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Bibliometric Mapping of Islamic Green Economy Research: Trends, Networks, and Emerging Themes

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Abstrak

Penelitian ini bertujuan memetakan tren dan jaringan kontribusi negara serta menganalisis kluster utama dan dinamika temporal perkembangan riset Islamic green economy. Metode penelitian menggunakan kualitatif dengan pendekatan bibliometric. Analisis dilakukan terhadap publikasi internasional menggunakan network visualization dan overlay visualization dengan tools VosViewer. Hasil penelitian menunjukkan bahwa kajian Islamic green economy mengalami pergeseran signifikan dari fokus normatif pada aspek regulasi, kebijakan, dan hukum lingkungan menuju tema aplikatif seperti green sukuk, keuangan syariah, pembangunan berkelanjutan (sustainable development goals), serta integrasi dengan inovasi teknologi finansial. Peta jejaring mengungkap lima kluster utama, yakni instrumen keuangan hijau berbasis syariah, keterlibatan pasar dan investor global, kerangka regulasi dan tata kelola, inovasi teknologi finansial, serta kontribusi akademik dan sektor riil. Analisis temporal memperlihatkan bahwa sebelum 2022 penelitian masih didominasi regulasi dan hukum, periode 2022–2023 menekankan instrumen keuangan, sedangkan pada 2023–2024 muncul tema fintech, industri halal, dan riset universitas. Temuan ini menegaskan bahwa Islamic green economy berkembang sebagai wacana multidimensi yang menghubungkan kebijakan publik, dinamika pasar, transformasi digital, dan basis pengetahuan akademik, serta memiliki potensi besar untuk memperkuat agenda pembangunan berkelanjutan secara global.

Keywords :

Bibliometrics, Islamic Green Economy, Trends

Abstract

The rapid growth of the global Islamic economy, with Sharia financial assets projected to reach USD 9.75 trillion by 2029, demands the transformation of Sharia accounting systems through artificial intelligence (AI) implementation. This study analyzes the impact of AI *on the transformation of Sharia accounting systems from a global perspective using qualitative methods through library research examining recent academic sources. The results reveal that AI enhances Sharia compliance monitoring accuracy by up to 92% through natural language processing (NLP), but faces complex challenges including regulatory disparities, algorithmic biases, and technological infrastructure gaps between GCC, Southeast Asia, and Africa regions. Key findings emphasize the need for an ethical framework based on maqasid al-shariah and localized AI adoption strategies. The research contributes to the development of a hybrid intelligence model integrating AI with human expertise and an ethical AI certification framework for Sharia accounting. This study recommends multisectoral collaboration to ensure digital transformation aligned with Islamic values.*

INTRODUCTION

The global discourse on sustainability and the transition toward a low-carbon economy has accelerated since the Paris Agreement and the adoption of the Sustainable Development Goals (SDGs). Within this context, the green economy framework emphasizes resource efficiency, renewable energy, and environmentally responsible production. Islamic economics, with its core principles of riba prohibition, distributive justice, social responsibility (e.g., zakat and waqf), and environmental stewardship (khalifah and amanah), offers normative foundations that naturally align with green finance and sustainable development objectives. Recent studies highlight this intrinsic compatibility, positioning the Islamic economic paradigm as a potential driver for advancing green economy agendas (World Bank, 2019).

Over the past decade, scholarly interest in the "Islamic green economy" has grown substantially. Topics such as green sukuk, Islamic green banking, sustainability governance, and environmentally oriented Islamic philanthropy (e.g., green waqf) are increasingly discussed across academic and policy circles. Bibliometric studies have begun to document this development, showing growth in publication volume, regional concentration in Muslim-majority countries (notably Malaysia, Indonesia, and GCC states), and the dominance of specific themes such as green sukuk and ESG integration in Islamic banking (Lada et al., 2023).

Despite these advances, existing bibliometric and systematic reviews remain fragmented. Some focus exclusively on green sukuk, others on Islamic finance and SDGs, while comprehensive mappings of the intellectual structure of the Islamic green economy remain scarce. Questions about thematic shifts (e.g., from sukuk-centric research to governance, ESG, or green waqf), patterns of collaboration, and the identification of emerging themes are yet to be systematically addressed. Furthermore, methodological differences across existing studies limit the comparability and integrative insights of current knowledge (Dewi et al., 2024).

