West Science Business and Management
Vol. 3, No. 03, September 2025, pp. 738~745

Mapping Research Themes on Sustainable Finance: A Scientometric Review from Scopus Database

Loso Judijanto
IPOSS Jakarta

Article Info

Article history:

Received September, 2025
Revised September, 2025
Accepted September, 2025

Keywords:

Sustainable Finance; Green Finance; ESG; Scientometric Analysis; Bibliometric Mapping; VOSviewer

ABSTRACT

This study presents a scientometric analysis of the global research landscape on sustainable finance using data retrieved from the Scopus database. By employing VOSviewer for bibliometric mapping, the study identifies major themes, influential authors, collaborative networks, and temporal trends within the literature published between 2000 and 2025. The analysis reveals that sustainable finance is anchored around core topics such as green finance, climate change, ESG performance, and responsible investment, while new themes like financial inclusion, digital finance, and greenwashing are gaining prominence. Keyword co-occurrence and overlay visualizations highlight the dynamic evolution of research interests, shifting from environmental and policy-centered discussions toward technologically driven and socially responsive financial practices. The study also maps institutional and country-level collaborations, identifying dominant players as well as regions with emerging contributions. This comprehensive overview provides valuable insights for researchers, policymakers, and financial practitioners seeking to understand the intellectual structure of sustainable finance and to identify strategic directions for future inquiry and action.

Corresponding Author:

Name: Loso Judijanto
Institution: IPOSS Jakarta
e-mail: losojudijantobumn@gmail.com

1. INTRODUCTION

Over the past few decades, the financial industry has undergone a paradigm shift, transitioning from a singular focus on profitability toward a broader commitment to sustainability. This shift reflects an increasing awareness of environmental, social, and governance (ESG) concerns, coupled with the pressing need to align financial systems with the objectives of sustainable development. Sustainable finance, defined broadly as the integration of ESG criteria into business or investment decisions—has emerged as a response to the global urgency for climate action, social equity, and economic resilience [1]. Governments, investors, and corporations now recognize that long-term value creation must incorporate sustainability principles. Consequently, the term "sustainable finance" has become a focal point in policy agendas, academic research, and financial markets [2], [3].

This growing attention is evident in the proliferation of research output addressing various aspects of sustainable finance. Topics such as green bonds, impact investing, ESG performance, and climate-

related financial disclosures have attracted scholars from finance, economics, environmental science, and policy-making domains [4]. Alongside this expansion, international regulatory bodies, such as the European Commission's Action Plan on Financing Sustainable Growth, have set robust frameworks to support sustainable financial practices. As a result, sustainable finance has transcended its niche roots to become a mainstream component of financial systems. Nevertheless, the sheer diversity of topics and approaches has made it increasingly difficult to understand how the field is evolving and where knowledge gaps persist [5], [6].

The proliferation of academic literature in this domain calls for a structured analysis to map the intellectual structure, emerging research themes, and collaboration networks that define the field. Traditional literature reviews, although informative, often lack the comprehensiveness and objectivity required to understand complex scholarly landscapes. In this context, scientometric analysis, an advanced bibliometric technique, offers a powerful methodological tool to quantitatively assess research trends, influential authors, institutions, and thematic clusters within a large corpus of scientific literature [7]. By employing tools such as VOSviewer or CiteSpace, scholars can visualize co-authorship networks, keyword co-occurrences, and temporal research trajectories to better comprehend the dynamics of scholarly inquiry.

The Scopus database, as one of the most comprehensive sources of peer-reviewed literature across disciplines, provides an ideal foundation for conducting such analysis. Its structured metadata, expansive coverage, and citation tracking capabilities enable a nuanced understanding of how research on sustainable finance has evolved over time. With the growing demand for evidence-based policy and investment decisions, a detailed mapping of scholarly output on sustainable finance becomes crucial not only for academics but also for practitioners and policymakers. Understanding which themes dominate the literature, how knowledge has diffused geographically, and which interdisciplinary linkages have emerged can inform future research and practice in meaningful ways.

