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Green Pesantren Research Landscape: A Bibliometric Study from 2000 to 2025

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Abstract

This study examines Green Pesantren as a framework that integrates Islamic values with environmental sustainability principles, positioning it as a faith-based educational model relevant to addressing the global climate crisis. Despite the emergence of various initiatives, there has been no comprehensive bibliometric mapping of the Green Pesantren research landscape from 2000 to 2025. This study aims to identify publication trends, author collaborations, and key research themes related to Green Pesantren during this period. Employing a quantitative bibliometric approach, data were collected from the Scopus and Google Scholar databases using relevant keywords and analyzed with VOSviewer and Publish or Perish (PoP) software. The results indicate a significant increase in publications over the past five years (2020-2025), reflecting a thematic shift from ecological awareness toward program implementation and institutional evaluation. Most studies originate from Indonesia, indicating that the Green Pesantren phenomenon is deeply rooted in Indonesia's local wisdom while also demonstrating global relevance as an Islamic-based environmental education model. Thematic mapping reveals three main clusters: (1) internalization of values and environmental awareness, (2) Islamic theological foundations and educational integration, and (3) environmental management and practical implementation. This study concludes that Green Pesantren embodies a transformative educational paradigm that bridges spirituality and sustainability, emphasizing the importance of international collaboration, curriculum innovation, and policy support to strengthen its role as a globally recognized model of sustainable Islamic education.

Keywords

Green Pesantren; environmental sustainability; bibliometric.

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Introduction

Global climate change has emerged as one of the greatest challenges facing humanity in the twenty-first century (Zhang & Bai, 2023). Accelerating rates of deforestation, environmental pollution, and the excessive exploitation of natural resources have generated an ecological crisis that threatens the sustainability of life on Earth (Maghfiroh et al., 2024); (Maulida et al., 2024). In this context, the education sector plays a strategic role in fostering ecological awareness and in shaping pro-environmental attitudes and behaviors across all segments of society. Religious-based education, particularly in Indonesia with its thousands of pesantren (Islamic boarding schools), holds significant potential to become a driving force for transforming community ecological behavior (Aulia et al., 2021); (Fua et al., 2018); (Fahrurrazi, 2019). Rooted in Islamic values that emphasize the principle of *rahmatan lil 'alamin* (mercy to all creation), pesantren are believed to be capable of offering solutions grounded in local wisdom to address global challenges related to environmental sustainability.

In the global arena, climate change has become an urgent and worldwide concern in the twenty-first century, not only as an environmental issue but also as a social, economic, and moral challenge. A systematic review of religious education articles published between 2000 and 2022 confirms that religious education across various countries has acknowledged the ecological crisis and has contributed to cultivating a sense of hope regarding climate change mitigation through relevant teaching content, pedagogical approaches, and practical activities (Aldrin, 2024). Similarly, the study by Hearn et al., (2024) conducted in Germany and Switzerland found that religious communities and institutions possess substantial potential to mitigate climate change, particularly through the internalization and application of religious values in pro-environmental behaviours.

Moreover, cross-country studies indicate that levels of religiosity are often correlated with more responsible environmental behavior, for example in relation to carbon emissions (Agusalim & Karim, 2024). In the context of Islamic education, instructional activities that incorporate the principles of *Green Fiqh* within Islamic educational institutions such as Muhammadiyah and Aisyiyah demonstrate concrete efforts to integrate religious values into the curriculum in support of sustainable development (Zuhdi et al., 2023).

The global climate crisis has prompted various stakeholders to respond by integrating sustainability principles into multiple spheres of life, including educational practices (Ma'rifat & Suraharta, 2024); (Fatima et al., 2025); (Aronsson et al., 2025). In the context of Islamic education, the concept of *Green Pesantren* has emerged as an effort to combine Islamic teachings with principles of environmental sustainability (Muchlis et al., 2024); (Masturin & Ritonga, 2022). Since the early 2000s, a number of *Green Pesantren* initiatives have developed in Indonesia, such as pesantren-based waste management systems, the utilization of renewable energy, and eco-theology-based Islamic curricula. Several previous studies have highlighted the role of pesantren as centers of religious character education that have expanded their functions to become agents of social and environmental change (Rahman et al., 2024); (Hangesti Emi Widayarsi & Handayani, 2025). Furthermore, analyses of eco-pesantren have demonstrated their significant contributions to sustainable education, environmental conservation, and the

empowerment of surrounding communities (Aulia et al., 2024). However, these studies remain fragmented and limited to specific regions, and have not yet provided a comprehensive overview of the research landscape.

