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FINANCIAL DEVELOPMENT AND ESG SUSTAINABILITY: A BIBLIOMETRIC ANALYSIS OF GLOBAL RESEARCH AND EVIDENCE FROM JAPAN

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Abstract: *Financial development has become an important enabler of Environmental, Social, and Governance (ESG) sustainability as financial systems increasingly channel capital towards the global sustainability transition. Despite growing interest in sustainable finance, few studies have systematically mapped the research linking financial development and ESG sustainability, particularly in the Japanese context. This study addresses this gap through a bibliometric analysis of 16 Scopus-indexed documents published between 2020 and 2026. The data were analysed using Scopus analytical tools, Harzing's Publish or Perish, and VOSviewer version 1.6.20 to examine publication trends, document and subject distribution, country contributions, co-authorship, keyword co-occurrence, and citation impact. The results show that the field is small and emerging: output peaked in 2023 with six documents, and 62.5% of the documents were published in 2023–2024. India (five documents) and Japan (three documents) were the leading contributors, while the literature spans social sciences, environmental science, business, energy, and economics. The co-authorship network consisted of a single five-author cluster, and only three keywords (ESG, sustainability, and Japan) met the co-occurrence threshold, indicating limited collaboration and a thematically fragmented knowledge base. The dataset received 420 Scopus citations with an h-index of 9. Although constrained by its small sample and reliance on a single database, this study offers the first bibliometric synthesis focusing on financial development and ESG sustainability in relation to Japan and provides a*

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reference point for researchers, policymakers, financial institutions, and sustainability practitioners.

Keywords: *Financial Development, ESG Sustainability, Sustainable Finance, Bibliometric Analysis, VOSviewer, Scopus, Japan*

Introduction

The role of the financial system in shaping environmental and social outcomes has become one of the most debated questions in contemporary economics and finance. Classical finance-growth theory holds that well-developed financial systems mobilise savings, allocate capital efficiently, diversify risk, and monitor firms, thereby supporting long-run economic growth (Levine, 2005). Over the past two decades, however, researchers have increasingly asked whether the same financial deepening that fuels growth also affects environmental quality. Early empirical evidence was mixed: some studies found that financial development could reduce carbon emissions by financing cleaner technologies (Tamazian et al., 2009), whereas others reported that it raised energy consumption and emissions by expanding credit for industrial activity (Sadorsky, 2010; Zhang, 2011). Similar debates continue in emerging Asian economies, where financial development has been shown to influence environmental quality in ways that depend on the policy context (Ridzuan et al., 2022).

In parallel, Environmental, Social, and Governance (ESG) considerations have moved from the margins to the mainstream of corporate finance and investment practice. ESG criteria are now used by investors, lenders, and regulators to evaluate how firms manage environmental risks, treat stakeholders, and govern themselves (Gillan et al., 2021). A large body of evidence suggests that ESG performance is, on average, non-negatively related to corporate financial performance (Friede et al., 2015), although the reliability of ESG measurement remains contested because ratings from different providers frequently diverge (Berg et al., 2022). Sustainable finance therefore sits at the intersection of these two research streams: it concerns how financial systems, instruments, and institutions can integrate ESG considerations to support sustainable development (Kashi & Shah, 2023; Kumar et al., 2025).

Japan offers a particularly instructive setting for examining this nexus. As one of the world's largest and most developed financial systems, Japan has introduced a sequence of reforms that encourage ESG integration, including the Stewardship Code, the Corporate Governance Code, and the commitment of the Government Pension Investment Fund to responsible investment. These measures have been accompanied by the growth of green bond markets, stronger disclosure expectations, and increasing attention to climate-related financial risks (Schumacher et al., 2020). Japan is also among the countries that have actively adopted climate-related financial disclosure recommendations (Ngo et al., 2023). At the firm level, recent studies report that ESG activities are associated with higher firm value and financial performance among Japanese companies, although the relationship varies across ESG dimensions and industries (Chen et al., 2024; Ikuta & Fujii, 2025; Ismail & Azman, 2024; Xie et al., 2019).

Problem Statement

Despite this growing interest, it remains unknown how research connecting financial development and ESG sustainability is structured, who produces it, and which themes it addresses, particularly with respect to Japan. The two literatures that should inform this question have developed largely in isolation. Studies of financial development and the

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environment operate mainly at the macroeconomic level and focus on the finance–energy–emissions channel in emerging economies such as the BRIC countries, China, and Indonesia (Ridzuan et al., 2022; Sadorsky, 2010; Tamazian et al., 2009; Zhang, 2011), whereas ESG research operates mainly at the firm level and examines the link between ESG practices and corporate value or performance (Friede et al., 2015; Gillan et al., 2021). Consequently, it is not known whether a coherent body of work linking the depth and structure of a national financial system to ESG outcomes exists, how large it is, how its authors collaborate, and which concepts organise it.