Furthermore, the evolution of sustainable finance research must be contextualized within global socio-political developments. The COVID-19 pandemic, the war in Ukraine, global energy transitions, and the intensification of climate-related disasters have reshaped priorities within financial decision-making. These global disruptions have sparked renewed calls for resilience and inclusivity in financial systems [8]. As such, it is important to assess whether and how these dynamics are being reflected in the academic literature. Are new topics like climate resilience finance or transition finance gaining traction? Are developing countries and South–South collaborations contributing meaningfully to the literature? These questions point to the need for a systematic investigation that goes beyond topical enumeration and explores the underlying knowledge architecture.

Despite the rapid expansion of scholarly work on sustainable finance, there is still limited understanding of how the field is structured in terms of research themes, author networks, and temporal development. Previous reviews tend to be either too general or focused narrowly on specific instruments (e.g., green bonds or ESG scoring), missing the broader landscape of how diverse themes in sustainable finance are interconnected. Moreover, existing studies often lack scientometric rigor, making it difficult to track the evolution of key concepts, geographical dispersion of research, and patterns of interdisciplinary collaboration. There is, therefore, a critical need for a comprehensive scientometric mapping of the sustainable finance research domain that can serve as a benchmark for scholars, practitioners, and policymakers alike. This study aims to conduct a scientometric review of sustainable finance literature using the Scopus database, with the primary objective of mapping research themes, author and institutional

networks, and temporal trends in publication output.

2. METHODS

This study adopts a scientometric analysis approach to map the research landscape of sustainable finance using bibliographic data from the Scopus database. Scientometric analysis is a quantitative method that evaluates the structure, dynamics, and patterns within scientific literature by analyzing publications, citations, co-authorships, and keyword co-occurrences [7]. This method allows for the identification of influential authors, key institutions, emerging topics, and collaboration networks in a specific research domain. The use of scientometric techniques is particularly suited to capture the multidimensional growth of sustainable finance literature, which spans across disciplines such as economics, environmental science, management, and policy studies.

The data for this analysis were collected from Scopus, one of the largest and most reliable multidisciplinary citation databases. The search was conducted using the keyword string: ("sustainable finance" OR "green finance" OR "ESG investing" OR "impact investing") in the article title, abstract, and keywords fields. The timespan for the data retrieval was set from 2000 to 2025, ensuring that the study captures the historical progression and recent advancements in the field. Only peer-reviewed journal articles, conference papers, and reviews written in English were included to ensure the academic quality and consistency of the dataset. The bibliographic information extracted included authors, titles, abstracts, keywords, publication year, journal name, and citation counts, which were exported in CSV format for analysis.

The data were analyzed using **VOSviewer**—a specialized software for building and visualizing bibliometric maps. Three primary types of analysis were conducted: **(1) co-authorship analysis**, to reveal collaborative patterns among authors and institutions; **(2) keyword co-occurrence analysis**, to identify dominant and emerging research themes; and **(3) citation analysis**, to highlight the most influential publications and journals in the domain. The results were presented through visual network maps, where the size of nodes indicates frequency or influence (e.g., number of publications or citations), and the proximity of nodes reflects the strength of co-occurrence or collaboration. Clustering algorithms within VOSviewer were used to detect thematic clusters that help explain how research on sustainable finance is intellectually structured.

3. RESULTS AND DISCUSSION

Co-Authorship Analysis

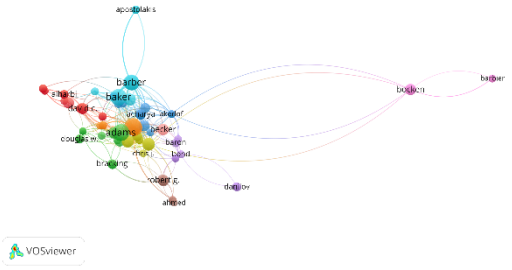

Figure 1. Author Visualization
Source: Data Analysis

Figure 1 illustrates a co-authorship network within the field of sustainable finance research. Each node represents an author, and the size of the node indicates the author's publication or citation impact. The lines between nodes show the strength of collaboration, with thicker lines indicating stronger or more frequent co-authorship. Distinct color clusters represent groups of authors who frequently collaborate, revealing communities of practice or intellectual clusters. For instance, prominent clusters around authors like adams, baker, and boden suggest central roles in their respective research communities. Notably, boden appears as a separate, strongly connected node with limited ties to the central cluster, possibly indicating a leading author or a distinct subfield.