Despite the growing body of work on Green Pesantren and eco-pesantren, the literature remains dispersed across disciplines and publication outlets. To date, no study has systematically mapped the field's publication growth, knowledge structure, collaboration networks, and thematic clusters over an extended period (2000-2025), limiting a consolidated understanding of how this research area has evolved and where it is heading.

This study addresses this gap by providing a bibliometric mapping of Green Pesantren research (2000–2025) using curated and complementary data sources, and by applying performance analysis and science mapping to identify trend trajectories, key contributors, collaboration patterns, and dominant research themes, thereby offering evidence-based directions for future scholarship and cross-country research collaboration.

To address these questions, the researchers collected 23 Scopus-indexed journal articles and 62 articles indexed in Google Scholar using the keywords “*green pesantren*” and “*eco-pesantren*.” These two keywords are frequently used interchangeably or in conjunction in several studies. Descriptive, performance, and scientific mapping analyses were employed to answer the research questions. The significance of this review lies in its potential to offer strategic insights and directions for the future development of this emerging research field. To delimit the scope of the study, this study formulates two main research questions as follows:

RQ1: What are the growth patterns and geographical distribution of *Green Pesantren* research globally?

RQ2: What major research foci have emerged in global studies on *Green Pesantren*, and what future research directions can be identified?

Method

This study adopts a quantitative bibliometric method to depict the development and research patterns related to *Green Pesantren* from 2000 to 2025. Data were retrieved from two primary sources, Scopus and Google Scholar, as both databases comprehensively represent national and international publication coverage. The search was conducted using the keywords “*green pesantren*” and “*eco-pesantren*,” combined with Boolean operators (AND, OR) to ensure the diversity and inclusiveness of the search results. The research process followed the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework, which includes identification, screening, eligibility assessment, and final article selection. From this procedure, 85 documents were obtained, consisting of 23 Scopus-indexed articles and 62 articles indexed in Google Scholar. All eligible data were exported in CSV (Comma-Separated Values) format and analyzed using VOSviewer to visualize author collaboration networks, keyword maps, and thematic clusters, as well as Publish or Perish (PoP) to examine citation trends and publication productivity. The analysis focused on three main aspects: (1) publication development and growth over time, (2) geographical distribution and patterns of author collaboration, and (3) thematic mapping and future research trajectories. This approach enables a structured scientific mapping of the evolution of the *Green Pesantren* concept and its research themes at both the global level and within the Indonesian context.

Findings

This section presents the findings on global research trends related to *Green Pesantren*. The results are organized to address the three key research questions that guide this study.

Research Landscape

This section presents findings that illustrate the growth trajectory and distribution of research outputs from two different database perspectives, namely SCOPUS and Google Scholar. Although the overall data coverage spans the last 25 years (2000–2025), Scopus-indexed publications are only available from 2012 onward, beginning with the study by [Gade \(2012\)](#), which examined issues of Islamic environmentalism. During the period from 2013 to 2015, there was a noticeable gap in publications, indicating that studies on environmental issues within the context of Islamic education, *Green Pesantren*, and *Eco-Pesantren* were still very limited in high-impact, reputable journals.

Subsequently, in the period of 2023, 2024, and 2025, the number of Scopus-indexed publications increased significantly, with a notable peak in 2023. Prominent studies during this year were conducted by [Subaidi et al., \(2023\)](#), [Putri et al., \(2023\)](#), [Karman et al., \(2023\)](#), [Nurkhin et al., \(2023\)](#), and [Lutfauziah et al., \(2023\)](#). These studies addressed a range of themes, including environmental issues, environmental fiqh, eco-pesantren, eco-theology, and *Green Pesantren*. These data indicate that research on Green Pesantren and environmental issues within the framework of Islamic education has received heightened scholarly attention over the past three years.

An overview of the growth trajectory of *Green Pesantren* literature indexed in Scopus from 2020 to 2025 is presented as follows:

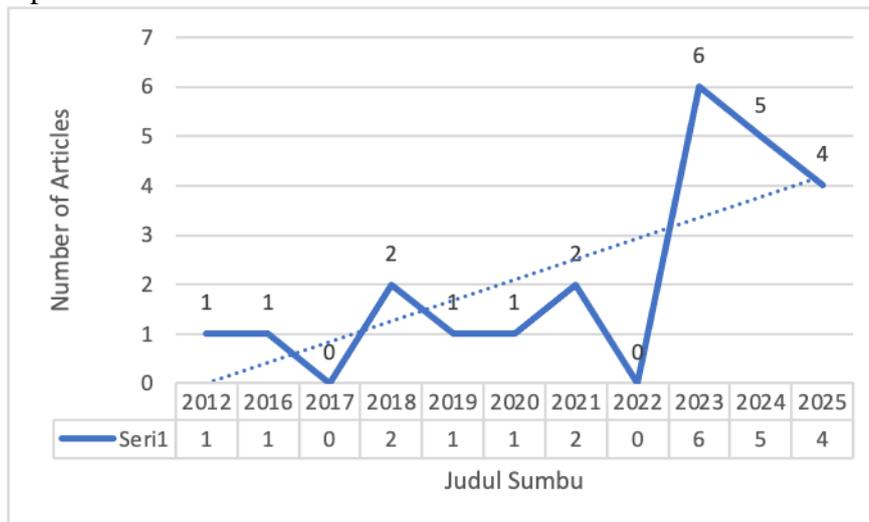


Figure 1: Scopus Publication Trend Metrics

Similarly to the Scopus database, Google Scholar-indexed publications only became available from 2016 onward. A clear absence of studies is observed during the period from 2000 to 2015. This gap may be attributed to the limited scholarly attention to this topic or to a general lack of interest in examining environmental issues within educational institutions. The study conducted by [Khairunnisaa \(2016\)](#) represents one of the earliest works addressing the concept of *eco-pesantren*. In the subsequent years up to 2025, a highly significant growth in publications is evident. These data indicate that issues related to *Green Pesantren*, *eco-pesantren*, and environmental sustainability have increasingly become important topics of inquiry, as reflected in the rising number of studies identified in both Scopus and Google Scholar.

The growth trajectory of *Green Pesantren* literature indexed in Google Scholar from 2020 to 2025 is presented as follows:

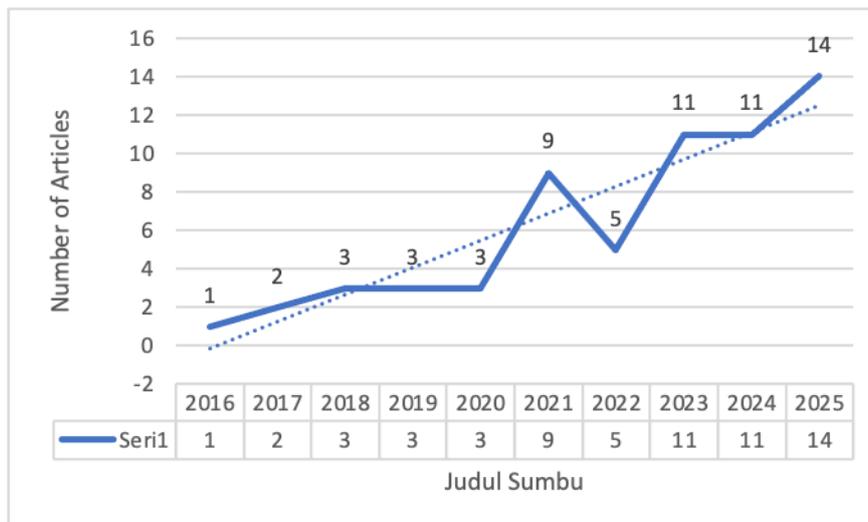


Figure 2: Google Scholar Publication Trend Metrics

Having identified the development of publication outputs over time as illustrated in the trend scheme, the next step is to examine the geographical distribution of authors in order to address the first research question. Based on the data analysis specifically the export of Scopus data in CSV (**Comma-Separated Values**) format the trajectory of authors' geographical origins is presented as follows:

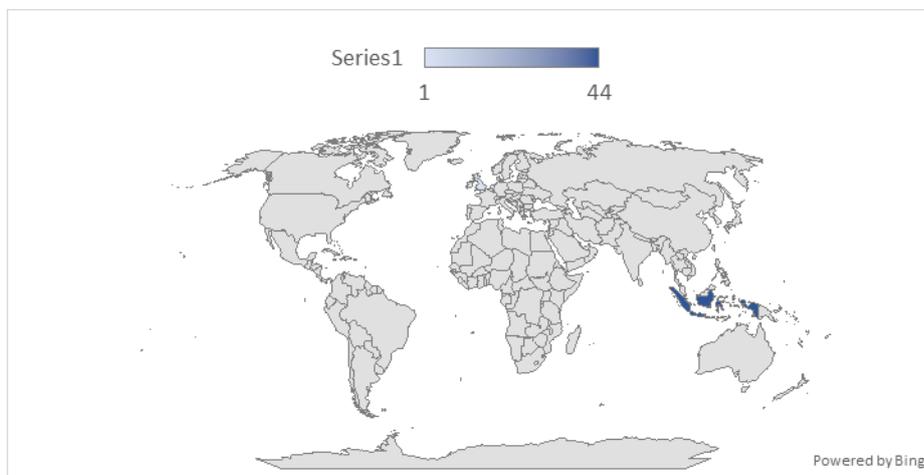


Figure 3: Geographical Distribution Metrics of Authors Based on Google Scholar

COUNTRY	NUMBER OF AFFILIATIONS
Indonesia	44
United Kingdom	1
Netherlands	1
United States	1

The data presented above indicate that the authors' affiliations are predominantly from Indonesia. This dominance is largely influenced by the distinctive nature of pesantren, which

are primarily found in Indonesia. The terminology *pesantren* or *pondok pesantren* is highly characteristic of Indonesian Islamic educational institutions. Consequently, studies on *eco-pesantren* and *Green Pesantren* introduce significant conceptual novelty to the global scholarly discourse.