The absence of such a mapping is a substantive research problem rather than a mere descriptive omission. Because the relevant studies are dispersed across finance, environmental science, energy, and management, researchers cannot readily determine whether the scarcity of Japan-focused evidence reflects a genuine gap or simply the fragmentation of the literature across disciplines and outlets. Without a map of the field's size, collaboration structure, and conceptual vocabulary, future empirical studies risk duplicating one another, adopting inconsistent definitions of financial development and ESG, and overlooking the measurement problems already documented for ESG ratings (Berg et al., 2022). For policymakers and financial institutions, the lack of a consolidated evidence base also makes it difficult to judge what is known about how financial systems can be directed towards sustainability goals.

Previous bibliometric studies have not resolved this problem. Existing reviews map sustainable finance as a broad global field and organise it around themes such as socially responsible investing, climate finance, and green finance (Kashi & Shah, 2023; Kumar et al., 2025). These reviews do not treat financial development, which concerns the depth, access, and efficiency of financial institutions and markets (Levine, 2005), as a distinct construct, and they do not disaggregate the literature by country. As a result, they cannot show how research on financial development and ESG sustainability has evolved within a specific national financial system, nor whether country-specific evidence, such as the emerging firm-level studies on Japan, forms a connected body of knowledge or remains a set of isolated contributions.

Japan constitutes an analytically distinctive case for three reasons. First, unlike the emerging economies that dominate the finance–environment literature, Japan already has one of the world's largest and most developed financial systems, so the relevant question is not whether financial deepening increases or reduces environmental pressure, but how a mature, bank-centred system redirects existing capital towards ESG objectives (Schumacher et al., 2020). Second, ESG integration in Japan has been driven largely by policy-led reforms, including the Stewardship Code, the Corporate Governance Code, the responsible investment commitment of the Government Pension Investment Fund, and the active adoption of climate-related disclosure recommendations (Ngo et al., 2023; Schumacher et al., 2020). This provides a setting in which the role of financial institutions and regulators in shaping ESG outcomes can be clearly observed. Third, firm-level evidence from Japan shows that the relationship between ESG and financial performance varies across ESG dimensions and industries (Chen et al., 2024; Ikuta & Fujii, 2025; Xie et al., 2019), suggesting that findings from other contexts cannot simply be generalised to Japan. Mapping the Japan-related literature therefore offers insights that a global review cannot provide. Bibliometric analysis is well suited to this task because it offers a systematic and reproducible way of evaluating the structure and development of a research field (Donthu et al., 2021; Zupic & Čater, 2015), and it has been used effectively to map emerging topics with relatively small bodies of literature (Nawi et al., 2024).

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Accordingly, this study conducts a bibliometric analysis of Scopus-indexed publications on financial development and ESG sustainability with evidence from Japan. The study addresses the following research questions (RQs):

(i) RQ1: How has research on financial development and ESG sustainability evolved in terms of annual output, document type, and subject area?
(ii) RQ2: Which countries have contributed most to this research?
(iii) RQ3: What collaboration patterns characterise the authors working in this field?
(iv) RQ4: What are the dominant keywords and conceptual themes in the literature?
(v) RQ5: Which publications have had the greatest citation impact, particularly those concerning Japan?

The remainder of the paper is organised as follows. The next section reviews the relevant literature, followed by a description of the methodology. The results are then presented according to the research questions, followed by a discussion of the findings, the limitations of the study, and the conclusion.

Literature Review

Financial Development and Environmental Sustainability

Financial development refers to improvements in the depth, access, and efficiency of financial institutions and markets (Levine, 2005). Its relationship with environmental sustainability has been examined mainly through the finance energy emissions channel. Tamazian et al. (2009) found that higher financial development was associated with lower carbon emissions in the BRIC economies, suggesting that deeper financial markets can support investment in cleaner technologies. In contrast, Sadorsky (2010) showed that financial development increased energy consumption in emerging economies, and Zhang (2011) reported that financial development contributed to higher carbon emissions in China. More recent country studies, including evidence from Indonesia, confirm that the environmental effects of financial development depend on institutional and policy conditions (Ridzuan et al., 2022). These mixed findings motivate the question of how financial systems can be directed towards sustainability goals, which is the central concern of the ESG and sustainable finance literature.

ESG, Sustainable Finance and Firm Performance

ESG research in corporate finance has examined how environmental, social, and governance practices affect firm value, risk, and the cost of capital (Gillan et al., 2021). A synthesis of more than 2,000 empirical studies concluded that the majority report a non-negative relationship between ESG and financial performance (Friede et al., 2015). Other studies show that ESG disclosure influences financial policies such as corporate cash holdings (AlHares et al., 2023). Nevertheless, the literature highlights persistent measurement problems, as ESG ratings from different agencies show substantial divergence (Berg et al., 2022), and cross-country differences in ESG regulation shape the quality and comparability of disclosures (Singhania & Saini, 2022, 2023). Bibliometric reviews of sustainable finance identify socially responsible investing, climate finance, green finance, and the governance of sustainable investment as the major themes of the field (Kashi & Shah, 2023; Kumar et al., 2025).

