

# ESG Integration in Islamic Finance: Green Sukuk and Sustainable Investment in Indonesia: Literature Review and Bibliometric Analysis

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**Abstract**—This study aims to analyze the integration of Environmental, Social, and Governance (ESG) principles in Islamic finance by highlighting the development of green sukuk as a sustainable financing instrument in Indonesia. Using a literature review approach and bibliometric analysis with VOSviewer on publications from the period 2015–2025, this study identifies patterns of thematic evolution, key actors, and the dynamics of citation networks in related research. The findings indicate that the integration of ESG in Islamic finance has shifted from normative discourse toward empirical studies that assess credibility, governance, and the sustainability impact of financed projects. Green sukuk has emerged as a strategic instrument that not only complies with Sharia principles but also supports the national green transition agenda. However, challenges such as non-uniform reporting standards, the risk of greenwashing, and limitations in the pipeline of green projects continue to constrain the optimal utilization of this instrument. The results of this study provide implications for regulators, industry practitioners, and researchers in strengthening the sustainable Islamic finance ecosystem.

**Keywords:** ESG; Islamic Finance; Green Sukuk; Sustainable Investment; Bibliometric Analysis; VOSviewer

## 1. INTRODUCTION

Global attention to climate change and sustainable development has accelerated the integration of Environmental, Social, and Governance (ESG) principles into both conventional and Islamic financial practices. ESG represents a set of non-financial criteria that increasingly shape modern investment decisions and long-term risk assessments of projects and investment portfolios. Within the context of Islamic finance, ESG is often viewed as being aligned with the *maqāṣid al-sharīʿah*, which emphasize the preservation of religion, life, intellect, lineage, and wealth, thereby creating a convergence between ethical–religious justification and the practical demands of sustainability reporting (Harahap et al., 2022).

One instrument that bridges Shariah values and the green agenda is green sukuk, a type of sukuk whose proceeds are allocated to environmentally friendly projects such as renewable energy, waste management, and low-carbon infrastructure. Green sukuk are considered capable of addressing the green financing gap in countries with strong Islamic capital markets, as they combine Shariah compliance with sustainability credentials that appeal to both institutional and retail investors. Empirical studies and conceptual analyses demonstrate the potential of green sukuk to support the achievement of the Sustainable Development Goals (SDGs) while simultaneously expanding the Islamic investor base (Fitrah & Soemitra, 2022).

In Indonesia, government policy initiatives and the evolving regulatory framework on sustainable finance have opened significant opportunities for green instruments, including green sukuk, although their implementation remains complex. Recent changes in green investment taxonomy and transition policies illustrate how the classification of “green” technologies and projects varies across national criteria, thereby influencing project eligibility for green financing. Domestic market conditions, such as reliance on traditional energy sectors and the dominant role of state-owned enterprises (SOEs), also affect the pace of green sukuk adoption (Adzimatinur et al., 2024). Consequently, examining Indonesia’s experience is essential for identifying policy, technical, and market-related barriers.

From an academic perspective, literature on ESG integration within Islamic finance has expanded rapidly since the early 2020s. Recent reviews and bibliometric studies reveal a growing number of publications on green sukuk, ESG in Islamic finance, and SRI-sukuk instruments, while also highlighting thematic concentration, limited empirical evidence, and the predominance of qualitative approaches. Bibliometric analysis using tools such as VOSviewer maps research clusters (e.g., green sukuk definitions, country case studies, regulatory frameworks), facilitating the identification of research gaps, including the need for cross-country comparative studies and empirical assessments of emission mitigation impacts (Prayogo et al., 2024).

Although numerous studies elaborate on the concept and potential of green sukuk, robust empirical evidence regarding their effectiveness in mobilizing green investment at the national level remains relatively limited. Case studies suggest that transparency in fund utilization, ESG reporting standards, and third-party verification mechanisms are critical determinants of green sukuk credibility (Rahmaningsih, 2022). Inconsistent ESG reporting standards and variations in certification schemes across countries increase the risk of greenwashing, thereby underscoring the need for enriched research methodologies that integrate both quantitative and qualitative approaches.

A VOSviewer-based bibliometric focus adopting a reference period from 2015 onward enables the mapping of intellectual evolution and thematic trends, such as the shift from normative discussions on Shariah compliance toward more pragmatic discourse on market structures, policy incentives, and environmental–economic impacts. The use of VOSviewer to visualize keyword networks, author collaborations, and research clusters adds methodological value,

particularly when the research objective is to identify emerging topics, key contributors, and empirical gaps in green sukuk studies in Indonesia (Adillah & Handoko, 2024). Therefore, combining systematic literature review and bibliometric analysis constitutes an appropriate methodology for this article.

