International Journal of Energy Economics and Policy

ISSN: 2146-4553

available at http: www.econjournals.com

International Journal of Energy Economics and Policy, 2026, 16(2), 68-79.

Unveiling Research Trends in Green Finance in the Age of ESG: A Comprehensive Bibliometric Analysis and Future Research Agenda

Omar El Mortagi[1], Ines Belgacem[2], Walid Simmou[3,4], Slimane Ed-Dafali [1], Zahra Adardour[1], Nesrine Gafsi[2]

[1]National School of Commerce and Management (ENCG), Chouaib Doukkali University, El Jadida, Morocco, [2]College of Business, Imam Mohammad Ibn Saud Islamic University (IMSIU), Riyadh 11564, Saudi Arabia, [3]Department of Business, Autonomous University of Barcelona, Bellaterra, Spain, [4]Business School, Bahrain Polytechnic, Isa Town, Bahrain. *Email: ed-dafali.s@ucd.ac.ma

Received: 01 September 2025 **Accepted:** 27 December 2025 **DOI:** https://doi.org/10.32479/ijeep.22292

ABSTRACT

Green finance has grown significantly over the past 30 years, with the primary aim of protecting the environment and effectively addressing the challenges of climate change through a variety of innovative financial mechanisms and strategies. The present study is designed to conduct a comprehensive bibliometric analysis with the explicit aim of identifying the academic development and diffusion of green finance within the academic community. The literature studied covers the period 1993-2023 from the Scopus database. The results show that the main research topics in this area include the regulation of green credit, the impacts and outcomes of green finance, and strategies for its development. These findings provide insights into green finance research in line with the suggested research trends. Moreover, they identify avenues for future research and provide original insights for managers, investors, and policy-makers to re-compose the climate finance puzzle.

Keywords: Green Finance, Climate Finance, Sustainable Finance, Bibliometric Analysis, ESG
JEL Classifications: Q01, Q56, G3, P28, E50, K32, M14, D53

1. INTRODUCTION

Green finance is a fundamental framework that underpins the progress of green initiatives, ensuring that environmental and social dimensions are duly considered in the investment decision-making process (Martin, 2023). It is a global imperative that can help countries achieve their climate goals while promoting environmentally sustainable economic growth (Ravichandran and Roy, 2022), and more specifically, the adoption of green finance strategies offers favorable prospects for more sustainable development of banking systems (Vuong et al., 2025). It associates the financial business sector with an environmentally friendly framework (Wang and Zhi, 2016), and a proactive engagement of financial institutions that mobilize resources to finance projects focused on environmental conservation and energy efficiency (Wang et al., 2021). Therefore, green finance is essential to finance renewable and environmentally friendly energy projects that aim to reduce carbon emissions and their adverse health effects, develop climate-resilient urban infrastructure, and ensure environmental sustainability (Taghizadeh-Hesary and Yoshino, 2019).

The discourse on green finance requires recognition of various concepts that are intrinsically associated, including climate finance, carbon finance, environmental finance and sustainable finance (Bhatnagar and Sharma, 2022). It is important to distinguish between these concepts; carbon finance encompasses financial and investment activities that contribute to an economy characterised by minimal greenhouse gas emissions, including carbon credit trading and other mechanisms to combat climate change (Wu and Niu, 2024). While climate finance refers to financial strategies

specifically designed to mitigate and adapt to the impacts of climate change (Hong et al., 2020a). In contrast, environmental finance aims to mitigate negative environmental impacts through market-based environmental policy instruments, while sustainable finance focuses on improving social, economic and environmental well-being (Bhatnagar and Sharma, 2022).

Indeed, the field of green finance has experienced remarkable growth due to the diversity of its financial instruments, of which green bonds are the most important, representing a bond asset class whose first edition was issued by the European Investment Bank in 2007 to finance renewable energy and energy efficiency projects (Reboredo, 2018). The volume of green bond issuance has risen from US$36.6 billion in 2014 to US$487.1 billion in 2022 (Climate Bonds Initiative, 2023). The remarkable proliferation of these bonds can be attributed to the publication of the Green Bond Principles (GBP) by the International Capital Markets Association (ICMA), which divides green bonds into labelled and unlabelled categories. In addition, green loans have emerged, which aim to facilitate the transition to a zero-carbon economy through various green initiatives (Gilchrist et al., 2021), alongside green insurance, green investment and carbon finance (He et al., 2019, Setyorini and Hakam, 2025).

Compared to previous bibliometric studies on green finance, the discourse articulated in this manuscript defines the main research topics relevant to this discipline that have been studied over the last 30 years, along with an analysis of the trajectory of publications and the most prominent journals, authors, articles and countries involved in global green finance research, enriching the contributions of Debrah et al. (2023), Sharma et al. (2023), Verma et al. (2023), Zhang et al. (2019). Furthermore, In addition, previous bibliometric analyses have been limited to specific topics, such as India's participation in green finance (Chauhan et al., 2025), or catalysts for green finance (Bhatnagar and Sharma, 2022). Alternatively, these studies have integrated green finance with various dimensions, including green supply chain management (Fahim and Mahadi, 2022), carbon trading mechanism (Mashari et al., 2023), renewable energy development (Muhmad et al., 2024), halal industry (Napitupulu et al., 2024), sustainable construction practices (Akomea-Frimpong et al., 2022), fintech innovations (Napitupulu et al., 2024), energy price volatility (Dar et al., 2024), sustainability (Razi et al., 2024), the circular economy (Kumar et al., 2024), or the shortcomings of green finance in sustainable construction (Debrah et al., 2022). In the same vein, this survey expanded the temporal dimension in relation to Chandranand Chandran (2024), Krastev and Krasteva-Hristova (2024).

The present study therefore aims to provide a comprehensive inventory of green finance through a bibliometric analysis of 1,578 articles published in reputable journals. This initiative aims to provide a comprehensive understanding of the scholarship published in the field of green finance over the last 30 years. To achieve this goal, the present manuscript uses the methods and scientific rationale inherent in systematic literature reviews (SPAR-4-SLR) to examine articles on green finance published in Scopus-indexed journals, which include recent papers that meet rigorous quality criteria for indexing. The main objective of this article is to examine and reflect on the following research review:

- RQ1. What is the trend in publishing research on green finance?
- RQ2. What are the most important journals, articles, authors, countries and institutions in the field of green finance research?
- RQ3. What opportunities are there for green finance research?