Figure 2. Institution Visualization
Source: Data Analysis

Figure 2 illustrates a co-authorship network based on institutional affiliations in the field of sustainable finance research. Each node represents an academic or research institution, with node size reflecting the institution's output or citation impact in the field. The connecting lines between institutions indicate co-authorship or collaboration intensity, where thicker links represent stronger collaborative ties. Several color-coded clusters suggest the presence of regional or thematic research partnerships. For example, International Islamic University, Universität Zürich, and University of Luxembourg appear as prominent nodes with strong connections to other institutions, indicating their central roles in global academic collaboration on sustainable finance. Meanwhile, the presence of tightly grouped nodes around institutions like Bucharest University of Economic Studies suggests active regional networks. The relatively linear structure of the network may reflect limited inter-regional collaboration, with most institutions operating within loosely connected academic silos.

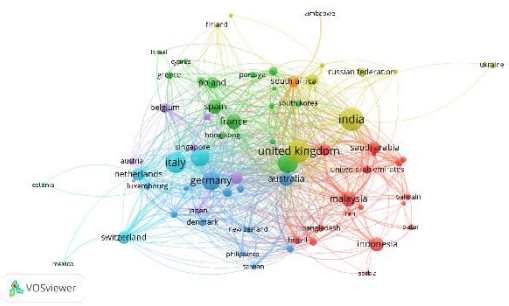

Figure 3. Country Visualization
Source: Data Analysis

Figure 3 shows a country collaboration network in the field of sustainable finance research, where each node represents a country and the lines denote co-authorship or joint publication relationships. Larger nodes such as the United Kingdom, India, Malaysia, and Germany indicate high levels of research output or centrality in collaborative networks. Color-coded clusters reveal regional or thematic partnerships, with notable clusters formed among European countries (e.g., Germany, Italy, France, Netherlands), Asian countries (Malaysia, Indonesia, China, India), and a global hub centered around the United Kingdom. The dense interlinkages suggest a robust global research network, although some countries like Zimbabwe, Ukraine, and Saudi Arabia are more peripheral, indicating limited international collaborations. The strong presence of Southeast Asian countries (e.g., Malaysia and Indonesia) underscores their growing role in sustainable finance discourse, especially in emerging market contexts.

Keyword Co-Occurrence Analysis

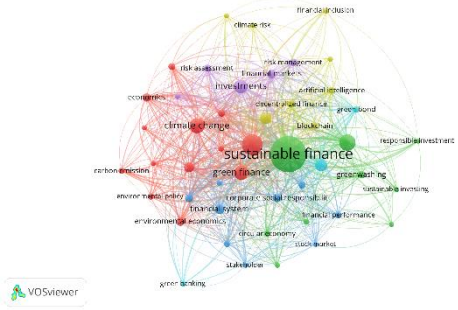

Figure 4. Network Visualization
Source: Data Analysis

Figure 4 is a keyword co-occurrence network in the domain of sustainable finance, illustrating how key concepts are interconnected in the existing literature. The node size reflects the frequency of keyword appearance, with "sustainable finance" emerging as the dominant term at the center, indicating its centrality and high relevance across studies. Other large nodes such as green finance, climate change, investments, and corporate social responsibility signal thematic pillars that often co-occur with sustainable finance in academic discussions. The density and clustering patterns of the nodes suggest the multidimensional nature of

the field, where finance is increasingly intertwined with environmental, social, and technological dimensions.

The red cluster, which prominently includes keywords like *climate change*, *carbon emission*, *climate risk*, and *environmental economics*, reflects the climate-oriented discourse within sustainable finance. This cluster signifies the environmental urgency that propels much of the literature, especially in relation to climate risk management, carbon pricing, and financing low-carbon transitions. The presence of terms like *eco-innovation* and *environmental performance* in this cluster indicates an emerging interest in aligning financial decision-making with environmental impact assessments, showing how climate concerns are pushing financial models to evolve.