In addition to reflecting the uniqueness of this type of educational institution as a form of Indonesian local wisdom, this field of study has strong potential for collaboration with countries that operate comparable boarding school systems. The findings further reinforce that the literature on this theme is still largely mapped within the Indonesian context, thereby underscoring the attractiveness and scholarly relevance of *Green Pesantren* as an emerging research theme.

Consistent with the metadata derived from Scopus, the geographical trajectory based on Google Scholar metadata further reinforces these findings. The Google Scholar database also provides clear evidence that this body of research is still predominantly mapped within the Indonesian context. This indicates a consistent pattern in which studies addressing *Green Pesantren* and related themes largely originate from Indonesia. Due to several limitations in extracting Google Scholar data particularly regarding author affiliations the dataset in this study uses the country of the journal source as a proxy. Nevertheless, the overall pattern remains unchanged: Indonesia continues to play a central role in research on *Green Pesantren*, *eco-pesantren*, and environmental issues examined through the distinctive lens of pesantren. The geographical distribution of countries contributing to this research field is presented as follows:



Figure 4: Geographical Distribution Metrics of Authors Based on Scopus

COUNTRY	NUMBER OF PUBLICATION
Indonesia	20
Malaysia	1

Both the Scopus and Google Scholar datasets present consistent patterns, indicating that research on *Green Pesantren* has rarely been conducted using contexts outside Indonesia. These findings reinforce that, in addition to pesantren being a distinctive form of Indonesian educational institution, the issue of *Green Pesantren* represents a compelling and distinctive theme that highlights Indonesia’s contribution to global environmental concerns.

Thematic Trends

In another aspect, this study maps thematic trends in order to address the second research question. This focus enables the identification of themes and research foci that have been explored in previous studies. Based on these results, potential directions for future research can be empirically identified.

The visualization of thematic relationships or terms generated using VOSviewer is presented in the figure below:

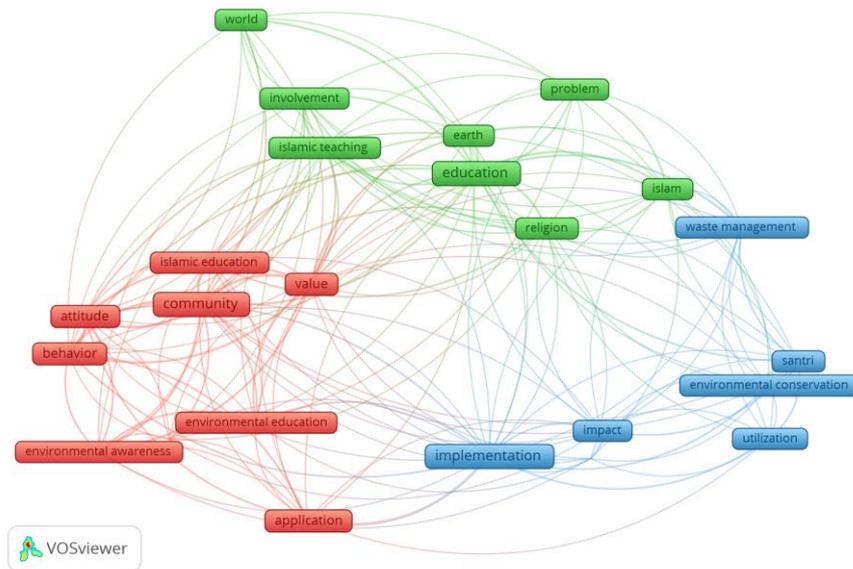


Figure 5: Visualization of Thematic Relationships Based on the Scopus Database
The color-coded visualization forms three distinct clusters, as follows:

Table 1: Scopus Database Clusters

Cluster 1	Cluster 2	Cluster 3
Application	Earth	Environmental conservation
Attitude	Education	Environmental management
Behavior	Involvement	Impact
Community	Islam	Implementation
Environmental awareness	Islamic teaching	Santri
Environmental education	Problem	Utilization
Environmental problems	Religion	Waste management
Islamic education	World	
Value		

Based on the mapped keywords, the first cluster emphasizes the personal and social dimensions of *eco-pesantren* or environmental Islamic education. The research direction in this cluster primarily focuses on behavioral change, attitude cultivation, and the formation of values among *santri* and pesantren communities. Furthermore, keywords such as *attitude*, *behavior*, and *value* indicate a strong emphasis on educational psychology and the internalization of environmental values.