The following sections of the paper are structured as follows: section 2 defines the methodological framework adopted. Next, section 3 reports on the bibliometric and intellectual architecture of VF identified during the analysis. This is followed by a discussion of the most frequently cited articles in our dataset, culminating in the manuscript's conclusion, which proposes a future research agenda for VF.

2. METHODOLOGY

While many surveys have used a variety of methodologies to examine contemporary research, the present article merges a systematic review and bibliometric analysis (Lim et al., 2022). This methodology represents a new protocol of scientific procedures and reasoning for systematic literature reviews recently formulated by Paul et al. (2021), commonly referred to by its acronym SPAR-4-SLR. Various researchers have implemented this approach to discern the subject, its bibliometric attributes and its theoretical framework (Blanco-González-Tejero et al., 2023); (Nyagadza, 2022); (Ribeiro-Navarrete et al., 2022). Bibliometric analysis facilitates the integration of quantitative and qualitative methodologies to assess the performance and organisation of several studies in a research field (Ed-Dafali et al., 2023), and allows the categorisation of publications disseminated within a research discipline (Ragazou et al., 2022), while elucidating the main themes, gaps and trends relevant to this field of study (Usman et al., 2024). This method is exploited in a range of fields, including marketing (Hu et al., 2019), human resources (Markoulli et al., 2017), strategic management (Khoury, 2021),finance (Linnenluecke et al., 2017).

This method represents a recent and rigorous review that effectively follows the PRISMA protocol, frequently used in the social sciences (Lim et al., 2022; Paul et al., 2021), comprising three sequential steps: assembly, arrangement and evaluation, as well as six sub-steps (identification, acquisition, organization, purification, evaluation and reporting). A summary of the procedure is shown in Figure 1.

3. RESULTS

The analysis carried out on all 1,578 documents elucidates the evolution of the literature, research trends and potential avenues of research. Consequently, the following section presents information concerning publication trends, relevant sources, thematic areas, author demographics and the organization of thematic data.

3.1. Publication Structure

This study includes articles published from 1993 to 2023 (Figure 2), research on green finance has seen a notable increase

Figure 1: Review procedure according to the SPAR-4-SLR protocol. Note: SPAR-4-SLR, Scientific procedures and rationale for systematic literature reviews according to Paul et al. (2021)

Assembly	• Identification - Domain : Green Finance • Search questions : - RQ1. What is the publication trend in green finance research? - RQ2. What are the most important journals, articles, authors, countries and institutions in the field of green finance research? - RQ3. What opportunities are there for green finance research? - Source type : journals - Quality of source: Scopus • Acquisition - Research mechanism and material acquisition: Scopus - Research period : 1993 to 2023 - Search keywords: 'Sustainable finance' OR 'Green Finance' OR 'Carbone finance' OR 'Environmental finance' OR 'green bonds' OR 'Climate bonds' OR 'Green investing' OR 'Eco-investing' OR 'Carbon investing' OR 'Green credit' OR 'Green Loans' OR 'Green securities' OR 'Green funds' OR 'Sustainability bonds' OR 'climate finance' - Source quality: Scopus Total documents : 5.186 publications
Arrangement	• Organisation - Organization codes : language • Purification - Language : English - Document type : journals and articles - Source type: journals - Publication stage: final - Subject field: Economics, econometrics, and finance; business, managing and accounting Total documents: 1.578 publications
Evaluation	• Evaluation - Total documents to be analyzed: 1.578 Articles - Analysis method: performance analysis (publication trend of articles, and performance of article, author, country and journal) • Reporting - Conventions : Figures, tables and word - Limitations: date limited to Scopus. Review limited to bibliometric information

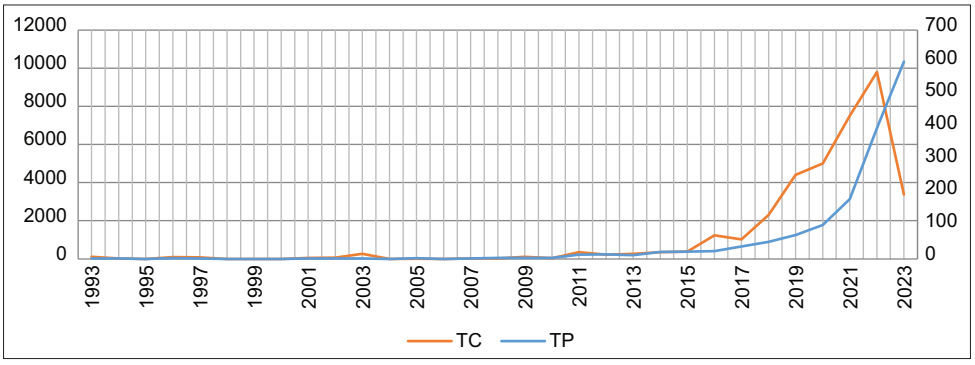
since 2015, a phenomenon that can be attributed to the issuance of the Green Bond Principles by the International Capital Markets Association in January 2014 (Reboredo, 2018). Since then, green finance has received increased attention due to its importance in the energy transition and sustainable development, further accentuated by the adoption of three fundamental agreements by world governments, namely "The 2030 Agenda for Sustainable Development", "The Paris Agreement on Climate Change" and "The Addis Ababa Conference and the development of a financing agenda" (Falcone, 2020). Against this backdrop, green finance was included for the first time on the agenda of G20 finance ministers and central bank governors in 2016.

The year 2023 was the most prolific in terms of the volume of articles circulated on green finance, with a total of 603 publications. Closely followed in 2022 and 2021, with 400 and 183 articles, respectively. the first singular scientific manuscript circulated in 1993 by Cormier et al. (1993), concerning the advent of "ethical" (or green) investing, postulates that a company's pollution performance marginally corroborates the existence of a premium in the stock market valuation of entities adhering to environmental regulations. While a study by Sumarta et al. (2023), of sustainability reports by banks listed on the Indonesian stock exchange confirms that these reports result in higher market valuations. This illustrates the significant advances made by scientific research in the field of green finance, and underlines the need to take into account environmental preferences, which have been increasingly valued and integrated over time among the criteria used to evaluate organizations.