Addressing this gap is important. A systematic bibliometric mapping can reveal not only the state of the art but also priority research areas for scholars, policymakers, and Islamic financial institutions. It can also identify key actors, influential journals, and collaborative networks that support interdisciplinary research consolidation. In addition, uncovering emerging themes will help guide future scholarship and policy initiatives, such as refining shariah criteria for green finance, assessing the environmental impact of Islamic financial instruments, and integrating zakat or waqf in climate financing.

Accordingly, this study conducts a bibliometric mapping of Islamic green economy research. By analyzing publication trends and keyword co-occurrence clusters using a large academic database and bibliometric tools, this study aims to provide a comprehensive overview of the intellectual landscape of the Islamic green economy.

METHODS

This study uses a bibliometric approach to map global trends in research related to halal industry governance, particularly those related to policy and regulation. This approach was chosen because it is capable of identifying publication patterns, revealing relationships between topics, and showing the dynamics of research development temporally and spatially (Ninkov et al., 2022).

The research data was obtained from the Dimensions database, which was chosen because it has broad publication coverage, high accessibility, and includes complete metadata related to citations and author collaborations. The search strategy was carried out using the main keywords "Islamic Green Economy," OR "Islamic Green Finance," and "Green Sukuk." The search period was set from 2015 to 2024, covering a decade of recent research developments.

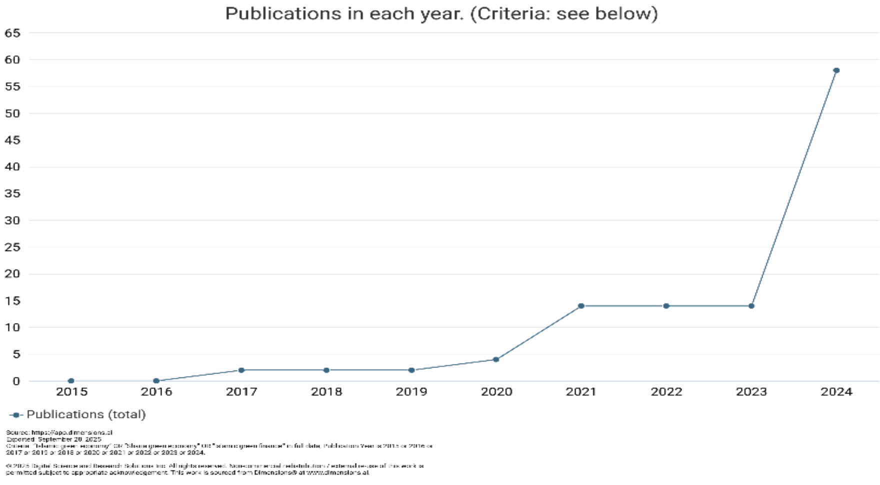
The initial search results produced a number of publications that were then selected based on the following inclusion criteria: (1) journal articles, proceedings, and reviews relevant to the theme of halal governance; (2) articles containing dimensions of regulation, policy, or halal industry governance. Duplicate, irrelevant, or grey literature (non-peer reviewed reports) articles were excluded. After the screening process, 110 articles were obtained as the basis for analysis. Bibliometric analysis was performed using the latest version of VOSviewer (Eck & Waltman, 2019), with country contribution, Network Visualization, and Overlay Visualization procedures.

RESULT AND DISCUSSION

Evolution of Research on Islamic Green Economy

An analysis of annual publication trends for the 2015–2024 period shows significant developments in studies related to the Islamic green economy. This trend indicates a significant development in the research direction of Islamic economics in the context of the Islamic green economy over the past 10 years.

Figure 1. Trends in Islamic Green Economy Research



Source: Data Processed by Dimensiom.id (2025)

The annual publication trend illustrates the dynamic development of research on the Islamic green economy over the past decade. During the early stage (2015–2019), the number of publications remained very limited, with fewer than three works per year, indicating that the theme was still in its embryonic phase and had not yet attracted significant scholarly attention. Between 2020 and 2023, a transitional phase occurred, marked by a modest increase and then stabilization at around 14 publications annually. This growth coincides with the global momentum of the COVID-19 pandemic, which heightened awareness of sustainability, resilience, and the role of green finance, thereby encouraging the integration of Islamic perspectives into these discussions.