Meanwhile, the second cluster reflects the interconnection between Islamic teachings and environmental issues. This is evident from keywords such as *Islam*, *Islamic teaching*, and *religion*, which are linked to terms such as *earth* and *world*. This indicates that studies within this cluster examine how Islamic religious education—through curricula, classical texts, and

doctrinal teachings—is utilized to foster environmental awareness. Accordingly, this second cluster carries a strong eco-theological orientation, emphasizing how the Earth and nature are conceptualized as a form of trusteeship (*amanah*) in Islam.

The third cluster, as indicated by the grouped keywords, represents a more practice-oriented dimension, focusing on environmental management within pesantren. This cluster highlights terms such as *waste management*, *conservation*, and *utilization*, which signify the concrete implementation of eco-pesantren programs. The presence of the keyword *santri* further indicates the involvement of primary actors (students) in these initiatives. Accordingly, this cluster places greater emphasis on the impacts of implementing environmentally friendly programs.

When viewed holistically, these clusters form a coherent pattern: Cluster 1 represents character formation and environmental awareness (values, attitudes, and behaviors); Cluster 2 reflects the religious foundations and Islamic educational dimensions (theological underpinnings and curriculum); and Cluster 3 captures the technical aspects and practical implementation of environmental management (conservation, waste management, and concrete actions). Accordingly, the Scopus database mapping indicates that research on *Green Pesantren/eco-pesantren* is situated within three major domains: (1) internalization of values and behaviors, (2) foundations of Islamic religious education, and (3) implementation of environmental management in practice. The visualization of inter-cluster relationships is presented in the following figure:

Visualisasi Cluster VOSviewer (Eco-Pesantren)

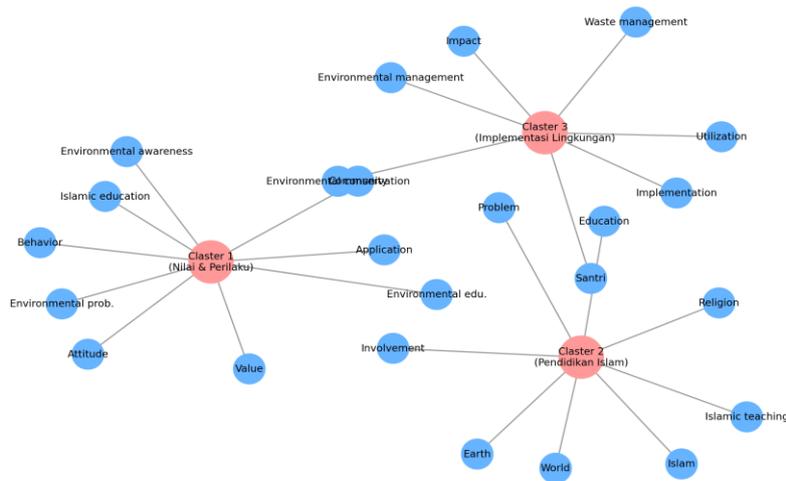


Figure 6: Cluster Visualization Based on the Scopus Database

The above visualization indicates that *Green Pesantren* constitutes a highly novel and relevant component within the domain of practical environmental management. The limited number of studies in this area suggests substantial opportunities for researchers to generate new insights and contribute original findings to the field.