3.2. Journal Performance Analysis

As shown in Table 1, the top ten journals account for 73% of cumulative scientific output over the designated period. The Journal of Cleaner Production emerges as the journal with the highest number of publications, recording 111 publications, in conjunction with the highest citation impact, with 5169 citations. It is followed by Energy Economics, with 103 publications and 4,330 citations; both journals play a key role in terms of scientific productivity and influential contributions, and as evidenced by their respective h-index scores of 41 and 34. In this light, the

Figure 2: Publication trends in green finance research between 1993 and 2023



Source: The authors

discourse on green finance has a multidisciplinary character, encompassing a significant proportion of non-financial journals, while a limited number of financial journals contribute more to the conceptual advancement of green finance.

Figure 3 shows that the network of journal research groups provides additional information on the contributions of various journals to the field of green finance research. Collectively, this network comprises three distinct groups, the most important being environmental research, followed by economic analysis and finally finance.

3.3. Author Performance Analysis

Table 2 presents the 10 most prominent researchers in the field of green finance, based on the number of their publications, the frequency of citations received and various indices derived from the Scopus database. These indicators were used to assess the scientific productivity of authors, as they provide multidimensional information concerning the production, influence and academic significance of their respective works.

With regard to the most productive authors, the Bibliometrix R software, for example, leads us to conclude that the author designated as Wang Y has a significant quantity of publications, in particular 27, which distorted the results of Miyan et al. (2024) who addressed the same subject as ours. Upon further analysis, we discovered that the abbreviation Wang Y encompasses several individuals, whose identities are listed as follows: Wang, Yu- Wang, Yifeng- Wang, Yaojun- Wang, Yuan- Wang, Yuzhang- Wang, Yukai- Wang, Yao- Wang, Yan- Wang, Ying- Wang, Yutao- Wang, Yaojun- Wang, Yi-Ran- Wang, Yanan- Wang, Yujou- Wang, Yao- Wang, Yang- Wang, Yi Ran- Wang, Yanxi- Wang, Yufeng- Wang, Yongquan- Wang, Yunliang- Wang, Yizhi. Therefore, to mitigate this resulting bias, we used Excel to meticulously check the first and last names of the authors in our corpus of articles, resulting in the following hierarchical arrangement:

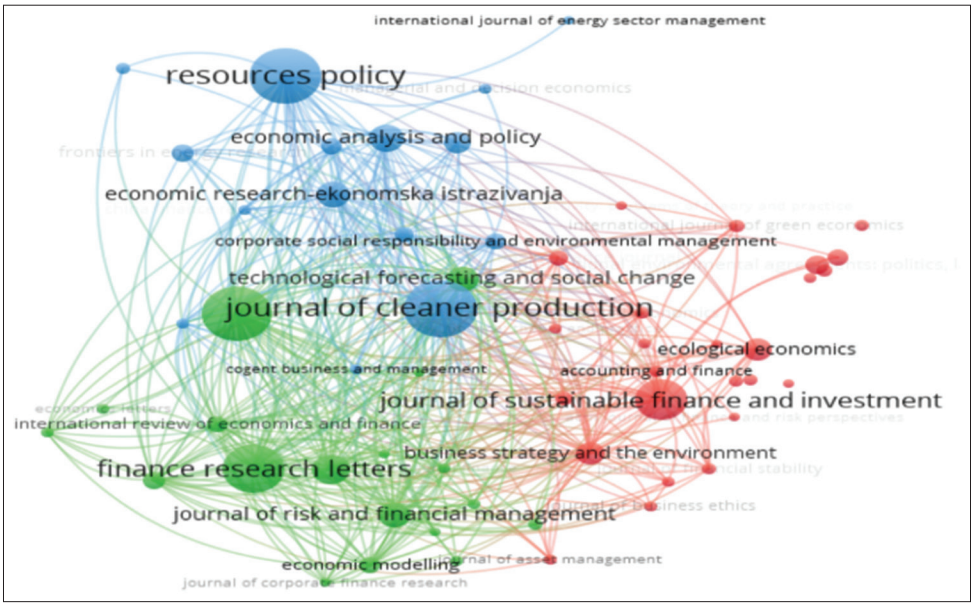
Among the cohort of authors examined in this survey, "Taghizadeh-Hesary, Farhad" was identified as the lead author, having written a total of 25 publications; however, after evaluation on the basis of citation frequency, "Lee, Chien-Chiang" emerged as the most

Table 1: Top 10 contributing journals in green finance research

R	Journals	TP	TC	H	G	M	PR
1	Journal of Cleaner Production	111	5169	41	70	3.727	2014
2	Energy Economics	103	4330	34	65	3.778	2016
3	Resources Policy	106	2127	25	44	6.25	2021
4	Finance Research Letters	84	2775	23	52	2.556	2016
5	Journal of Sustainable Finance and Investment	65	1428	19	36	1.357	2011
6	Technological Forecasting and Social Change	29	1849	19	29	2.714	2018
7	Ecological Economics	25	1621	17	25	0.531	1993
8	Economic Analysis and Policy	34	916	17	30	4.25	2021
9	International Review of Financial Analysis	38	907	17	29	1.545	2014
10	Business Strategy and The Environment	24	668	13	24	0.448	1996

R: Rang, TP: Total publications, TC: Total citations, H: h-index, G: g-index, M: m-index, FP: Year of first publication. Source: The authors

Figure 3: Groups of journals contributing to green finance research. Green group: [Finance and Management], blue group: [Economic Analysis], red group: [Environment]