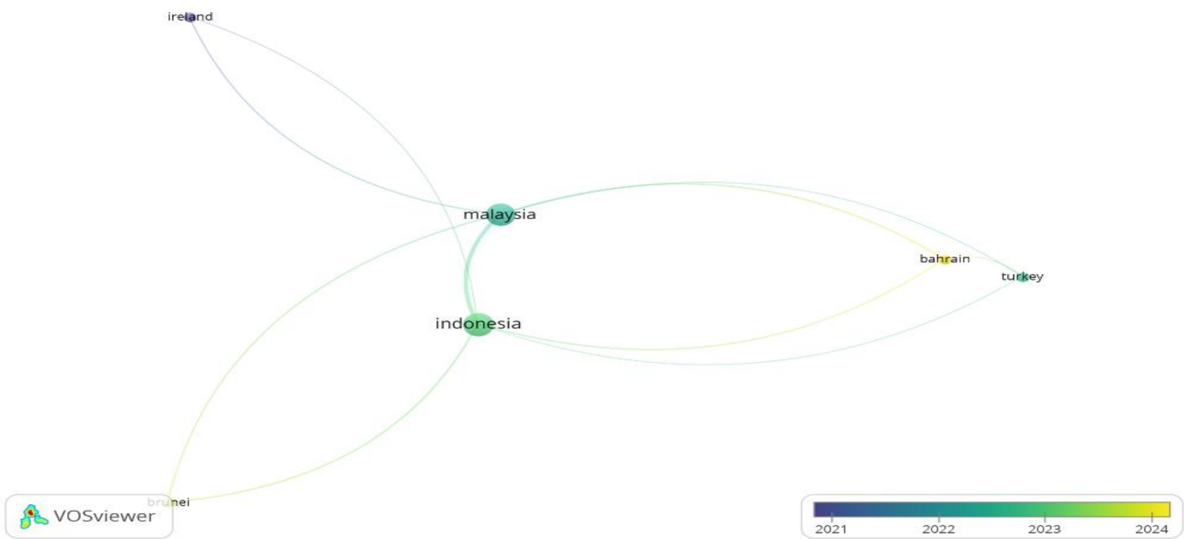
A remarkable breakthrough is observed in 2024, when publications rose sharply to 58, representing more than a fourfold increase compared to previous years. This surge reflects the emergence of the Islamic green economy as a well-established and strategic research domain within the broader sustainability discourse. Several factors likely explain this development: the global push towards achieving the Sustainable Development Goals (SDGs) by 2030, the rising prominence of Islamic green finance instruments such as green sukuk, and the growing policy initiatives in Muslim-majority countries to integrate sustainability with Shariah-compliant economic practices.

From a bibliometric perspective, this pattern highlights a clear transition from marginal interest to mainstream relevance. The sharp growth in 2024 suggests expanding international collaboration networks and the consolidation of key research clusters, particularly in the areas of green Islamic finance, halal and sustainable supply chains, and renewable energy investment. Consequently, the Islamic green economy is increasingly positioned at the intersection of Islamic ethics, environmental sustainability, and global economic transformation, marking it as an emerging theme with significant academic and policy implications.

Country Contribution to Halal Policy Research

The contribution of countries to Islamic green economy research is an important aspect in understanding the direction and dynamics of global discourse. Each country has different focuses, interests, and approaches in developing Islamic green economy, which are then reflected in academic literature. Therefore, studies on the contribution of countries are important to understand how differences in capacity and interests influence the development of Islamic green economy at the international level.

Figure 2. Visualitation of Country Contribution in Islamic Green Economy Research



Source: Data Processed by Vosviewer (2025)

The network map reveals the existence of cross-country research collaborations within the theme of the Islamic green economy, with the main nodes located in Malaysia and Indonesia. These two countries serve as central hubs of interaction, consistently emerging as pioneers in developing environmentally oriented Islamic financial instruments, particularly *green sukuk*. Their interconnection illustrates that Southeast Asia functions as the epicenter of both academic inquiry and practical implementation of the Islamic green economy, aligning with the dominant positions of Malaysia and Indonesia in the global sukuk market.

Beyond these two core countries, the network also shows linkages with Brunei, Turkey, Bahrain, and Ireland. Brunei appears as a regional actor reinforcing the Southeast Asian base, while Turkey and Bahrain represent contributions from the Middle East—traditionally recognized as the historical authority in Islamic finance. The involvement of Ireland signals that the Islamic green economy theme has begun to extend into Europe, reflecting the emergence of a bridge between Western financial centers and Islamic financial markets in the Muslim world.