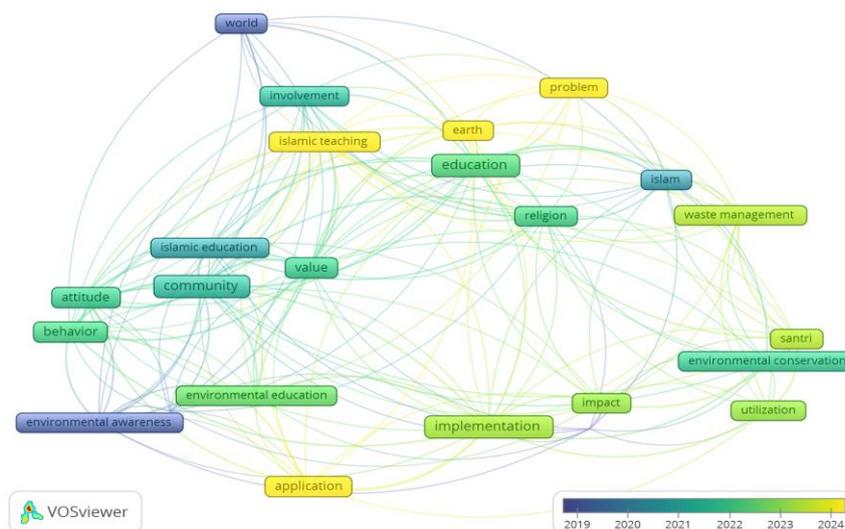


Figure 7: Overlay visualization scopus

The visualization of the Scopus database indicates that the early themes during the period 2019-2020 are represented in blue and are associated with keywords such as *environmental awareness*, *world*, and *environmental education*, suggesting that early research primarily focused on general environmental awareness and its relationship with education. The intermediate themes during 2021-2022 are shown in green and are characterized by keywords such as *community*, *Islamic education*, *religion*, *santri*, *waste management*, and *implementation*. These indicate a shift toward the contextualization of *eco-pesantren*, emphasizing the roles of community, Islamic education, student engagement, and waste management practices. The most recent themes during 2023-2024 are depicted in yellow and include keywords such as *application*, *problem*, *Islamic teaching*, *earth*, and *impact*. These highlight trending topics that focus on how Islamic teachings and applied practices are implemented to address environmental problems and to assess their impacts.

Based on this description, it can be concluded that the research focus has shifted from general awareness (*awareness*, *education*, *world*) to concrete implementation (*waste management*, *conservation*, *community involvement*, *santri*), and subsequently toward contemporary issues related to the application of Islamic teachings, problem-solving, and the impacts of *eco-pesantren* programs. Overall, the evolution of this research field demonstrates a progressive transition from awareness to implementation, followed by stages of evaluation and problem resolution.

In addition to the Scopus database presented above, this study also incorporates data from Google Scholar to strengthen the overall findings. The visualization based on the Google Scholar database is presented as follows:

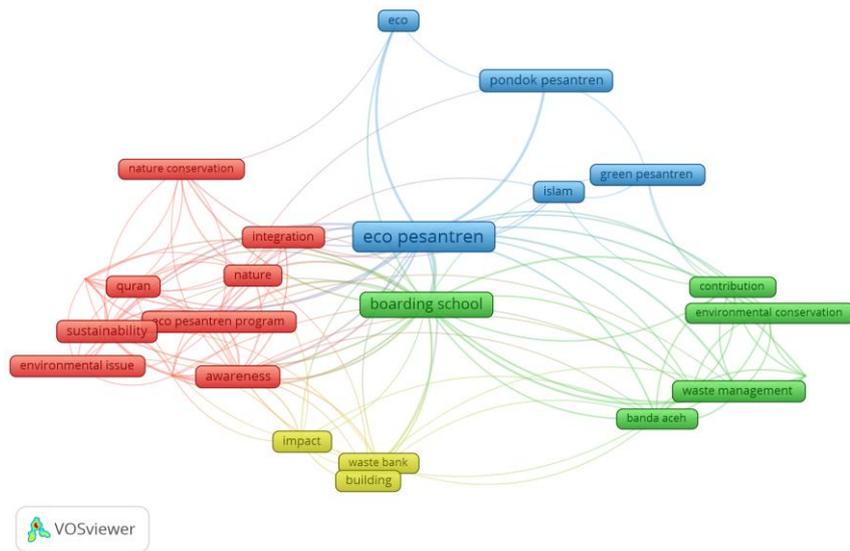


Figure 8: Visualization of Thematic Relationships Based on the Google Scholar Database

Unlike the Scopus database, the Google Scholar visualization forms four color-coded clusters, as follows:

Table 2: Klaster database google scholar

Cluster 1	Cluster 2	Cluster 3	Cluster 4
Awareness			Building
Eco pesantren program	Banda Aceh	Eco	Impact
Environmental issue	Boarding school	Eco pesantren	Waste bank
Integration	Contribution	Green pesantren	
Islamic value	Eco pesantren implementation	Islam	
Nature	Environmental conservation	Pondok pesantren	
Nature conservation	Green space		
Qur'an	Waste management		
Sustainability			
Sustainable Development			

The four clusters reflect the thematic directions of research on *eco-pesantren* and environmentally based Islamic education. Cluster 1 emphasizes environmental awareness and Islamic values. The interrelated keywords in this cluster include *awareness*, *environmental issue*, *integration*, *Islamic value*, *nature*, *nature conservation*, *Qur'an*, *sustainability*, and *sustainable development*. The thematic meaning of this cluster centers on the conceptual and philosophical dimensions of how Islamic teachings (*Qur'an*, Islamic values) are integrated with environmental awareness (*awareness*) and sustainability concepts (*sustainability*). The keyword *integration* indicates a research orientation that seeks to bridge religion and environmental issues within the framework of Islamic moral values. The terms *nature* and *conservation* further highlight attention to environmental preservation as a form of spiritual trusteeship. Accordingly, the core of this cluster is eco-theological awareness and the

integration of Islamic values into the concept of sustainable development (*Islamic-based sustainability awareness*).