Source: The authors using VOSviewer

Table 2: Top 10 researchers in green finance research

R	Authors	Affiliation	TP	TC	H	G	M	PR
1	Taghizadeh-Hesary, Farhad	Faculty of Political Science and Economics, Waseda University, Tokyo, Japan	25	1232	16	25	2.667	2019
2	Naeem, Muhammad Abubakr	College of Business and Economics, United Arab Emirates University, Al Ain, United Arab Emirates	14	834	12	14	3	2021
3	Lee, Chien-Chiang	School of Economics and Management, Nanchang University, China	13	1369	16	20	4	2021
4	Tiwari, Aviral Kumar	Indian Institute of Management Bodh Gaya, Bodh Gaya, India, Rajagiri Business School, Rajagiri Valley Campus, Kochi, India	13	547	9	13	2.25	2021
5	Umar, Muhammad	School of Economics, Qingdao University, Shandong, China	13	394	9	13	3	2022
6	Zhang, Dongyang	School of Economics, Capital University of Economics and Business, 121 Zhangjialukou, Huaxiang Fengtai District, Beijing, 100070, China	11	793	12	14	2	2019
7	Abakah, Emmanuel Joel Aikins	University of Ghana Business School, Accra, Ghana	10	325	6	10	1.5	2021
8	Mirza, Nawazish	Excelia Business School, La Rochelle, France	9	301	8	9	2	2021
9	Ren, Xiaohang	School of Business, Central South University, Changsha, 410083, China	9	460	7	10	1.4	2020
10	Karim, Sitara	Faculty of Management Sciences, ILMA University, Karachi, Pakistan	8	270	7	8	2,333	2022

R: Rang, TP: Total publications, TC: Total citations, H: h-index, G: g-index, M: m-index, FP: Year of first publication. Source: The Authors

influential author, with a total of 1,369 citations. In addition, the results show that the top 10 authors began their publishing activities in 2019, making a substantial contribution to the discourse on green finance.

Although it is generally accepted that the main indicator for assessing the performance of scientists is the quantity of their publications (Huber, 2002), (Lotka, 1926) proposed a law according to which: «The number of authors making n contributions is about 1/n2 of those making one; and the proportion of all contributors making only one contribution is about 60 percent».

In the context of our analysis, as illustrated in the Figure 4, a total of 3,402 authors produced a single article, representing 70% of our full sample, thus challenging the validity of Lotka's law.

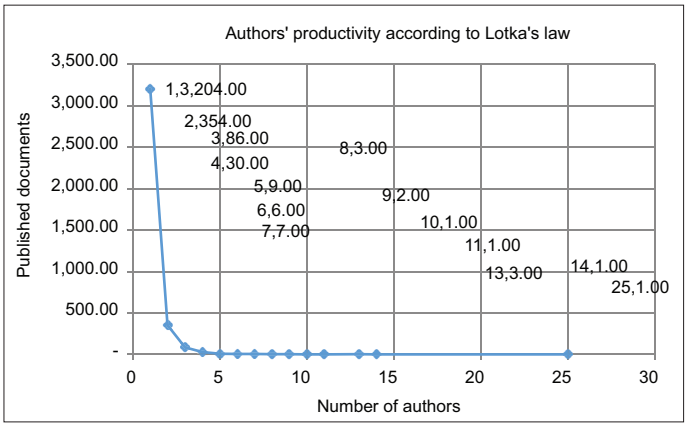
Nevertheless, it is worth noting that 86% of these individuals are classified as irregular authors, publishing no more than two papers, while only 14% have circulated at least three papers, collectively forming the cohort of lead authors in this area of research, having begun their contributions around 2016, suggesting a sustained commitment on the part of these researchers to continue their research in this burgeoning area of study.

The collaboration between the most influential authors is shown in Figure 5. Within this main collaboration network related to green finance, authors who play a central role include «Taghizadeh-Hesary, Farhad», «Naeem, Muhammad Abubakr», «Tiwari, Aviral Kumar», «Lee, Chien-Chiang», «Umar, Muhammad», «Vo, Xuan Vinh».

3.4. Article Performance Analysis

A co-citation analysis was carried out to determine which articles relating to green finance obtained the highest number of citations among other academic works, enabling a more accurate assessment of citation performance related to green finance literature. Table 3 lists the 10 most frequently cited articles in the corpus extracted from Scopus. Notably, the top 10 contributions were published from 2016, collectively receiving a total of 3,477 citations, indicating that each article in the green finance corpus cites an average of 2.2 articles among the top 10 (3,477 ÷ 1,578).

Figure 4: Lotka's law graph



Source: The authors using Excel

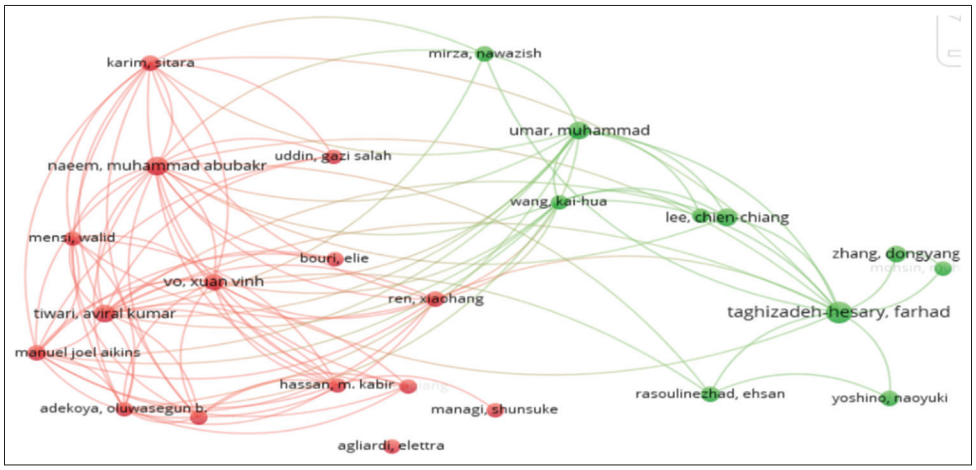
Zerbib (2019), this article is the most cited by other green finance authors (413 citations). The article uses green bonds to identify the effect of pro-environmental passions on bond market prices and finds that there is a small negative premium, i.e. the yield of conventional bonds is higher than that of green bonds.

Leeand Lee (2022) is the second most cited article (412 citations), and studies the link between the development of green finance and green productivity in China. The results of this study demonstrate that the development of green finance significantly improves the level of green productivity, especially in provinces where economic and social conditions are better.