ESG and Sustainable Finance in Japan

Japan's sustainable finance landscape has been shaped by policy-led reforms and by the country's exposure to both physical and transition climate risks. Schumacher et al. (2020)

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documented the growing importance of ESG criteria in Japanese financial decision-making, stricter reporting and disclosure standards, and the development of green bond and sustainable investment markets. Firm-level studies provide supportive but nuanced evidence. Xie et al. (2019) found that ESG activities can improve corporate financial performance, Chen et al. (2024) showed that Japanese listed firms engaging in ESG activities had a higher Tobin's Q, and Ikuta and Fujii (2025) found that the relationship between ESG activities and financial indicators differs by ESG dimension and between manufacturing and non-manufacturing firms. Ismail and Azman (2024) similarly reported that ESG performance affects the financial performance of Japanese companies, while Aldowaish et al. (2024) showed how a leading Japanese firm resolved internal conflicts arising from ESG integration. Earlier evidence also indicated that environmental performance, particularly greenhouse gas reduction, can enhance the financial performance of Japanese manufacturers (Iwata & Okada, 2011). However, these studies are scattered across journals and disciplines, which underscores the need for a bibliometric overview.

Bibliometric Analysis as a Research Approach

Bibliometric analysis applies quantitative techniques to bibliographic data to evaluate research performance and map the intellectual and social structure of a field (Donthu et al., 2021; Zupic & Čater, 2015). Performance analysis uses indicators such as publication counts, citations, the h-index (Hirsch, 2005), and the g-index (Egghe, 2006), whereas science mapping uses co-authorship and keyword co-occurrence networks, commonly visualised with VOSviewer (van Eck & Waltman, 2010). Scopus is widely used for this purpose because it is a curated database with consistent metadata and citation information (Baas et al., 2020). Recent bibliometric studies have applied these techniques to specialised topics, including financial issues among families with special needs children (Nawi et al., 2024) and artificial intelligence in radiation dose optimisation (Mohd Zain et al., 2026), demonstrating the value of the approach for emerging and interdisciplinary fields.

Methodology

Research Design

This study employed a bibliometric analysis to systematically examine the research landscape of financial development and ESG sustainability, with particular emphasis on evidence related to Japan. Bibliometric analysis is a quantitative research method that enables researchers to evaluate the intellectual structure, research trends, collaboration networks, and thematic evolution within a specific field through the analysis of scientific publications (Donthu et al., 2021). The procedure consisted of four stages: defining the topic and scope, collecting data, performing bibliometric analysis, and reporting the findings.

Data Source and Search Strategy

The Scopus database was selected as the primary source of bibliographic data because of its extensive coverage of peer-reviewed journals across disciplines and its reliable citation, affiliation, and keyword metadata (Baas et al., 2020). The literature search combined keywords related to financial development and sustainable finance, ESG, and Japan using Boolean operators, and was applied to the title, abstract, and keyword fields (Table 1). The retrieved records contained bibliographic information such as publication year, document type, country or territory, author information, author keywords, affiliations, and citation data. The data were extracted on 26 July2026.

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Table 1: The Search String

Database	Search String
Scopus	[TITLE-ABS-KEY (("financial development" OR "sustainable finance" OR "green finance") AND ("ESG" OR "environmental, social and governance") AND ("Japan" OR "Japanese")) – replace with the exact string used]

Source: Scopus Database

Data Collection and Screening

The search returned 16 documents published between 2020 and 2026. The records were screened for duplicates and for documents unrelated to the research topic. No records were removed at this stage; the erratum identified in the dataset was retained because Scopus indexes it as a separate record linked to a highly cited sustainable finance review. The final dataset of 16 documents was exported from Scopus in comma-separated values (CSV) format for further analysis. Figure 1 summarises the search and screening process.