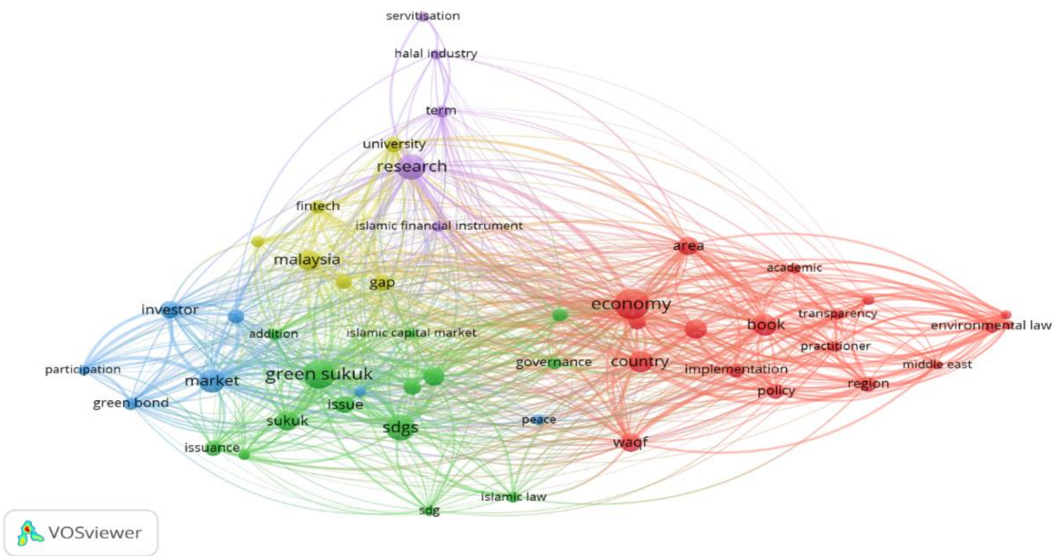
These findings confirm a geographical shift in the locus of Islamic green economy research toward Southeast Asia. As noted by Prayogo et al. (2024), Indonesia and Malaysia not only play leading roles as the largest sukuk markets but also serve as policy laboratories for innovative integration between Shariah principles and sustainable development agendas. The World Bank (2020) report, *"Pioneering the Green Sukuk: Three Years On,"* also highlights that Malaysia launched the world's first green sukuk and remains a leader in terms of issuance volume, while Indonesia has accumulated the highest value from green sukuk emissions. Empirical literature further shows that regulatory initiatives, sukuk issuance, and academic research activities are highly concentrated in these two countries.

Overall, the network underscores a *hub-and-spoke* structure in Islamic green economy research, with Malaysia and Indonesia functioning as the central hubs, while other countries act as satellites complementing the global network. This structure reflects two key insights: first, the strength of Southeast Asia as the driving force behind *green sukuk* development; and second, the growing potential for global integration between Islamic financial centers in Asia and the Middle East and research partners in the West.

Network Visualitation: Thematic Clusters of Islamic Green Economy

The network visualization analysis aims to map the structural relationships among keywords within the literature on the Islamic green economy. In this network map, each keyword appearing in academic publications is treated as a node, while the connections (links) represent the co-occurrence relationships between these keywords. The more frequently two keywords appear together within the same publication, the stronger their linkage appears in the visualization. This approach allows for the identification of thematic clusters, central concepts, and emerging research trends within the field of the Islamic green economy.

Figure 3. Network Visualitation in Islamic Green Economy Research



Source: Data Processed by Vosviewer (2025)

The network visualization generated using VOSviewer reveals a web of interconnected research keywords forming several major thematic clusters within the field of Islamic green economy studies. This network represents the broader map of academic discourse, illustrating the actors, ideas, and financial instruments that constitute the focal points of scholarly attention. Consequently, the visualization not only displays the density of topics but also highlights the evolving directions and reinforcing focus areas of research in this field.

The green cluster serves as the central hub, connecting overarching themes such as green sukuk, Islamic finance, Sustainable Development Goals (SDGs), and Islamic capital markets. This cluster indicates that the literature positions green sukuk as a key intersection between the Islamic financial system and the global sustainable development agenda. The prominent position of green sukuk underscores its strategic role as a bridge linking Islamic capital markets with broader environmental and sustainability imperatives.

The blue cluster emphasizes the involvement of market actors—such as investors and public participation—alongside connections with conventional financial instruments like green bonds. This relationship suggests that the Islamic green economy does not evolve in isolation but interacts closely with global financial mechanisms. The literature represented in this cluster explores how Shariah-compliant financial instruments can integrate with international markets, thereby enhancing cross-border investor appeal and fostering global financial inclusion.