Flammer (2021) is the third most cited green finance article (391 citations), showing that investors react positively to the announcement of green bond issuance, a reaction that is stronger for first-time issuers and third-party certified bond.

Taghizadeh-Hesary and Yoshino (2019), this article received 385 citations, in which the authors proposed solutions to encourage the private sector in investment and financing in the environmental field and which consist in setting up green credit guarantee systems (GCGS) and returning to investors part of the tax revenues originally generated by the spin-offs from green energy provision.

Figure 5: Research groups contributing to green finance research. Green group "Environmental Investment", red group "Sustainability and Climate Change"



Source: The authors using VOSviewer

Table 3: Top 10 contributions in green finance research

R	Autors	Title	Year	Source	TC
1	Zerbib O.D.	The effect of pro-environmental preferences on bond prices: Evidence from green bonds	2019	Journal of Banking and Finance	413
2	Lee C.-C and Lee C.-C.	How does green finance affect green total factor productivity? Evidence from China	2022	Energy Economics	412
3	Flammer C.	Corporate green bonds	2021	Journal of Financial Economics	391
4	Taghizadeh-Hesary F and Yoshino N.	The way to induce private participation in green finance and investment	2019	Finance Research Letters	385
5	Tang D.Y and Zhang Y.	Do shareholders benefit from green bonds?	2020	Journal of Corporate Finance	329
6	Campiglio E.	Beyond carbon pricing: The role of banking and monetary policy in financing the transition to a low-carbon economy	2016	Ecological Economics	328
7	Reboredo J.C.	Green bond and financial markets: Co-movement, diversification and price spillover effects	2018	Energy Economics	315
8	Drempetic S et al.	The Influence of Firm Size on the ESG Score: Corporate Sustainability Ratings Under Review	2020	Journal of Business Ethics	309
9	Zhang D et al.	A bibliometric analysis on green finance: Current status, development, and future directions	2019	Finance Research Letters	302
10	Hu G et al.	Can the green credit policy stimulate green innovation in heavily polluting enterprises? Evidence from a quasi-natural experiment in China	2021	Energy Economics	293

R: Rang, TC: Total citations. Source: The authors

Tangand Zhang (2020) features in the list of the five green finance articles most cited by other green finance articles in the corpus (329 citations), their article shows that share prices react positively to the issue of green bonds, which is advantageous for shareholders, and that institutional shareholders adhere much more than others following the announcement of green bond issues.

3.5. Performance Analysis of Countries

In terms of volume of articles published, the top 10 countries account for 82% of all publications by the leading countries in green finance (Table 4). China alone, with 1,564 publications (Figure 6), accounts for 42% of the total. If we add the contributions of India, Indonesia and Pakistan, this figure rises to 52%. The 15 developed countries, on the other hand, account for only 43%, underlining the increased efforts of emerging economies to promote the concept of green finance. Conversely, the countries of the African continent have little presence in this global discourse.

4. RESEARCH TRENDS IN GREEN FINANCE

Through a thorough and meticulous review of the most cited articles within our sample, we have been able to discern and systematically delineate a total of six distinct and important lines of research currently emerging and evolving in the field of green finance.

4.1. Green Credit Guidelines (GCG 2012)

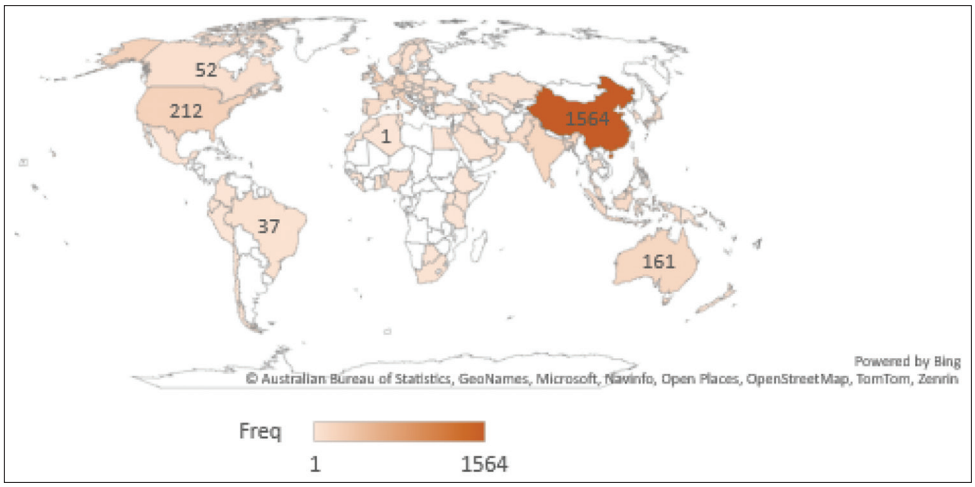
In 2012, the People's Republic of China implemented a green credit policy by establishing the Green Credit Guidelines (GCG2012) specifically targeting financial institutions, with the aim of improving the allocation of green credit to encourage enterprises to participate in energy conservation and environmental management (Hu et al., 2021), thus assuming a central role in the allocation of credit resources (Liu et al., 2019). This initiative

Table 4: Top 25 countries in green finance research

Developed countries			Developing countries			Top 10 countries			
R	Country	TP	R	Country	TP	R	Country	TP	% Publication
1	United Kingdom	227,00	1	China	1 564,00	1	China	1 564,00	42
2	USA	212,00	2	India	173,00	2	United Kingdom	227,00	6
3	Italy	205,00	3	Indonesia	99,00	3	USA	212,00	6
4	Germany	174,00	4	Pakistan	91,00	4	Italy	205,00	5
5	Australia	161,00	5	Romania	44,00	5	Germany	174,00	5
6	France	139,00	6	Brazil	37,00	6	India	173,00	5
7	Spain	88,00	7	Turkey	37,00	7	Australia	161,00	4
8	Japan	78,00	8	Saudi Arabia	30,00	8	France	139,00	4
9	Malaysia	78,00	9	Ukraine	28,00	9	Indonesia	99,00	3
10	Canada	52,00	10	Hungary	27,00	10	Pakistan	91,00	2
11	Poland	46,00	Total		2 130,00	Total		3 045,00	82
12	Sweden	43,00							
13	South Korea	35,00							
14	New Zealand	31,00							
15	Netherland	30,00							
Total		1 599,00							

R: Rang, TP: Total publications. Source: The Authors

Figure 6: Countries contributing to green finance research



Source: The authors using Power Bing

has demonstrated a favorable and statistically significant effect on the proliferation of green patents by environmentally harmful companies (Wang et al., 2022), particularly those subject to increased financial constraints (Hu et al., 2021), while mitigating the debt financing expenses associated with green businesses (Xu and Li, 2020), and is considered effective in reducing investment in energy-intensive sectors (Liu et al., 2017).

