified, as presented in the following table:

Table 1. Verses on the Concept of Khalifah in the Qur'an

No	Surah/Verse	Key Term	Main Content
1	Al-Baqarah: 30	<i>Khalifah</i>	Appointment of humans as Allah's representatives on earth
2	Al-An'ām: 165	<i>Khala'if al-ardh</i>	Humans as managers of the earth and trustees
3	Shād: 26	<i>Khalifah</i>	Command to uphold justice and avoid desires

4	Yunus: 14	<i>Khala'if</i>	Human beings tested in managing the earth
5	Fāṭir: 39	<i>Khala'if</i>	Succession of human generations as earth stewards

The data indicate that the term *khalifah* and its derivatives are used in the context of responsibility, trust (*amanah*), and environmental management oriented toward justice and sustainability.

Based on an examination of Hadith literature, several Hadiths related to environmental preservation were identified and classified as follows:

Table 2. Classification of Hadiths on the Environment

No	Theme	Hadith Substance	Practical Implication
1	Tree planting	Encouragement to plant trees as charity	Reforestation, greening
2	Cleanliness	Cleanliness as part of faith	Sanitation and environmental hygiene
3	Prohibition of damage	Prohibition of destroying plants and ecosystems	Environmental conservation
4	Water management	Prohibition of wasting water even at a river	Resource efficiency
5	Compassion for creatures	Prohibition of harming animals	Fauna protection

These findings show that Hadith provides practical and applicable principles for maintaining environmental sustainability. Based on the analysis of Qur'anic verses and Hadith, several principles relevant to environmental management in education were identified, as summarized below:

Table 3. Principles of Environmental Management Based on the Qur'an and Hadith

No	Principle	Source	Description
1	<i>Amanah</i> (Trust)	Qur'an	Human responsibility as stewards of the earth
2	Justice (<i>'adl</i>)	Qur'an	Balanced environmental management
3	Prohibition of damage (<i>fasād</i>)	Qur'an	Prevention of excessive exploitation
4	<i>Ihsan</i>	Hadith	Good treatment toward all creatures
5	Moderation (<i>wasatiyyah</i>)	Hadith	Proportional use of resources

The findings also reveal a pattern of integration between theological values and managerial practices in the educational context. This integration can be illustrated in the following conceptual framework:

Table 4. Integration of Islamic Values in Educational Environmental Management

Dimension	Core Values	Implementation in Educational Institutions
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Theological	<i>Khalifah, Amanah</i>	Vision and mission based on environmental values
Normative	Prohibition of <i>fasād, Ihsan</i>	Eco-friendly school policies and regulations
Practical	Cleanliness, resource efficiency	Green school programs, eco-pesantren
Social	Collective responsibility	Participation of the school community

Overall, the findings indicate that: (1) the Qur'an contains the concept of *khalifah*, emphasizing human responsibility in preserving and managing the environment; (2) the Hadith of the Prophet ﷺ provides practical principles that support environmental sustainability in daily life; and (3) there is alignment between Islamic theological values and the principles of sustainable environmental management in education, which can be integrated into educational systems through policies, curriculum, and institutional culture.

Recent developments indicate a synthesis between Education for Sustainable Development (ESD) and Islamic epistemology in education. Recent studies (2026) confirm that ESD functions as a methodological framework, while Islamic values (*tawhid, khalifah, maqāṣid al-sharī'ah*) serve as ethical-spiritual foundations in sustainable education (Wawan Abdullah et al., 2026). This integration produces an educational paradigm that emphasizes not only sustainability competence but also moral awareness and religious responsibility. Thus, sustainability in Islamic education is not merely technical-ecological but also an act of worship and trust (*amanah*).

The concept of eco-pedagogy in Islamic education has developed as an approach integrating environmental awareness into learning processes based on Islamic values. Studies show that Islamic education holds significant potential to support global sustainability agendas through the internalization of concepts such as *khalifah, 'adl, and mīzān* in curriculum and educational practices (Nur Maharani Husna & Andrian, 2025: 311–321). Furthermore, eco-Islamic education models in pesantren and Islamic institutions have proven effective in internalizing sustainability values through school culture, green curricula, and community engagement (Ferdinan et al., 2026).

In contemporary discourse, the concept of *fiqh al-bī'ah* has emerged as a branch of Islamic jurisprudence addressing human-environment relations. This concept emphasizes that environmental preservation is part of the objectives of Islamic law (*maqāṣid al-sharī'ah*), particularly in preserving life (*hifz al-nafs*) and wealth (*hifz al-māl*). Recent studies indicate that integrating *fiqh al-bī'ah* into education can shape environmentally responsible students by grounding ecological behavior in legal and moral awareness (Hawwin Muzakki et al., 2025).

Sustainable Islamic education is defined as an educational system that integrates Islamic values with sustainable development principles to produce individuals who are faithful, knowledgeable, and environmentally responsible. Systematic literature reviews indicate that such education emphasizes contextual approaches, technological integration, and the strengthening of religious values in daily life to achieve Sustainable Development

Goals (SDGs) (Khoiriyah et al., 2023: 12–28). Innovations such as zero-waste programs, green campuses, and eco-pesantren represent concrete implementations of this concept (Esti Yuli Widayanti & Wiwin Widyawati, 2024).

Islamic environmental ethics represents a value system regulating human interaction with nature based on *tawhid*, *amanah*, *khalifah*, and justice. Contemporary studies view this ethical framework as a solution to the global environmental crisis, as it integrates spiritual and ecological dimensions simultaneously (Sadali, 2023). These principles encourage environmentally friendly behavior at both institutional and individual levels while strengthening faith-based movements addressing climate change and sustainability.