Cluster 2 describes the local context and the participatory role of pesantren. The interconnected keywords in this cluster include *Banda Aceh*, *boarding school*, *contribution*, *environmental conservation*, *green space*, and *waste management*. The thematic meaning of this cluster highlights the geographical and participatory dimensions of the research. The presence of *Banda Aceh* indicates location-based studies (case studies), while *boarding school* refers to pesantren as residential educational institutions. Keywords such as *contribution*, *green space*, and *waste management* reflect a focus on the tangible contributions of pesantren to environmental protection, for example through the management of green areas and waste. Accordingly, the core of this cluster is community-based environmental management practices within local pesantren contexts (*eco-boarding school practices*).

Cluster 3 focuses on the implementation aspects and models of *eco-pesantren*. The interconnected keywords in this cluster include *eco-pesantren program*, *eco-pesantren implementation*, *Green Pesantren*, *pondok pesantren*, *Islam*, and *eco*. The thematic meaning of this cluster relates to the operationalization of the *eco-pesantren* concept. The emphasis on *program*, *implementation*, and *Green Pesantren* indicates studies that investigate how the *eco-pesantren* framework is applied within Islamic educational institutions. The terms *Islam* and *pondok pesantren* constitute the primary context for these implementations, reflecting a shift from theoretical discourse to field-based practice. Accordingly, the core of this cluster is the implementation and strengthening of *eco-pesantren* models as an Islamic-based environmental education strategy.

The final cluster highlights program impacts and reinforcement. The interconnected keywords in this cluster include *building*, *impact*, and *waste bank*. The thematic meaning of this cluster points toward the assessment of outcomes and impacts of *eco-pesantren* programs. The term *building* can be interpreted as *capacity building*, referring to the strengthening of institutional or individual capabilities. *Impact* reflects an evaluative orientation, while *waste bank* represents tangible outcomes in the environmental–economic management of pesantren. Accordingly, the core of this cluster is the evaluation and institutional strengthening of *eco-pesantren* programs to generate sustainable impacts. From these four clusters, it can be concluded that:

Table 3: Cluster Highlights Program Impacts and Reinforcement

Cluster	Main Focus	Research Direction
1	Awareness Islamic values	and Integration of Islamic theology with sustainable environmental awareness
2	Local context and participation	and Environmental management practices and pesantren contributions in specific regions
3	Program implementation	Models and implementation of <i>eco-pesantren</i> programs in Islamic educational institutions
4	Impact institutional strengthening	and Evaluation of outcomes, impacts, and sustainability of pesantren environmental initiatives

The clustering patterns above reveal a systematic evolution of research trends. They indicate that, despite certain differences, the clusters identified in the Scopus metadata are

largely consistent with those derived from Google Scholar. These differences are influenced by the nature and scope of the data sources. In terms of similarities, both Scopus and Google Scholar exhibit comparable clusters related to environmental awareness, the internalization of values, and the growing recognition of the importance of *eco-pesantren*. Another point of convergence lies in the emphasis on the implementation of programs in real-world contexts. The primary divergence concerns the local context and the dimension of institutional strengthening and impact, which are more prominently captured in the Google Scholar database. This is because Google Scholar provides broader coverage of articles, particularly those authored by Indonesian scholars and published in journals not indexed by Scopus. Overall, these findings point to emerging research opportunities. The discourse on *eco-pesantren* should no longer be confined to normative or value-based discussions; rather, it needs to move toward implementation-oriented and evaluative studies that assess practical outcomes in the field.

The geographical origin data of authors, as addressed in the first research question, indicate that Indonesia constitutes the primary research base for studies on *Green Pesantren* and *eco-pesantren*. These findings suggest that pesantren represent a form of local wisdom and a distinctive type of educational institution in Indonesia. As a prominent model of Islamic education with strong institutional characteristics, research on *Green Pesantren* and *eco-pesantren* is therefore predominantly conducted by Indonesian scholars.

Discussion

The bibliometric findings on articles addressing *Green Pesantren* from 2000 to 2025 indicate that this field of research has experienced significant growth in recent years. The sharp increase in publications during 2023-2025 marks a shift in research focus from general ecological awareness to the concrete implementation and evaluation of pesantren-based sustainability programs (Subaidi et al., 2023); (Putri et al., 2023); dan (Nurkhin et al., 2023). This phenomenon is consistent with international studies showing that faith-oriented educational institutions are increasingly assuming an increasingly important role in addressing climate change through the promotion of value-based education, the cultivation of ecological character, and the facilitation of collective environmental action (Hearn et al., 2024); (Fatima et al., 2025).