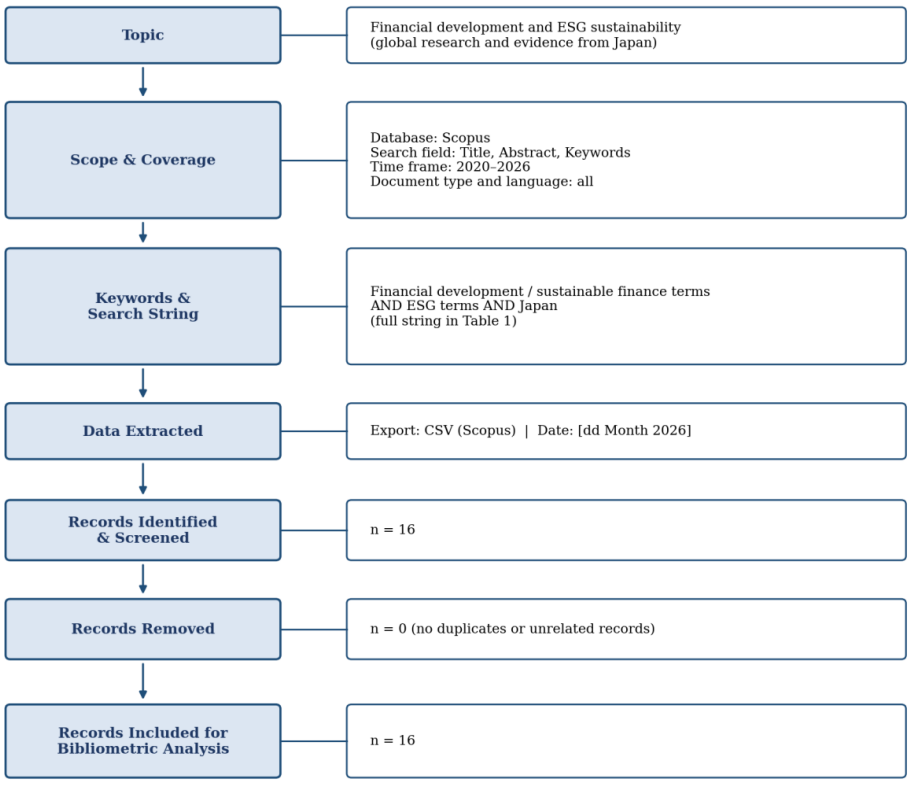


Figure 1: Flow Diagram of the Search Strategy

Source: Authors' Own Illustration

Bibliometric Analysis Tools

The analysis used three complementary software applications. First, the Scopus analytical functions were used to generate descriptive statistics, including publication trends by year, country or territory, document type, and subject area. Second, VOSviewer version 1.6.20 was used to construct and visualise bibliometric networks, specifically co-authorship networks and keyword co-occurrence maps (Van Eck & Waltman, 2010). In these maps, larger nodes indicate greater prominence, and thicker links represent stronger relationships between authors or

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keywords.Third, Harzing's Publish or Perish (Harzing, 2007) was used to retrieve citation counts from Google Scholar, which were compared with Scopus citation counts to identify the most influential publications.

Data Analysis

The analysis proceeded in four stages aligned with the research questions. First, publication characteristics were analysed using descriptive statistics, including annual output, document type, subject area, and country distribution (RQ1 and RQ2). Second, co-authorship analysis was performed to identify collaboration patterns among authors (RQ3). Third, keyword co-occurrence analysis was conducted to examine the conceptual structure of the field (RQ4). Finally, citation analysis was undertaken using total citations, citations per paper, the h-index (Hirsch, 2005), and the g-index (Egghe, 2006) to identify influential publications (RQ5).

Results

RQ1: How has research on financial development and ESG sustainability evolved in terms of annual output, document type and subject area?

Figure 2 and Table 2 present the annual distribution of the 16 documents. The first document in the dataset appeared in 2020, followed by no publications in 2021 and a single publication in 2022. Output rose sharply to six documents in 2023, the peak year, before declining to four documents in 2024 and two documents in each of 2025 and 2026. Documents published in 2023 and 2024 together account for 62.5% of the dataset, indicating that research on financial development and ESG sustainability with a Japanese dimension is a recent and still emerging field. The 2026 figure reflects a partial year and should be interpreted cautiously.

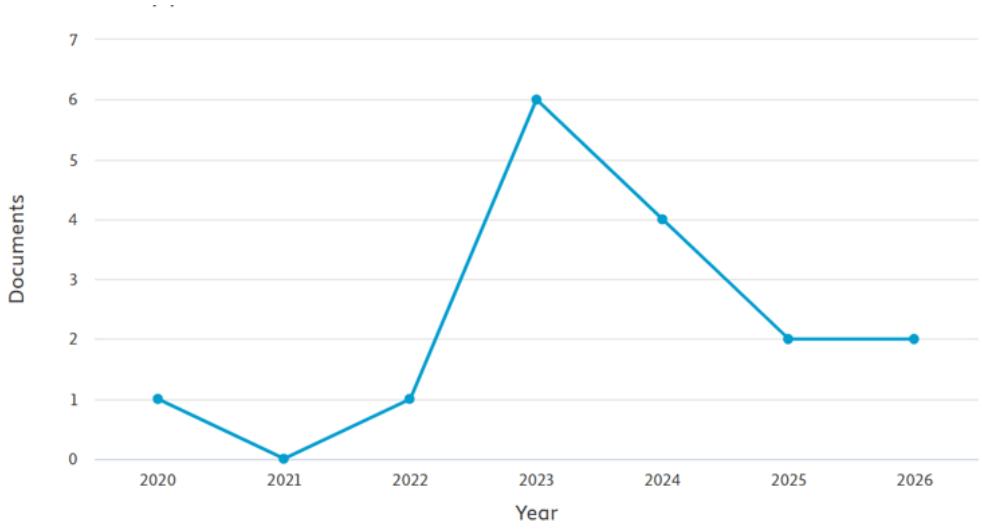


Figure 2: Documents by Year

Source: Scopus Database

Table 2: Documents by Year

Year	Documents	Percentage (%)
2020	1	6.25
2021	0	0.00
2022	1	6.25
2023	6	37.50
2024	4	25.00

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Year	Documents	Percentage (%)
2025	2	12.50
2026*	2	12.50
Total	16	100.00

Source: Scopus Database. *Partial year

In terms of document type (Figure 3 and Table 3), journal articles dominate the dataset with 11 documents (68.75%), followed by reviews (two documents, 12.50%) and one document each (6.25%) for book chapter, conference paper, and erratum. The predominance of peer-reviewed articles and reviews suggests that the field is developing mainly through journal-based empirical and conceptual work.