In addition, following the tightening of this regulatory framework, non-compliant companies have faced increased interest rate hikes and greater difficulties in obtaining loans (Fan et al., 2021). While entities that rely heavily on external financing have successfully mitigated water pollution by preventing contamination at source rather than treating it at the end of the production process (Sun et al., 2019).

For financial institutions, this regulatory intervention has the potential to improve their sustainability and foster a more resilient and efficient financial sector (Weber, 2017). Nevertheless, it has been noted that this policy exerts a significant negative effect on the intensity of research and development efforts, as well as on the overall productivity of energy-intensive sectors (Wen et al., 2021), and decreases the performance indicators of companies operating in highly polluting industries (Yao et al., 2021).

4.2. Green Finance Effect

Green finance enables a significant reduction in CO2 emissions into the atmosphere (Zhang et al., 2022); its progression clearly improves the level of green productivity (Jiakui et al., 2023; Lee and Lee, 2022), sustainable development (Cui et al., 2020), and facilitates the advancement of green innovation (Irfan et al., 2022), particularly in emerging economies and countries characterized by a low degree of green finance (Wang et al., 2022). Furthermore, thanks to innovations in financial technology, green finance significantly stimulates green economic growth (Yao et al., 2021), and promotes the development of high-quality economic frameworks (Yang et al., 2021). In the context of China, Wang and Wang (2021) established that green finance exerted a more pronounced impact on the tertiary sector, accelerating its evolution and contributing to the modernization of the industrial framework.

Historically, the manifestation of a premium (or discount) in stock market valuations of companies complying with environmental

regulations was minimal (Cormier et al., 1993). However, in contemporary times, the price premium associated with green corporate bonds, when juxtaposed with conventional bonds, is beginning to exert an economic influence, particularly in China, where it is significantly higher (Wang et al., 2020), whereas internationally, there is no systematically notable premium for green bonds (Tang and Zhang, 2020). A subsequent systematic review of the literature conducted between 2007 and 2019, by (MacAskill et al., 2021), affirms the presence of a green premium in 56% of primary market studies and 70% of secondary market surveys.

4.3. Solutions for Developing Green Finance

The financial challenges associated with the transition to a low-carbon economy require major financial commitments to update theoretical frameworks. Green finance, consisting of a range of products offered by banks including green securities, green investments, climate finance, carbon finance, green insurance, green credit and green infrastructure bonds (Akomea-Frimpong et al., 2022), should occupy a central position to accelerate this transition (Falcone, 2020), and carbon allowances (Tan et al., 2020). The nationally determined contributions set out in the Paris Agreement exerted a considerable and statistically significant influence on the allocation of green bonds to renewable energy projects during 2016 and 2017, following their official submission (Tolliver et al., 2020a).

To address the shortage of financial resources for sustainable development, existing literature presents a range of potential solutions. Taghizadeh and Yoshino (2019) advocate the creation of participatory financing platforms or investment funds dedicated to small green initiatives in rural areas of less developed countries lacking an electricity grid. While (Yoshino et al., 2019) propose redirecting part of the tax benefits generated by supplying green energy to historically disadvantaged areas of these resources, particularly for green energy projects, with the aim of improving their rate of return. In addition, Campiglio (2016) suggests reducing reserve requirements for banking institutions, thus favoring investments in low-carbon sectors, while (D'Orazio and Popoyan, 2019) propose a series of significantly more diversified alternative strategies aimed at making the existing Basel III framework more environmentally sustainable. Furthermore, Huang et al. (2019) affirm the effectiveness of government subsidies as an interventionist strategy to enhance green innovation and environmental preservation. He et al. (2019) argue in favor of encouraging investment in renewable energy sources by small, medium and micro enterprises, recognizing their central role in promoting the green economy.

In addition, Tolliver et al. (2020b) recognize that improved land use practices and better water supply and management systems exert the most pronounced direct influence on the expansion of the green bond market.

Ultimately, Cui et al. (2020) assert that preserving the integrity of the green financial ecosystem can only be achieved through the active engagement and dedication of all relevant stakeholders, including government agencies, financial institutions, businesses and consumers, over a long period of time to achieve the desired results Bai et al. (2022). At the same time, Hong et al. (2020b) appeal to the entire academic financial community, which, with its diverse methodologies and special interests, will undoubtedly make important contributions aimed at improving the applicability and effectiveness of the field.

4.4. Market Connectivity

Green bonds are currently the main source of financing for energy efficiency projects (Zhao et al., 2022), have strong connectivity with Treasury and corporate bonds in both the European Union and the USA (Reboredo et al., 2020), and a significant link between the price of CO2 emission allowances and green bonds (Hammoudeh et al., 2020). In addition, the green bond index offers the best hedging for carbon futures and performs well, even in times of crisis (Jin et al., 2020). The green bond market is interconnected with corporate and treasury bond markets, exhibiting low co-evolution with equity and energy commodity markets (Reboredo, 2018; Reboredo et al., 2020), and significant correlation with fixed income and currency markets (Reboredo and Ugolini, 2020)

4.5. The Benefits of Being Green

The factor of investors' pro-environmental preferences still remains undeterred in supporting the expansion of green bonds (Zerbib, 2019), and returns associated with green funds are proving relatively comparable to those of traditional funds (Climent and Soriano, 2011). Nevertheless, the decision to adopt ecologically sustainable production processes has several consequences; in particular, this development offers significant advantages to new issuers of certified green bonds (Gianfrate and Peri, 2019), as long-term investors generally react favorably to the announcement of such initiatives (Flammer, 2021). Furthermore, share prices tend to react positively to the issuance of green bonds, ultimately benefiting existing shareholders (Tang and Zhang, 2020), in addition to the observation that liquidity risk is minimal for green bonds (Febi et al., 2018)

For banks, integrating sustainability into the financial sector does not harm financial performance, but rather enhances it (Weber, 2017). Nevertheless, a recent survey conducted in the United States (Larcker and Watts, 2020) suggests that US municipal investors show a marked reluctance to forego yields in favor of investments in green securities.