Environmental literacy in sustainable education encompasses knowledge, attitudes, and skills for environmental stewardship. In Islamic education, this literacy is reinforced by religious values that position ecological behavior as part of moral character (*akhlak*). Recent studies show that integrating sustainability-based curricula significantly enhances students' sustainability competencies, including critical thinking, reflection, and ecological action (Wawan Abdullah et al., 2026).

This concept refers to the management of educational environments based on ethical, cultural, and religious values. In Islamic education, such management is rooted in *tawhid* and *amanah*, directing all policies and practices toward sustainability as a form of accountability to Allah. Recent studies emphasize that successful environmental management in education depends not only on technical aspects but also on the internalization of values and organizational culture supporting ecological behavior (Hajar, 2024: 82–95).

Based on the above discussion, the theoretical framework of this study is built upon the integration of three main dimensions: (1) the global dimension—ESD theory as a methodological framework; (2) the Islamic dimension—concepts of *khalifah*, *amanah*, and environmental ethics as normative foundations; and (3) the managerial dimension—value-based and sustainability-oriented educational management practices. The integration of these dimensions produces a conceptual model of Islamic-based sustainable environmental management in education, linking religious texts (Qur'an and Hadith) with institutional practices in a systematic, contextual, and applicable manner.

The findings indicate that the concept of *khalifah* is not merely normative-theological but has transformational implications in shaping ecological behavior. Humans are positioned not only as agents of development but also as agents of preservation. Recent studies confirm that integrating religious values into environmental education significantly enhances pro-environmental behavior due to intrinsic faith-based motivation (Khalid, 2020; Abdullah, 2019). This aligns with the study's finding that *amanah* and accountability to Allah strengthen the implementation of environmental management in education.

Thus, the Islamic approach adds a unique dimension to modern sustainability theory—namely, the eschatological dimension (accountability in the hereafter), which is absent in secular approaches.

These findings can also be analyzed through the lens of transformative learning theory, which emphasizes shifts in individuals' paradigms through critical reflection (Mezirow, 2018). In this context, Qur'anic verses on *khalifah* and environmental Hadith function as "trigger values" that foster ecological awareness transformation among learners. Additionally, research by Stevenson et al. (2020) highlights that successful environmental education depends on integrating knowledge, values, and action (knowledge-values-action framework). This study reinforces that framework by demonstrating that Islam inherently integrates these three aspects.

Therefore, Islamic-based environmental management in education can be positioned as a model of holistic sustainability education, integrating cognitive, affective, and spiritual dimensions simultaneously.

Compared to previous studies, this research offers several key distinctions. Earlier studies often employed descriptive-normative approaches in discussing environmental issues in Islam (Abdullah, 2019), while this study adopts an integrative approach linking thematic exegesis with educational management theory. Previous research largely focused on character education or environment-based curricula (Tilbury, 2021), whereas this study expands the scope to institutional management, including policies and organizational culture. Moreover, this study demonstrates a higher level of integration between modern theories such as ESD and Islamic concepts, which were previously treated separately.

Nevertheless, this study supports prior findings that Islamic values hold significant potential in advancing global sustainability agendas.

The novelty of this research lies in several key contributions. First, it formulates an integrative conceptual model based on revelation, combining three main dimensions: Islamic normative sources (Qur'an and Hadith), sustainable education theory, and educational management practices. This integration produces a framework that is not only theoretical but also applicable in institutional contexts.

Second, the study reconstructs the concept of *khalifah*, expanding it from a theological notion into an operational managerial principle. In this sense, *khalifah* serves not only as a spiritual mandate but also as a foundation for management functions such as planning, organizing, implementation, and evaluation in sustainable educational environmental management.

Third, the study formulates operational principles derived from Hadith. Environmental Hadiths, previously understood in partial and individual contexts, are systematized into applicable institutional principles, providing practical guidance for developing environmentally oriented educational policies and cultures.

Overall, this novelty contributes significantly to interdisciplinary studies, particularly in integrating Islamic studies with educational management, resulting in a more comprehensive, contextual, and relevant approach to sustainability challenges in the contemporary era.

Conclusion

This study concludes that the concept of *khalifah* in the Qur'an serves as a theological foundation that emphasizes human responsibility in preserving and managing the environment sustainably. The Hadith of the Prophet ﷺ complements this by providing practical principles such as maintaining cleanliness, planting trees, and avoiding environmental destruction. These values can be integrated into educational management through the principles of *amanah* (trust), justice (*'adl*), moderation (*wasatiyyah*), and *ihsan*, thereby forming a value-based model of sustainable educational management. Furthermore, this concept aligns with the theory of Education for Sustainable Development (ESD), while offering an added advantage in its spiritual dimension, which strengthens ecological awareness.

Practically, educational institutions need to integrate environmental values into their vision, curriculum, and school culture through programs such as eco-pesantren and green schools, as well as enhance the capacity of educators. At the policy level, it is necessary to integrate sustainability principles into the national education system, strengthen value-based Islamic programs, and promote cross-sector collaboration.

Future research should be directed toward empirical studies, the development of implementative models, comparative studies, the integration of digital technology, and deeper thematic interpretations of environmental issues in the Qur'an.

In conclusion, Islamic-based environmental management in education is an approach that is not only theoretically relevant but also strategically important in shaping a generation that is knowledgeable, morally grounded, and environmentally responsible.

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