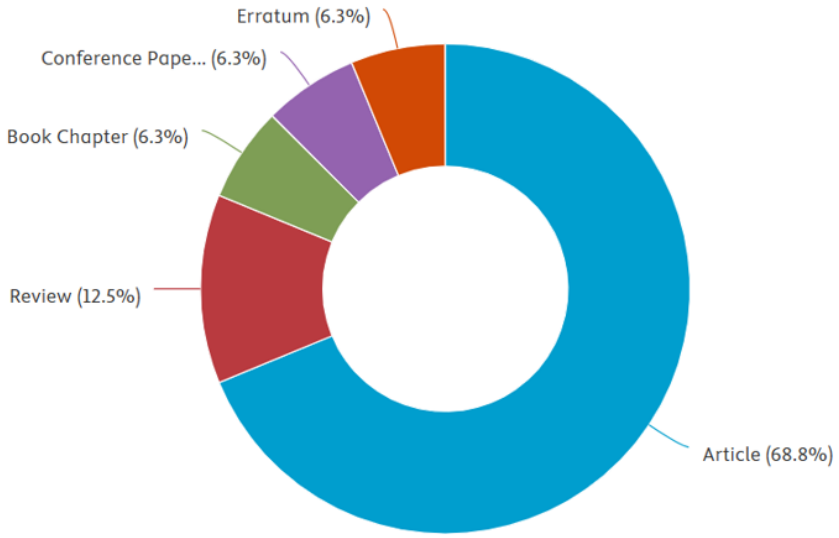


Figure 3: Documents by Type

Source: Scopus Database

Table 3: Documents by Type

Document Type	Documents	Percentage (%)
Article	11	68.75
Review	2	12.50
Book Chapter	1	6.25
Conference Paper	1	6.25
Erratum	1	6.25
Total	16	100.00

Source: Scopus Database

Figure 4 and Table 4 show the subject area classification. Because Scopus assigns documents to more than one subject area, the total exceeds the number of documents. Social Sciences is the largest category (nine documents), followed by Environmental Science (seven), Business, Management and Accounting (six), and Energy (six). Computer Science and Economics, Econometrics and Finance each account for four documents, while Decision Sciences, Engineering, and Multidisciplinary each account for one. The relatively small share of Economics, Econometrics and Finance is notable given the financial focus of the topic, and it

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indicates that the literature is strongly interdisciplinary and that core finance research on the financial development–ESG nexus remains limited.

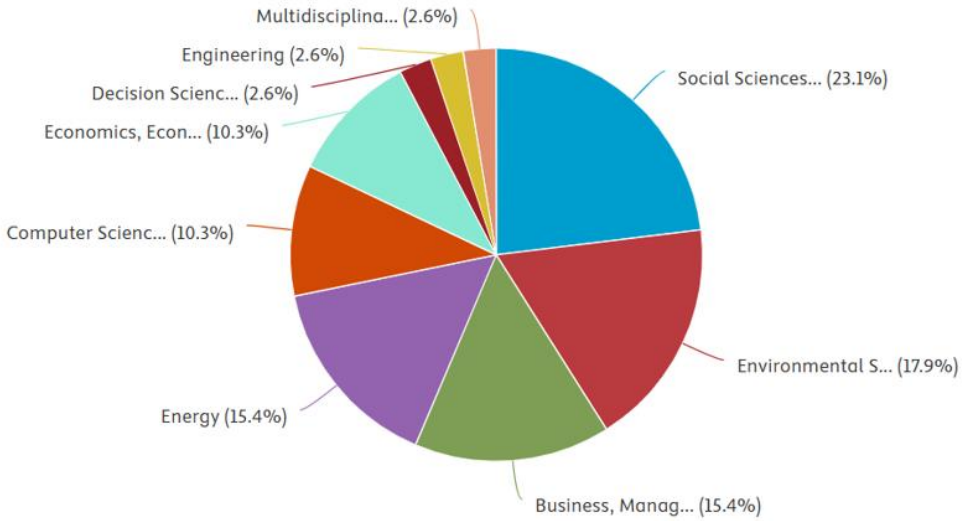


Figure 4: Documents by Subject Area

Source: Scopus Database

Table 4: Documents by Subject Area

Subject Area	Documents
Social Sciences	9
Environmental Science	7
Business, Management and Accounting	6
Energy	6
Computer Science	4
Economics, Econometrics and Finance	4
Decision Sciences	1
Engineering	1
Multidisciplinary	1

Source: Scopus Database. Note: One document may be classified in more than one subject area