From a public policy perspective, the experience of jurisdictions that have earlier adopted SRI/SRI-sukuk instruments (e.g., selected initiatives in Malaysia) can provide valuable references for Indonesia. Industry reports and regulatory bodies emphasize the importance of clear regulatory foundations, taxonomy harmonization, and fiscal incentives to encourage investor participation. However, the adoption of international best practices must be adapted to local contexts, including domestic investor characteristics, the capacity of Islamic financial institutions, and national infrastructure development needs (Adzimatunur et al., 2024). This study will assess the extent to which international lessons are applicable to the Indonesian context.

Beyond environmental considerations, the social and governance dimensions of the ESG framework are equally relevant to Islamic finance, particularly as Shariah principles promote equitable benefit distribution, consumer protection, and institutional accountability (Maarif et al., 2025). Accordingly, ESG integration within the Shariah framework is not merely about evaluating the viability of green projects but also about strengthening governance practices consistent with principles of justice, transparency, and stakeholder protection. This research positions green sukuk as an instrument that must be evaluated simultaneously across all three ESG dimensions.

Methodologically, this article proposes a mixed-method approach: (1) a systematic literature review of academic publications from 2020–2025 relevant to ESG–Islamic finance and green sukuk; and (2) bibliometric analysis using VOSviewer (with a reference range from 2015 onward) to map citation networks, author collaborations, and dominant themes. This approach aims not only to summarize conceptual developments but also to produce a research map that can support academics, policymakers, and Islamic capital market practitioners in setting research and policy priorities.

Against this background, the objectives of this article are: (i) to reconstruct the state-of-the-art literature on ESG integration within Islamic finance, particularly green sukuk; (ii) to map research trends and key actors through bibliometric analysis (VOSviewer); and (iii) to identify research gaps and policy implications for strengthening the role of green sukuk and sustainable investment in Indonesia. The resulting recommendations are expected to be operational, focusing on standard harmonization, enhanced reporting practices, and incentive design, so that green sukuk becomes not merely a symbolic instrument but an effective component of Indonesia’s national green transition financing strategy.

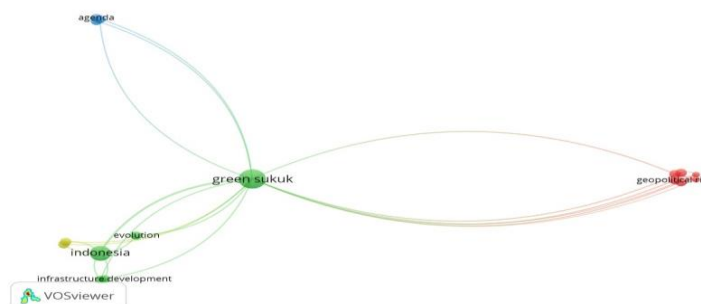
## 2. RESEARCH METHODS

The research methodology employs a mixed approach that integrates a systematic literature review with bibliometric analysis to obtain a comprehensive understanding of the development of research on the integration of ESG in Islamic finance, particularly green sukuk and sustainable investment in Indonesia. The literature review procedure begins with the identification of scholarly documents from reputable databases such as Scopus, Dimensions, and Google Scholar within the 2020–2025 publication period, followed by a screening process based on thematic relevance, full-text availability, and alignment with the research focus (Sahir, 2022).

Furthermore, bibliometric analysis is conducted using VOSviewer by incorporating bibliographic data from 2015 onward to map patterns of author collaboration, dominant keywords, citation network structures, and the formation of research clusters that reflect the focus, direction, and evolving trends of the field. All data undergo cleaning, normalization, and visualization stages to ensure accurate representation of relationships among bibliographic entities, while the interpretation of findings is carried out descriptively by relating them to developments in Islamic finance and the dynamics of the green sukuk market in Indonesia (Sembiring et al., 2024).

## 3. RESULTS AND DISCUSSION

The bibliometric analysis using VOSviewer software was conducted to map the development and interrelationships of research topics related to green sukuk. The resulting visualizations include network visualization, overlay visualization, and density visualization, each of which provides distinct insights into the structure and dynamics of the research field.