In contrast, the green cluster (bottom right) centers on concepts such as *corporate social responsibility*, *social impact*, *greenwashing*, and *responsible investment*, pointing to the social and governance dimensions of sustainable finance. This cluster emphasizes accountability, ethics, and transparency in investment decisions, and addresses critiques of ESG practices, including superficial compliance (greenwashing). The presence of *financial performance* and *risk management* within this cluster suggests a growing body of research exploring the business case and risk-return trade-offs of socially responsible investing.

The blue cluster, encompassing terms like *circular economy*, *green banking*, *green bonds*, and *financial innovation*, highlights the instrumental and structural mechanisms through which sustainability is operationalized in finance. It points to innovations in financial products and services designed to fund sustainable projects and businesses, including debt instruments (green bonds) and institution-level transitions (green banking). This cluster reflects the growing interest in how financial systems and tools can be redesigned to promote long-term ecological and economic value. The yellow cluster appears to focus on emerging technological and inclusion-oriented themes, featuring terms like financial inclusion, digital finance, artificial intelligence, and FinTech. This indicates a forward-looking perspective on how digital transformation and technology-enabled finance can bridge access gaps and democratize sustainable investing. It underscores the relevance of inclusive financial strategies and smart technologies in scaling sustainable finance initiatives across geographies and populations.

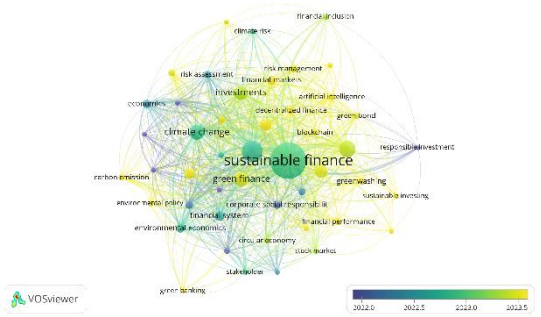

Figure 5. Overlay Visualization
Source: Data Analysis

Figure 5 illustrates the temporal evolution of keywords in sustainable finance research from 2020 to 2025. The color gradient from blue (older average publication year) to yellow (more recent) highlights how certain themes have gained momentum in recent years. The core term "sustainable finance" remains consistently central across the timeline, while newer, yellow-colored keywords such as financial inclusion, artificial intelligence, greenwashing, and digital finance have emerged more prominently in the recent period (2022–2025). This suggests a shift in research focus toward the intersection of sustainability with technology, accessibility, and ethical governance.

Earlier dominant themes, shown in blue or green, include *climate change*, *carbon emission*, *green bonds*, and *environmental performance*. These topics reflect the foundational environmental concerns that shaped the earlier stages of the sustainable finance discourse. Although still relevant, they appear to be gradually supplemented by themes reflecting technological innovation and social accountability, such as *AI*, *digital finance*, and *greenwashing*. This indicates an evolution in scholarly priorities, moving from reactive environmental financing toward

proactive, data-driven, and ethical sustainable investment strategies. Furthermore, the emergence of keywords like responsible investment, financial innovation, and ESG performance in the yellow zone illustrates a trend toward practical implementation and measurement in sustainable finance. Researchers are increasingly focusing on how sustainability is operationalized within financial institutions, and how technological tools can enable better transparency, risk management, and impact assessment.

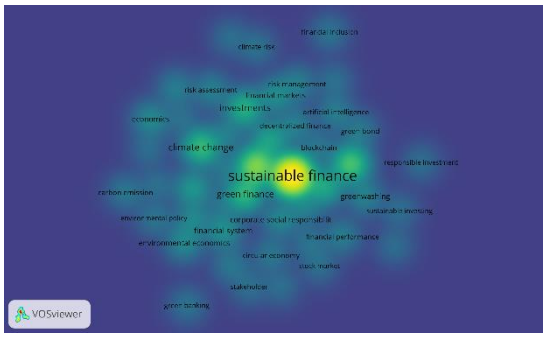

Figure 6. Density Visualization
Source: Data Analysis

The sixth figure presents a heatmap of keyword occurrences in sustainable finance research, with brighter colors indicating higher concentration and frequency of use. The brightest spot in the center, "sustainable finance", confirms its role as the central and most frequently discussed term in the literature. Surrounding terms such as green finance, climate change, investments, corporate social responsibility, and financial performance also show moderate to high density, suggesting their importance and frequent co-occurrence in studies related to sustainable finance. These terms represent core themes around which much of the scholarly discussion is structured, especially in linking environmental concerns with financial instruments and corporate behavior.