RQ2: ***Which countries have contributed most to this research?***

Figure 5 shows the ten most productive countries or territories. India is the leading contributor with five documents, followed by Japan with three. Denmark, Germany, Malaysia, Qatar, and the United Kingdom contributed two documents each, while Australia, China, and France contributed one document each. The prominence of India reflects the active involvement of Indian scholars in ESG regulatory and sustainable finance research (Kumar et al., 2025; Singhania & Saini, 2022), whereas Japan's position confirms growing domestic research interest in ESG practices among Japanese firms (Aldowaish et al., 2024; Ikuta & Fujii, 2025). The contribution of Malaysia and Qatar shows that researchers from emerging and Islamic finance-oriented economies are also engaging with the topic (AlHares et al., 2023; Ismail & Azman, 2024; Kashi & Shah, 2023).

Overall, the geographical distribution indicates that research on this topic is spread thinly across many countries, with no country contributing more than five documents. Although Japan is the

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empirical focus of several studies, only three documents are affiliated with Japanese institutions, which suggests considerable room for Japanese researchers, and for international collaborations involving Japan, to expand the evidence base.

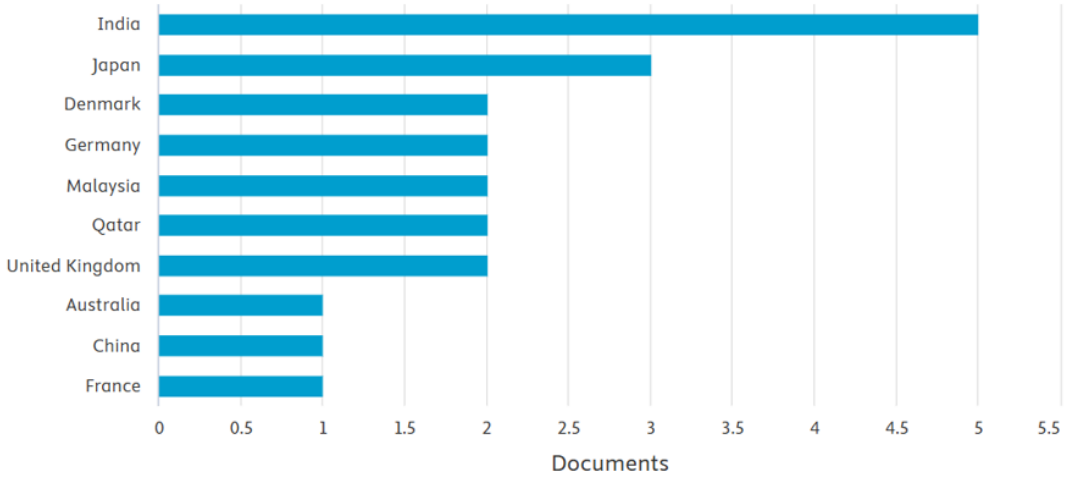


Figure 5: Documents by Country or Territory

Source: Scopus Database

RQ3: What collaboration patterns characterise the authors working in this field?

Figure 6 presents the co-authorship network generated using VOSviewer. Only one connected cluster emerged, consisting of five authors: Satish Kumar, Dipasha Sharma, Sandeep Rao, Weng Marc Lim, and Sachin Kumar Mangla. These authors are linked through their joint work on the past, present, and future of sustainable finance (Kumar et al., 2025), and each author is connected to all other members of the cluster. No other author groups formed connected components that met the threshold, meaning that the remaining documents were produced by separate, unconnected teams.

This pattern indicates that research on financial development and ESG sustainability with a Japanese focus is characterised by small, isolated research teams rather than an integrated collaboration network. The absence of cross-team links suggests that knowledge exchange among researchers in this area is still limited. Strengthening collaboration, particularly between Japanese institutions and researchers in other Asian and Western countries, could promote comparative studies and improve the generalisability of findings.

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Figure 6: Co-Authorship Network of Authors
Source: VOSviewer Version 1.6.20

RQ4: What are the dominant keywords and conceptual themes in the literature?
Figure 7 illustrates the keyword co-occurrence network. Only three keywords met the minimum occurrence threshold: "ESG", "sustainability", and "Japan". The three keywords form a single, fully connected cluster, with "sustainability" showing the largest node. This small network confirms that the documents share a common core, namely ESG sustainability in the Japanese context, but that beyond this core the keywords used by different authors vary widely.

The limited number of recurring keywords is itself an informative result. It shows that the literature has not yet converged on a shared conceptual vocabulary, and that the documents address diverse sub-themes such as climate risk disclosure (Ngo et al., 2023), ESG regulation (Singhania & Saini, 2022), ESG and financial performance (Ikuta & Fujii, 2025; Ismail & Azman, 2024), ESG and cash holdings (AlHares et al., 2023), and sustainable finance policy (Schumacher et al., 2020). Notably, the term "financial development" did not emerge as a recurring keyword, which suggests that the macro-level financial development perspective is still weakly integrated with firm-level ESG research.