4.6. ESG Disclosure

At the turn of the century, there was an extremely optimistic view that socially responsible investment (SRI) had reached a level of sophistication that enabled it to meet virtually any investment requirement through the construction of portfolios that incorporated the investor's personal values, institutional mission and/or social objectives (Schueth, 2003). Green finance has become a market-driven investment or lending initiative that integrates environmental considerations into risk assessment, or uses environmental incentives to influence business decisions (Soundarrajan and Vivek, 2016, Belgacem 2025).

In Asia, most large companies in Japan, South Korea and China recorded sales growth that coincided with ESG disclosure (Tolliver et al., 2021).

Although ESG ratings are influenced by company size and available resources, which raises the question of whether larger companies with more resources have an advantage in this respect (Drempetic et al., 2020), these ratings significantly promote the quantity and quality of companies' green innovation, and are mediated by the easing of financial constraints and the increase in managers' environmental awareness (Tan and Zhu, 2022)

5. CONCLUSION

This review of 1,578 academic articles relating to green finance, published in Scopus-indexed journals from 1993 to 2023, indicates a significant increase in the frequency of publications associated with green finance since 2015, corresponding with the publication of critical international agreements such as the Sustainable Development Goals and the Paris Agreement. The "Journal of Cleaner Production", "Energy Economics" and "Resources Policy" emerge as the top three journals making a substantial contribution to the field, showing greater relevance compared to their counterparts. In addition, we have identified the most prominent researchers, with notable contributions from author Farhad Taghizadeh-Hesary, based on various evaluation criteria. Key topics include China's Green Credit Guidelines (GCG2012), strategies to promote green finance, the outcomes and impacts of green finance, as well as the interrelationships between green assets and other asset classes, and ESG criteria. At present, China is demonstrating the greatest expertise in this field, accounting for 42% of global green finance production.

Using the methodology derived from innovative scientific protocols and rational analysis for systematic literature reviews as described by Paul et al. (2021), this study provides an invaluable reference for future researchers in the field of green finance. It facilitates the identification of key authors, hot topics, seminal articles, influential countries and journals within a global framework, while encouraging collaborative efforts and helping to identify research gaps that require further investigation in order to expand the frontiers of our understanding of green finance. For policymakers, this article first calls for the mobilisation of all countries that have ratified the Paris Agreement to improve the energy transition, reduce carbon emissions and protect the environment, and then draws attention to African and Arab countries that remain largely absent from the international dialogue on green finance. These countries need to energise the wider community by synergising their initiatives to embrace this paradigm, building on best practices in this area through the development of policy and regulatory frameworks conducive to the promotion of green finance.

Green finance is a fertile field for innovative directions, requiring future scientific research to improve our understanding of the gaps and potential advances in this discipline, which constantly alerts stakeholders to an urgent scenario requiring a global commitment to formulate a coherent, standardized framework.

Therefore, it is imperative to identify the changes in clean energy consumption at the firm level caused by green finance, and to analyse the differential impact of different forms of green finance on the carbon emission intensity of firms, including the impact of green finance policies on the green innovation capacity of small and medium-sized industrial enterprises.

At the macroeconomic level, the contribution of green finance to climate change mitigation in exporting countries can be studied, as well as the impact of green finance on human development and the overall productivity of green resources. In addition, the impact of macroeconomic policies on green finance and the factors that have facilitated the successful implementation of green finance strategies in some countries should be considered, as well as the role of government in greening the operations of small and medium-sized enterprises (SMEs).

China represents a global context that merits further research, particularly with regard to green finance policies; it is advisable to determine which forms of green finance are the most effective catalysts for achieving carbon neutrality in this country, as well as to analyse the ideological attributes of Chinese leaders that facilitate proactive participation in low-carbon innovation, while identifying the potential determinants that delimit the interaction between digitalisation and green innovation.

Green bonds, recognised as a leading instrument in the field of green finance, require in-depth research to elucidate their characteristics and optimise their application, in particular with regard to the correlation between variables such as the valuation of gold and green bonds, the impact of these financial instruments on environmental sustainability and the decarbonisation of the global economy, and the impact of fiscal policy, monetary policy, climate taxation and government initiatives to support green technologies on the dynamics of green bond markets.

6. ACKNOWLEDGMENTS AND FINANCIAL STATEMENT

This work was supported and funded by the Deanship of Scientific Research of Imam Mohammad Ibn Saud Islamic University (IMSIU) (grant number IMSIU-DDRSP2502).

REFERENCES

Akomea-Frimpong, I., Adeabah, D., Ofosu, D., Tenakwah, E.J. (2022), A review of studies on green finance of banks, research gaps and future directions. Journal of Sustainable Finance and Investment, 12(4), 12411264.

Akomea-Frimpong, I., Kukah, A.S., Jin, X., Osei-Kyei, R., Pariafsai, F. (2022), Green finance for green buildings: A systematic review and conceptual foundation. Journal of Cleaner Production, 356, 131869.

Bai, X., Wang, K.T., Tran, T.K., Sadiq, M., Trung, L.M., Khudoykulov, K. (2022), Measuring China's green economic recovery and energy environment sustainability: Econometric analysis of sustainable development goals. Economic Analysis and Policy, 75, 768779.

Belgacem, I. (2025), ESG integration in Saudi insurance: Financial performance, regulatory reform, and stakeholder insights. Sustainability, 17(15), 6821.