The red cluster focuses on regulation, governance, and environmental law, featuring key terms such as policy, governance, and environmental law. This cluster highlights the critical role of legal and policy frameworks in supporting the growth of the Islamic green economy. Regulation provides both certainty and integrity for green-oriented Islamic financial instruments. The dominance of this theme suggests that sustainability issues are addressed not only through economic mechanisms but also through public policy instruments and state governance frameworks.

The yellow cluster features themes related to financial technology (fintech) innovation and the role of specific countries particularly Malaysia which emerges as a central node in the network. Malaysia is widely recognized as a pioneer in developing green sukuk and establishing relevant regulatory frameworks, making it a global reference point in the literature. The strong linkage with fintech-related topics indicates that recent research has increasingly focused on digitalization and technological innovation as essential tools for expanding the Islamic green economy.

The purple cluster highlights the academic and real-sector dimensions, encompassing university-based research, halal industry development, and interdisciplinary studies. This cluster shows that the Islamic green economy is not confined to policy and market applications but has also evolved into a robust academic field. The cross-disciplinary connections signal an intellectual movement toward broadening perspectives, enabling the Islamic green economy discourse to contribute to wider conversations on environmental issues, development, and social justice.

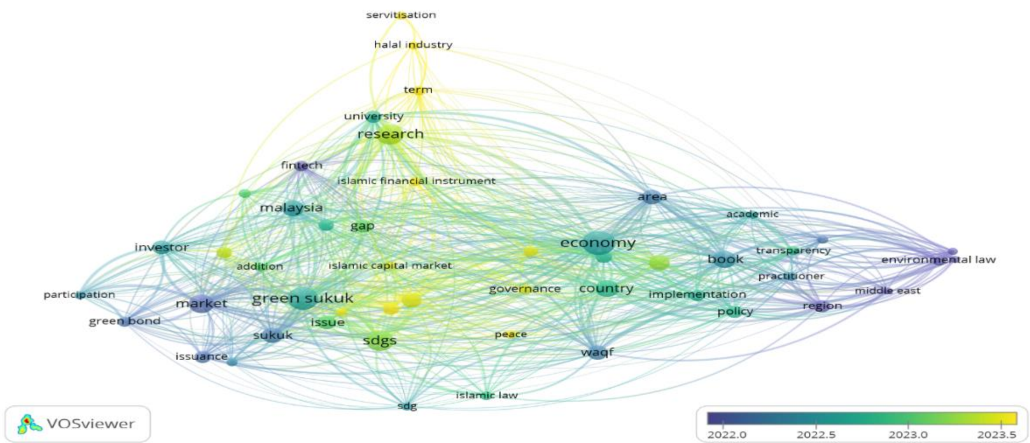
An integrated analysis of these clusters reveals a consistent and mutually reinforcing pattern. Prayogo et al. (2024) found that green sukuk emerged as a central linking theme between Islamic finance principles, green bond standards, ESG frameworks, and the pursuit of the SDGs from 2015 to 2023, while regulation and governance remained dominant themes reinforcing the instrument's legitimacy. Utomo et al. (2024) observed that ESG investing, climate finance, and green financial services have become increasingly prominent in Islamic finance literature, reflecting a growing integration between Shariah finance and the global sustainability agenda. On the regulatory front, Ihsan (2025) identified that clear policy frameworks, fiscal incentives, and supportive regulations are key factors driving the issuance of green sukuk within Islamic banking systems. From a legal and theoretical perspective, Rahmade & Arini (2025) proposed a conceptual model that integrates maqāṣid al-sharīʿah with ESG principles.

Overall, this network visualization demonstrates that the study of the Islamic green economy follows a multidimensional and interconnected pattern, encompassing regulation, financial instruments, market participation, technological innovation, and academic contribution. The resulting network reflects a balance between normative, practical, and interdisciplinary dimensions—indicating that the evolution of the Islamic green economy is not a partial phenomenon, but rather the outcome of complex interactions among law, policy, markets, technology, and scientific inquiry.

Overlay Visualitation: Emerging Themes in Islamic Green Economy

The overlay visualization not only illustrates the interconnections among keywords but also introduces a temporal dimension, showing how research themes have evolved over time. In other words, this visualization helps trace the dynamic shifts in research focus, allowing scholars to interpret the evolutionary trajectory of the Islamic green economy discourse. Through the overlay map, it becomes possible to identify emerging topics, the transition from foundational studies to contemporary issues, and the chronological progression of scholarly attention within the field.