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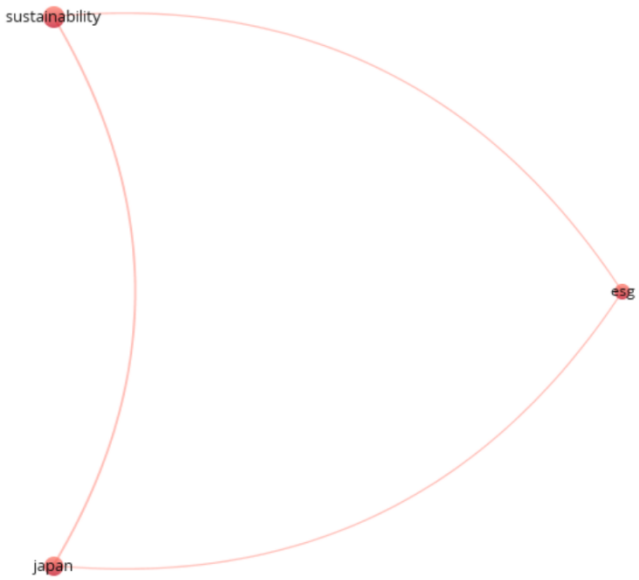


Figure 7: Keyword Co-Occurrence Network

Source: VOSviewer Version 1.6.20

RQ5: Which publications have had the greatest citation impact, particularly those concerning Japan?

Table 5 summarises the citation metrics of the dataset. The 16 documents received 420 citations in Scopus, or 26.25 citations per paper, with an h-index of 9 and a g-index of 16. Google Scholar, retrieved through Harzing's Publish or Perish, recorded 1,459 citations for the same set of documents. This figure is inflated by the erratum to Kumar et al. (2025), whose Google Scholar count (717) appears to reflect the citations of the original article; excluding this record, the Google Scholar total is 742 citations.

Table 5: Citation Metrics

Metric	Scopus	Google Scholar
Publication years	2020–2026	2020–2026
Total number of papers	16	16
Total citations	420	1,459 (742*)
Citations per paper	26.25	91.19
h-index	9	10
g-index	16	16

Source: Scopus Database and Harzing's Publish or Perish. *Excluding the erratum record

Table 6 lists all 16 documents ranked by Scopus citations. Schumacher et al. (2020) recorded the highest impact, with 131 Scopus citations and 234 Google Scholar citations, making it the foundational reference in Japanese sustainable finance research. Singhania and Saini (2022) ranked second with 90 Scopus citations, highlighting the importance of cross-country benchmarking of ESG regulations. Ngo et al. (2023) and Kashi and Shah (2023) followed with 75 and 53 Scopus citations, respectively. Together, the top four documents account for 349 of the 420 Scopus citations (83.1%), indicating that citation impact is highly concentrated in a small number of review-oriented and policy-oriented works.

The Japan-specific empirical studies, including Aldowaish et al. (2024), Ismail and Azman (2024), and Ikuta and Fujii (2025), have so far received fewer citations. Because these

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documents were published between 2024 and 2026, their lower citation counts largely reflect the shorter citation window rather than lower relevance. Several 2025–2026 documents have not yet been cited, which is typical of recently published work.

Table 6: Financial Development and ESG Sustainability: Evidence from Japan

No.	Title	Authors	Year	Scopus Cites	GS Cites
1	Sustainable finance in Japan	K. Schumacher, H. Chenet, U. Volz	2020	131	234
2	Quantification of ESG regulations: A cross-country benchmarking analysis	M. Singhania, N. Saini	2022	90	194
3	Climate risk disclosures and global sustainability initiatives: A conceptual analysis and agenda for future research	T. Ngo, T. Le, S. Ullah, H.H. Trinh	2023	75	118
4	Bibliometric review on sustainable finance	A. Kashi, M.E. Shah	2023	53	91
5	A multi-perspective exploration of the environmental website disclosure in global manufacturing	H. Thimm, K.B. Rasmussen	2023	17	33
6	Correction to: Past, present, and future of sustainable finance: Insights from big data analytics through machine learning of scholarly research	S. Kumar, D. Sharma, S. Rao, W.M. Lim, S.K. Mangla	2024	16	717*
7	Environmental, social, and governance disclosure impact on cash holdings in OECD countries	A. AlHares, N. AlEmadi, T. Abu-Asi, R. Al Abed	2023	11	15
8	How to manage conflicts in the process of ESG integration? A case of a Japanese firm	A. Aldowaish, J. Kokuryo, O. Almazyad, H.C. Goi	2024	10	21
9	The impact of environmental, social, and governance performance on financial performance: Evidence from Japanese companies	A.M. Ismail, K.B.B. Azman	2024	9	15
10	The problem of divergence of ESG ratings awarded by persons providing services for the assessment of sustainable development...	I. Ermokhin, Y. Burhanova, A. Levashenko	2023	4	11
11	An analysis of the relationship between ESG activities and the financial performance of Japanese companies toward sustainable development	T. Ikuta, H. Fujii	2025	3	6
12	Global ESG trend has potential to boost the green hydrogen economy	A. Mukherjee	2023	1	2
13	A study of the global emergence of sustainable investing: A cross-country analysis	S. Basak	2025	0	0
14	Leveraging financial and technological drivers in advancing ESG sustainability practices in achieving sustainable development goals	Y. Tong, J.C. Onwe, S. Rehman, M. Subhan	2026	0	1
15	Environmental, social, and governance metrics for green ports in archipelago countries	H. Fahmiasari, J.S.L. Lam, E.Y. Lo	2026	0	0
16	The ESG approach for planning, design and correct management of green area	M. Zupi, P. Celani	2024	0	1