Conceptually, the mapping results reveal three major pillars in the development of *Green Pesantren* research. The first pillar concerns the dimension of environmental awareness and the internalization of ecological values rooted in Islamic teachings, such as the concepts of *khalifah fi al-ardh* (stewardship on Earth) and *rahmatan lil 'alamin* (mercy to all creation). Studies by Aulia et al., (2024) and Rahman et al., (2024) emphasize that the spiritual values and ecological responsibility of *santri* can be nurtured through eco-theological activities. These findings underscore the relevance of Islamic eco-theology as a foundation for sustainability education that goes beyond scientific approaches by incorporating religious ethics (Karman et al., 2023).

The second pillar relates to the implementation of environmental programs within pesantren, encompassing the development of renewable energy, water conservation, and waste management initiatives. Pesantren have begun to transform into social laboratories for the application of locally grounded green campus principles, with thematic emphases such as “waste management,” “environmental preservation,” and “community participation” (Aulia et al., 2021); (Maghfiroh et al., 2024). This approach affirms that pesantren function not merely as institutions of religious propagation, but also as agents of social and environmental change that contribute to carbon emission reduction at the community level (Agusalim & Karim, 2024).

The third pillar concerns impact evaluation and institutional strengthening, which has emerged as the most recent research trend (2023–2025). Studies such as those by Muchlis et al., (2024) dan Lutfauziah et al., (2023) demonstrate scholarly efforts to assess the effectiveness of environmental curricula and programs in pesantren. This development reflects an epistemological shift from a normative paradigm toward an evaluative one. Within this evaluative paradigm, the success of *Green Pesantren* is measured not only by increased awareness but also by sustained behavioral change and the establishment of long-term, sustainable governance practices.

Furthermore, the findings indicate that the literature is overwhelmingly dominated by Indonesian scholars, accounting for more than 90% of author affiliations, with only limited contributions from other countries such as Malaysia, the Netherlands, and the United Kingdom. This pattern suggests that *Green Pesantren* represents a distinctive scholarly domain rooted in Indonesian local wisdom while simultaneously offering substantial opportunities for global collaboration (Muchlis et al., 2024); (Zhang & Bai, 2023); (Purnomo et al., 2024). By aligning with international initiatives such as *Faith for Earth* led by the United Nations Environment Programme (UNEP) and *Ummah for Earth* in the Middle East, this locally grounded dominance becomes a strength, as it showcases a contextualized model of Islamic education in addressing the global climate crisis (Ma'rifat & Suraharta, 2024).

The mapping results reveal a significant mismatch between conceptual development and operational practice. In advancing pesantren-based sustainability models, most existing studies remain predominantly descriptive in nature. This finding is consistent with Maghfiroh et al., (2024), who argue that many pesantren continue to face challenges in supporting environmental programs due to limitations in funding and institutional policy. Therefore, to develop integrative, applicable, and sustainable models, future research should deepen the interconnections among green management, curriculum design, and religious pedagogy.

Moreover, research on *Green Pesantren* differs from international studies on faith-based environmental education by exhibiting a distinctive pattern that emphasizes collaboration between moral education and social practice. According to studies by Aldrin, (2024) dan Aronsson et al. (2025), religious education in Europe tends to focus more on ecological awareness and *eco-hope*, whereas in Indonesia, pesantren have shifted toward community-based practices. Accordingly, *Green Pesantren* may serve as an alternative global model that integrates education, faith, and community-based environmental action.

Overall, the discussion demonstrates that the trajectory of *Green Pesantren* research has evolved toward a new paradigm, shifting from awareness to institutional transformation. This transition represents an innovation in Islamic education that positions sustainability as an integral component of religious and social missions. With the support of cross-disciplinary and cross-national collaboration, future research holds the potential to elevate *Green Pesantren* as a globally influential model of sustainable Islamic education.

Conclusion

This study concludes that *Green Pesantren* constitutes a unique and promising model of Islamic education that bridges religious values with environmental sustainability practices. Based on a bibliometric analysis of publications from 2000 to 2025, the findings reveal a significant upward trend in *Green Pesantren* research over the past five years, with a shift in focus from ecological awareness toward program implementation and institutional evaluation. The study further demonstrates that pesantren function not only as centers of moral and spiritual education but also as key actors in social and environmental transformation grounded in Indonesian local

wisdom. Nevertheless, challenges remain in terms of international collaboration, policy strengthening, and the development of more systematic theoretical frameworks. Therefore, the integration of Islamic values, curricular innovation, and cross-institutional and cross-national synergy is essential to reinforce the role of *Green Pesantren* as a globally competitive model of sustainable Islamic education.

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