Figure 4. Overlay Visualitation in Islamic Green Economy Research



Source: Data Processed by Vosviewer (2025)

The overlay visualization illustrates that the development of research on the Islamic green economy has progressed gradually and can be divided into several distinct phases that reflect the evolving dynamics of research themes. The color gradient in the keyword map provides a chronological depiction showing a transition from normative–regulatory focuses toward financial, technological, and innovation-oriented aspects. This pattern demonstrates that the literature is not static but rather evolves in response to global demands, market developments, and technological challenges.

In the early phase (prior to 2022), research was dominated by discussions on regulation, policy, and environmental law. Keywords such as policy, governance, environmental law, and Middle East emerged as central nodes in the research network. The predominance of these themes indicates that, during this period, scholarship was primarily concerned with establishing normative and regulatory foundations, with the Middle East serving as the central locus of discourse. This is unsurprising, given the region's position as the epicenter of energy issues and Islamic finance, necessitating robust policy frameworks to support the transition toward a green economy.

The transitional phase (2022–2023) marked a shift toward more application-oriented studies emphasizing financial themes. Keywords such as green sukuk, Islamic finance, and sustainable development goals (SDGs) became focal points of attention. This shift signifies a new research focus on the role of Islamic financial instruments as catalysts for sustainable development financing. Consequently, research in this phase moved beyond regulatory discussions to explore practical financial instruments that could bridge Islamic capital markets with global development agendas.

The most recent phase (2023–2024) is characterized by the emergence of new themes such as fintech, halal industry, and university research. The appearance of these keywords indicates a more technology-driven and innovation-oriented trajectory. During this stage, the literature emphasizes the role of digitalization in expanding market access, the halal industry in strengthening the broader economic ecosystem, and academic research in consolidating the knowledge base. This demonstrates increasing integration between Islamic finance, digital technology, and the real sector.

The evolution of Islamic green economy research—from its normative–regulatory foundations (policy, governance, environmental law) to financial applications (green sukuk, Islamic finance), and more recently to technology-based innovation aligns with existing scholarly findings. Habibullah & Hassan (2023) observed that green sukuk has transformed from a regulatory framework into an integrated component of ESG and SDG initiatives. Utomo et al. (2024) identified the growing prominence of climate finance and green financial services as key instruments for sustainable financing. In the latest phase, the emergence of fintech, halal industry, and academic research as new nodes corresponds with the findings of Sofyan et al.

(2022), whose bibliometric study on Islamic fintech in Indonesia highlights the importance of digitalization and financial inclusion.

Overall, the overlay visualization reveals that Islamic green economy research follows a progressive trajectory from regulatory and policy foundations to financial mechanisms, and ultimately toward technological innovation and academic contribution. This progression demonstrates the literature's adaptability to contemporary needs, encompassing regulatory frameworks, sustainable financing mechanisms, and digital transformation. Accordingly, the future direction of research is likely to emphasize the synergy among policy, market, technology, and knowledge in building an inclusive and sustainable Islamic green economy ecosystem.

CONCLUSION

This study concludes that research on the Islamic green economy has undergone significant advancement evolving from a marginal theme into a strategic domain within the global sustainability discourse. In the early phase (2015–2019), publications were still limited and primarily focused on regulation, policy, and environmental law, particularly in the Middle Eastern context. During the transitional period (2020–2023), there was a notable increase in studies emphasizing Shariah-compliant financial instruments such as green sukuk and their connection to the Sustainable Development Goals (SDGs), in line with the growing global awareness of sustainable development. By 2024, the number of publications rose sharply, marking the consolidation of the Islamic green economy as a major research theme.

The network visualization reveals five main thematic clusters: (1) Shariah-based green financial instruments, (2) global market and investor engagement, (3) regulatory and governance frameworks, (4) financial technology innovation, and (5) academic and real-sector contributions. The network map illustrates that the development of the Islamic green economy does not occur in isolation but is the result of a complex interaction among public policy, market dynamics, technological innovation, and scientific knowledge. Consequently, research in this field exhibits a multidimensional orientation, encompassing normative, practical, and interdisciplinary aspects.

The overlay visualization analysis demonstrates a progressive temporal dynamic from a regulatory focus before 2022, shifting toward financial instruments in 2022–2023, and subsequently emphasizing technological innovation, the halal industry, and academic contribution during 2023 - 2024. This progression reflects the literature's ability to adapt to global needs, particularly in the areas of sustainable financing, regulatory development, and digital transformation. Accordingly, the Islamic green economy is increasingly positioned to strengthen its role as an inclusive, adaptive, and sustainable academic and policy discourse, reflecting its growing relevance in addressing contemporary global economic and environmental challenges.

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