Source: Scopus Database and Harzing's Publish or Perish. GS = Google Scholar. *Likely reflects citations of the original article

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Discussion

An Emerging and Fragmented Field

The results show that research explicitly linking financial development, ESG sustainability, and Japan is small, recent, and fragmented. Only 16 documents were identified, most of them published from 2023 onwards. This timing coincides with the acceleration of sustainability-related disclosure and stewardship reforms in Japan and the global diffusion of climate-related financial disclosure recommendations (Ngo et al., 2023; Schumacher et al., 2020). The dominance of Social Sciences and Environmental Science over Economics, Econometrics and Finance suggests that the topic is being approached mainly from policy, environmental, and management perspectives, whereas rigorous finance-based analyses of how financial development shapes ESG outcomes remain scarce.

Limited Collaboration and a Narrow Conceptual Core

The co-authorship and keyword networks reinforce this interpretation. Only one five-author cluster formed a connected network, and only three keywords recurred across the dataset. In more mature fields, bibliometric studies typically reveal multiple interconnected clusters of authors and themes (Donthu et al., 2021; Kumar et al., 2025). The present results instead point to a field in which independent teams address different sub-questions without a shared framework. In particular, the absence of "financial development" as a recurring keyword indicates a conceptual gap between the macro-finance literature on financial development and the environment (Sadorsky, 2010; Tamazian et al., 2009; Zhang, 2011) and the micro-level literature on ESG and firm performance (Friede et al., 2015; Gillan et al., 2021).

Implications for Research on Japan

The Japan-specific studies consistently suggest that ESG activities are associated with better financial outcomes for Japanese firms, although the effects differ by ESG dimension and industry (Chen et al., 2024; Ikuta & Fujii, 2025; Ismail & Azman, 2024). Case evidence further shows that ESG integration requires firms to manage internal conflicts between cost considerations and sustainability objectives (Aldowaish et al., 2024). However, few studies connect these firm-level outcomes to the broader role of Japan's financial system, such as bank lending practices, green bond markets, institutional investors, and pension fund stewardship, in driving ESG adoption. Given the divergence of ESG ratings (Berg et al., 2022), studies on Japan should also examine how rating choice affects conclusions about the financial effects of ESG.

Recommendations for Future Research

Based on these findings, several directions are recommended. First, future studies should explicitly model the link between national or regional financial development indicators and ESG performance, combining macro-level financial data with firm-level ESG data. Second, comparative studies between Japan and other Asian economies, including Malaysia and India, would benefit from the international collaboration that is currently lacking. Third, research should investigate the role of specific financial channels, such as green bonds, sustainability-linked loans, and institutional investor engagement, in promoting ESG outcomes. Fourth, future bibliometric studies could broaden the search to additional databases and apply co-citation and bibliographic coupling analyses as the literature grows.

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Limitations of the Study

This study has several limitations. First, the analysis relied exclusively on Scopus, so relevant publications indexed only in Web of Science, Google Scholar, or Japanese-language databases may not have been captured. Second, the dataset was small (16 documents), which limits the depth of network analysis and the generalisability of the findings. Third, bibliometric retrieval depends on the chosen search terms; studies using alternative terminology, such as green finance, climate finance, or responsible investment without explicit reference to ESG, may have been omitted. Fourth, the dataset included an erratum and documents published in 2026, a partial year, which affect citation counts. Finally, bibliometric indicators describe publication and citation patterns but do not assess the methodological quality of individual studies; the findings should therefore be complemented by systematic reviews and empirical research.

Conclusion

This study provides the first bibliometric synthesis of research on financial development and ESG sustainability with a focus on Japan. Analysis of 16 Scopus-indexed documents published between 2020 and 2026 shows that the field is emerging, with publication activity concentrated in 2023–2024. India and Japan were the leading contributing countries, and the literature spans multiple disciplines, with relatively limited representation from core finance. Collaboration was confined to a single small cluster, and only three keywords (ESG, sustainability, and Japan) formed the conceptual core of the field. Citation impact was concentrated in a few works, with Schumacher et al. (2020) serving as the most influential reference. These findings highlight the need for more integrated, collaborative, and finance-focused research connecting financial development with ESG sustainability in Japan. The study offers a useful reference point for researchers, policymakers, financial institutions, and sustainability practitioners seeking to advance sustainable finance in Japan and beyond.

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