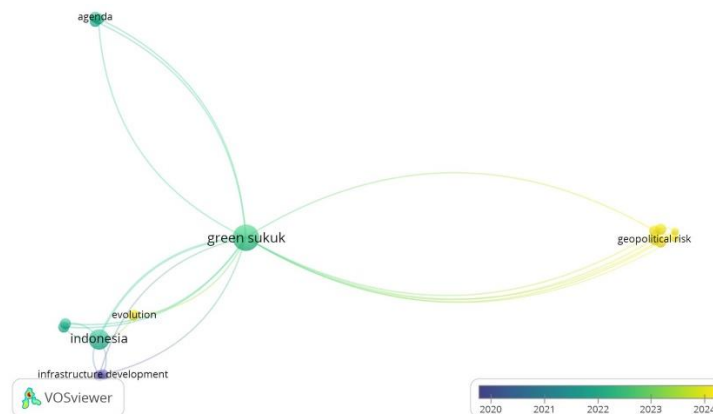


Picture 1. Network Visualization

In the network map, the keyword “green sukuk” appears as the largest node and is positioned at the center. This indicates that green sukuk represents the core theme within the analyzed body of publications. This keyword is directly connected to several other keywords, namely Indonesia, infrastructure development, agenda, evolution, and geopolitical risk.

The relationship between green sukuk and Indonesia suggests that a substantial portion of the research discusses the implementation of green sukuk within the Indonesian context. The connection with infrastructure **development** indicates that green sukuk is widely examined as a financing instrument for sustainable infrastructure development. Meanwhile, its association with agenda reflects the role of green sukuk in supporting sustainable development agendas and government policy initiatives.

Furthermore, the link with geopolitical risk signifies that green sukuk research is not limited to domestic considerations but has increasingly incorporated global risk factors and international geopolitical dynamics.

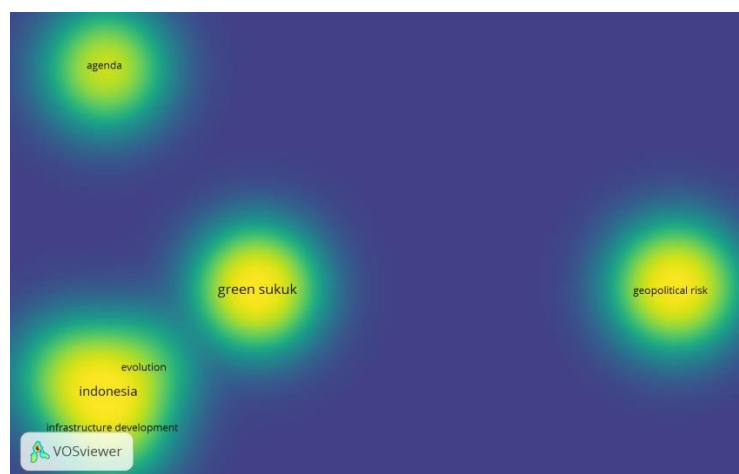


**Figure 2.** Overlay Visualization

The overlay visualization illustrates the development of research topics based on publication time. Keywords displayed in darker colors (blue to green), such as Indonesia, infrastructure development, and evolution, represent topics that were addressed earlier in the literature.

In contrast, keywords shown in lighter colors (yellow), such as geopolitical risk, indicate relatively newer and emerging topics. The color of the green sukuk keyword falls within the medium-to-light spectrum, suggesting that this topic continues to be actively researched and remains relevant in recent periods.

These findings indicate a shift in research focus from earlier studies that emphasized the role of green sukuk in national development toward broader investigations into the impact of global uncertainty and geopolitical risks on green financial instruments.



**Figure 3.** Density Visualization

In the density visualization, areas with the brightest color (yellow) represent the most frequently occurring and extensively studied topics. In this visualization, green sukuk occupies the area with the highest density, confirming its position as the primary focus of the research.

In addition, Indonesia and geopolitical risk also display relatively high density. This indicates that Indonesia serves as a dominant object of analysis in green sukuk research, while geopolitical risk has become an increasingly important topic associated with green sukuk in recent literature. Other keywords, such as infrastructure development and agenda, exhibit moderate density, reflecting their roles as supporting research themes.

### 3.1 Discussion

The findings of this study provide strong evidence that the integration of ESG principles within Islamic finance, particularly through green sukuk, has evolved from a predominantly normative discourse into a more operational and policy-driven framework. This evolution reflects the growing demand for financial instruments that not only comply with Shariah principles but also deliver measurable environmental and social outcomes.