In contrast, keywords like blockchain, artificial intelligence, green banking, and digital finance appear in relatively lower-density regions (darker blue to green), indicating emerging or less frequently explored topics within the field. The presence of these keywords suggests an expanding frontier in sustainable finance research, with scholars beginning to explore intersections with technology and innovation.

Citation Analysis

Table 1. Top Cited Literature

Citations	Author	Title
1085	[9]	Corporate green bonds
868	[10]	The Influence of Firm Size on the ESG Score: Corporate Sustainability Ratings Under Review
353	[11]	ESG disclosure and Firm performance: A bibliometric and meta-analysis
311	[12]	Quality maternity care for every woman, everywhere: a call to action
273	[13]	Sustainable business model archetypes for the banking industry
247	[14]	European Green Deal – legal and financial challenges of the climate change
232	[15]	Fintech and sustainability: Do they affect each other?
218	[16]	Understanding the role of green bonds in advancing sustainability
217	[17]	Past, present, and future of sustainable finance: insights from big data analytics through machine learning of scholarly research
208	[18]	Blind to carbon risk? An analysis of

		stock market reaction to the Paris Agreement

Source: Scopus Database, 2025

Practical Implication

The findings of this scientometric review offer several practical implications for policymakers, financial practitioners, investors, and research institutions. First, by identifying the most prominent and emerging themes in sustainable finance such as green bonds, ESG performance, climate risk, and financial inclusion stakeholders can better align their strategies with global research and market trends. For instance, financial institutions can enhance product innovation by integrating insights from clusters related to green banking and responsible investment. Regulators can also utilize the identified gaps in research to shape supportive policies that foster innovation while ensuring sustainability compliance. Moreover, the analysis of country and institutional collaboration networks reveals strategic opportunities for cross-border partnerships and academic-industry synergies, particularly for emerging economies seeking to expand their participation in the global sustainable finance agenda.

Theoretical Contribution

This study contributes theoretically by providing a comprehensive mapping of the intellectual structure of sustainable finance research through scientometric analysis. Unlike narrative literature reviews, which are often limited by subjectivity and scope, this study adopts a data-driven approach to uncover thematic clusters, knowledge trajectories, and author-institution-country networks. It advances the understanding of sustainable finance as a multidisciplinary field that intersects environmental economics, corporate governance, financial technology, and climate policy. The visualization of keyword co-occurrence and temporal evolution further enables theory-building by highlighting how concepts like greenwashing, financial inclusion, and digital innovation are increasingly becoming central to the discourse. This lays a theoretical foundation for future research frameworks that integrate sustainability with finance, technology, and ethics in a more systematic and scalable manner.

Limitations

Despite its comprehensive approach, this study is not without limitations. First, it relies solely on the Scopus database, which, while extensive, may exclude relevant literature indexed in other databases such as Web of Science, Google Scholar, or regional repositories. This may result in the omission of non-English and localized research contributions, particularly from developing countries. Second, the analysis is based on bibliometric metadata (titles, abstracts, keywords) without delving into the full-text content of the articles, potentially overlooking the depth and nuance of certain discussions. Third, the clustering and co-occurrence maps are influenced by the software's internal algorithms and thresholds (e.g., minimum keyword frequency), which may affect the granularity and representation of smaller or emerging themes. Lastly, as with all scientometric reviews, the field's dynamic nature means that emerging themes may evolve rapidly, necessitating continuous updates to maintain relevance.

4. CONCLUSION

his scientometric review provides a comprehensive mapping of the sustainable finance research landscape by analyzing publication patterns, keyword co-occurrences, author collaborations, and thematic evolutions from the Scopus database. The findings reveal that sustainable finance is a rapidly expanding, multidisciplinary field anchored around key themes such as green finance, climate change, ESG performance, and responsible investment, while also showing the emergence of newer topics like digital finance, financial inclusion, and greenwashing. Through visual network analyses, the study highlights influential authors, institutions, and countries, as well as gaps and underexplored areas that warrant future scholarly attention. By offering both a macro-level overview and micro-level thematic

insights, this study not only advances academic understanding but also informs practical strategies for policy development, financial innovation, and international collaboration in fostering a more inclusive and resilient global financial system.

REFERENCES

[1] M. Arlaud *et al.*, "The biodiversity finance initiative: an approach to identify and implement biodiversity-centered finance solutions for sustainable development," *Towar. a Sustain. bioeconomy Princ. challenges Perspect.*, pp. 77–98, 2018.

[2] G. K. Sutawa, "Issues on Bali tourism development and community empowerment to support sustainable tourism development," *Procedia Econ. Financ.*, vol. 4, pp. 413–422, 2012.

[3] H. Liang and L. Renneboog, "Corporate social responsibility and sustainable finance: A review of the literature," *Eur. Corp. Gov. Institute–Finance Work. Pap.*, no. 701, 2020.

[4] A. M. Fatemi and I. J. Fooladi, "Sustainable finance: A new paradigm," *Glob. Financ. J.*, vol. 24, no. 2, pp. 101–113, 2013.

[5] M. Jeucken, *Sustainable finance and banking: The financial sector and the future of the planet*. Routledge, 2010.

[6] K. A. Dirie, M. M. Alam, and S. Maamor, "Islamic social finance for achieving sustainable development goals: a systematic literature review and future research agenda," *Int. J. Ethics Syst.*, vol. 40, no. 4, pp. 676–698, 2024.

[7] N. Donthu, S. Kumar, D. Mukherjee, N. Pandey, and W. M. Lim, "How to conduct a bibliometric analysis: An overview and guidelines," *J. Bus. Res.*, vol. 133, pp. 285–296, 2021.

[8] U. Sarangi, "Blue economy, blue finance and ocean governance for achieving sustainable development goals," in *Natural Resources Forum*, Wiley Online Library, 2023, pp. 3–21.

[9] C. Flammer, "Corporate green bonds," *J. financ. econ.*, vol. 142, no. 2, pp. 499–516, 2021.

[10] S. Drempetic, C. Klein, and B. Zwergel, "The influence of firm size on the ESG score: Corporate sustainability ratings under review," *J. Bus. ethics*, vol. 167, no. 2, pp. 333–360, 2020.

[11] M. A. Khan, "ESG disclosure and firm performance: A bibliometric and meta analysis," *Res. Int. Bus. Financ.*, vol. 61, p. 101668, 2022.

[12] M. Koblinsky *et al.*, "Quality maternity care for every woman, everywhere: a call to action," *Lancet*, vol. 388, no. 10057, pp. 2307–2320, 2016.

[13] A. W. H. Yip and N. M. P. Bocken, "Sustainable business model archetypes for the banking industry," *J. Clean. Prod.*, vol. 174, pp. 150–169, 2018.

[14] A. Sikora, "European Green Deal–legal and financial challenges of the climate change," in *Era forum*, Springer, 2021, pp. 681–697.

[15] C. Chueca Vergara and L. Ferruz Agudo, "Fintech and sustainability: do they affect each other?," *Sustainability*, vol. 13, no. 13, p. 7012, 2021.

[16] A. Maltais and B. Nykvist, "Understanding the role of green bonds in advancing sustainability," *J. Sustain. Financ. Invest.*, pp. 1–20, 2020.

[17] S. Kumar, D. Sharma, S. Rao, W. M. Lim, and S. K. Mangla, "Past, present, and future of sustainable finance: insights from big data analytics through machine learning of scholarly research," *Ann. Oper. Res.*, vol. 345, no. 2, pp. 1061–1104, 2025.

[18] I. Monasterolo and L. De Angelis, "Blind to carbon risk? An analysis of stock market reaction to the Paris Agreement," *Ecol. Econ.*, vol. 170, p. 106571, 2020.