The bibliometric results confirm that green sukuk has become the central theme of scholarly discourse, as indicated by its dominant position in the network and density visualizations. Its strong association with keywords such as Indonesia, infrastructure development, and agenda underscores the role of green sukuk as a strategic instrument for financing sustainable infrastructure and supporting national development priorities. This finding aligns with previous studies (Fitrah & Soemitra, 2022; Adzimatinur et al., 2024), which emphasize that Indonesia's leadership in sovereign green sukuk issuance has positioned the country as a reference point in the global Islamic sustainable finance landscape.

The overlay visualization further reveals a clear shift in research focus over time. Early studies primarily examined the contribution of green sukuk to domestic development goals and infrastructure financing. More recent publications increasingly incorporate broader concerns related to geopolitical risk and global uncertainty. This transition indicates that green sukuk is no longer viewed solely as a development financing tool but is now embedded within discussions of global financial stability, risk management, and climate-related vulnerabilities. Such a shift suggests that future policy and market strategies must account not only for domestic sustainability objectives but also for external macroeconomic and geopolitical conditions.

The prominence of geopolitical risk in recent literature also highlights the growing recognition that green financial instruments are exposed to systemic global shocks. This reinforces the importance of resilient regulatory frameworks, diversified investor bases, and transparent governance mechanisms to safeguard the credibility and stability of green sukuk markets. Without these institutional safeguards, the ability of green sukuk to function as a reliable component of sustainable finance could be significantly constrained.

Furthermore, the moderate density of supporting themes such as infrastructure development and agenda demonstrates that while these elements remain essential, the research frontier is expanding toward governance quality, disclosure standards, verification mechanisms, and risk-related considerations. This expansion reflects a maturation of the field, moving beyond conceptual alignment between ESG and Shariah principles toward more technical and performance-oriented assessments.

From a policy perspective, the findings reinforce the importance of harmonizing ESG standards, strengthening disclosure requirements, and improving third-party verification practices. The recurring concern over greenwashing within the literature suggests that credibility remains a central challenge. Addressing this issue is critical for maintaining investor confidence and ensuring that green sukuk delivers genuine environmental and social impact rather than symbolic compliance.

Overall, this study demonstrates that green sukuk has emerged as a cornerstone of sustainable Islamic finance in Indonesia, supported by both academic development and practical policy relevance. However, its long-term effectiveness depends on the continuous improvement of governance structures, regulatory coherence, and the integration of global risk considerations. These findings contribute to the growing body of literature that positions green sukuk not merely as a niche Islamic financial product, but as a vital instrument in the broader architecture of global sustainable finance.

## 4. CONCLUSION

This study concludes that the integration of Environmental, Social, and Governance (ESG) principles into Islamic finance, particularly through the development of green sukuk, has experienced substantial conceptual and practical evolution over the past decade. What initially emerged as a normative alignment between Shariah values and sustainability objectives has progressively transformed into an operational framework that emphasizes governance quality, transparency, risk management, and measurable environmental and social outcomes. This shift reflects the growing expectations of investors, regulators, and policymakers for financial instruments that generate not only financial returns but also long-term sustainability impact. The bibliometric analysis demonstrates that green sukuk occupies a central position in the academic landscape and is strongly associated with Indonesia's sustainable development and infrastructure agenda. At the same time, the temporal evolution of research themes reveals a clear transition from domestically focused discussions toward broader considerations of global uncertainty, particularly geopolitical risk. This indicates that green sukuk is increasingly recognized as a strategic instrument situated within the global financial system, exposed to macroeconomic volatility and international political dynamics. Despite its considerable potential, the study identifies persistent structural challenges that limit the effectiveness of green sukuk. These include inconsistent ESG reporting standards, risks of greenwashing, limited availability of eligible green projects, and the need for stronger third-party verification mechanisms. Without addressing these challenges, green sukuk risks remaining a symbolic instrument rather than becoming a truly impactful tool for financing sustainable development and climate transition. From a policy perspective, the findings underscore the urgency of harmonizing ESG frameworks, strengthening regulatory coordination, and improving institutional capacity within Islamic financial markets. Enhancing disclosure quality and establishing credible verification systems are essential to maintain investor confidence and ensure the integrity of green sukuk issuances. Furthermore, integrating global risk considerations into national green finance strategies will enhance the resilience of

Indonesia's green sukuk market in the face of economic and geopolitical uncertainties. In conclusion, green sukuk represents a vital pillar in the architecture of sustainable Islamic finance in Indonesia. However, its long-term success depends on continuous institutional reform, policy innovation, and commitment from all stakeholders. By strengthening governance structures and aligning domestic practices with international sustainability standards, green sukuk can evolve from a promising financial innovation into a cornerstone of Indonesia's green transition strategy and a model for other emerging Islamic finance markets.

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