Bhatnagar, S., Sharma, D. (2022), Evolution of green finance and its enablers: A bibliometric analysis. Renewable and Sustainable Energy

Reviews, 162, 112405.
Blanco-González-Tejero, C., Ribeiro-Navarrete, B., Cano-Marin, E., McDowell, W.C. (2023), A systematic literature review on the role of artificial intelligence in entrepreneurial activity: International Journal on Semantic Web and Information Systems, 19(1), 116.
Campiglio, E. (2016), Beyond carbon pricing : The role of banking and monetary policy in financing the transition to a low-carbon economy. Ecological Economics, 121, 220230.
Chandran, R., Chandran, M.C.S. (2024), Green finance and sustainability : Mapping research development through bibliometric analysis. Discover Sustainability, 5(1), 339.
Chauhan, N., Gupta, N.R., Stephen, A., Sony, N. (2025), A bibliometric analysis on exploring the emerging trends and influence of green finance in India using bibliometrix. Studies in Systems, Decision and Control, 555, 11771191.
Climate Bonds Initiative. (2023), Market Data. Climate Bonds Initiative. Available from: https://www.climatebonds.net/market/data
Climent, F., Soriano, P. (2011), Green and good? The investment performance of US environmental mutual funds. Journal of Business Ethics, 103(2), 275287.
Cormier, D., Magnan, M., Morard, B. (1993), The impact of corporate pollution on market valuation: Some empirical evidence. Ecological Economics, 8(2), 135155.
Cui, H., Wang, R., Wang, H. (2020), An evolutionary analysis of green finance sustainability based on multi-agent game. Journal of Cleaner Production, 269, 121799.
D'Orazio, P., Popoyan, L. (2019), Fostering green investments and tackling climate-related financial risks: Which role for macroprudential policies? Ecological Economics, 160, 2537.
Dar, B.I., Badwan, N., Kumar, J. (2024), Investigating the role of Fintech innovations and green finance toward sustainable economic development: A bibliometric analysis. International Journal of Islamic and Middle Eastern Finance and Management, 17(6), 11751195.
Debrah, C., Chan, A.P.C., Darko, A. (2022), Green finance gap in green buildings : A scoping review and future research needs. Building and Environment, 207, 108443.
Debrah, C., Darko, A., Chan, A.P.C. (2023), A bibliometric-qualitative literature review of green finance gap and future research directions. Climate and Development, 15(5), 432455.
Drempetic, S., Klein, C., Zwergel, B. (2020), The influence of firm size on the ESG score: Corporate sustainability ratings under review. Journal of Business Ethics, 167(2), 333360.
Ed-Dafali, S., Patel, R., Iqbal, N. (2023), A bibliometric review of dividend policy literature. Research in International Business and Finance, 65, 101987.
Fahim, F., Mahadi, B. (2022), Green supply chain management/green finance : A bibliometric analysis of the last twenty years by using the Scopus database. Environmental Science and Pollution Research International, 29(56), 8471484740.
Falcone, P.M. (2020), Environmental regulation and green investments: The role of green finance. International Journal of Green Economics, 14(2), 159173.
Fan, H., Peng, Y., Wang, H., Xu, Z. (2021), Greening through finance? Journal of Development Economics, 152, 102683.
Febi, W., Schäfer, D., Stephan, A., Sun, C. (2018), The impact of liquidity risk on the yield spread of green bonds. Finance Research Letters, 27, 5359.
Flammer, C. (2021), Corporate green bonds. Journal of Financial Economics, 142(2), 499516.
Gianfrate, G., Peri, M. (2019), The green advantage: Exploring the convenience of issuing green bonds. Journal of Cleaner Production, 219, 127135.
Gilchrist, D., Yu, J., Zhong, R. (2021), The limits of green finance: A survey of literature in the context of green bonds and green loans. Sustainability, 13(2), 478.
Hammoudeh, S., Ajmi, A.N., Mokni, K. (2020), Relationship between green bonds and financial and environmental variables: A novel time-varying causality. Energy Economics, 92, 104941
He, L., Liu, R., Zhong, Z., Wang, D., Xia, Y. (2019), Can green financial development promote renewable energy investment efficiency? A consideration of bank credit. Renewable Energy, 143, 974984.
He, L., Zhang, L., Zhong, Z., Wang, D., Wang, F. (2019), Green credit, renewable energy investment and green economy development: Empirical analysis based on 150 listed companies of China. Journal of Cleaner Production, 208, 363372.
Hong, H., Karolyi, G.A., Scheinkman, J.A. (2020a), Climate finance. Review of Financial Studies, 33(3), 10111023.
Hong, H., Karolyi, G.A., Scheinkman, J.A. (2020b), Climate finance. The Review of Financial Studies, 33(3), 10111023.
Hu, C., Song, M., Guo, F. (2019), Intellectual structure of market orientation : A citation/co-citation analysis. Marketing Intelligence Planning, 37(6), 598616.
Hu, G., Wang, X., Wang, Y. (2021), Can the green credit policy stimulate green innovation in heavily polluting enterprises? Evidence from a quasi-natural experiment in China. Energy Economics, 98, 105134.
Huang, Z., Liao, G., Li, Z. (2019), Loaning scale and government subsidy for promoting green innovation. Technological Forecasting and Social Change, 144, 148156.
Huber, J.C. (2002), A new model that generates Lotka's law. Journal of the American Society for Information Science and Technology, 53(3), 209219.
Irfan, M., Razzaq, A., Sharif, A., Yang, X. (2022), Influence mechanism between green finance and green innovation: Exploring regional policy intervention effects in China. Technological Forecasting and Social Change, 182, 121882.
Jiakui, C., Abbas, J., Najam, H., Liu, J., Abbas, J. (2023), Green technological innovation, green finance, and financial development and their role in green total factor productivity: Empirical insights from China. Journal of Cleaner Production, 382, 135131.
Jin, J., Han, L., Wu, L., Zeng, H. (2020), The hedging effect of green bonds on carbon market risk. International Review of Financial Analysis, 71, 101509.
Khoury, M.E. (2021), État de l'art sur les entreprises libérées: Une étude bibliométrique. La Revue des Sciences de Gestion, 312(6), 2536.
Krastev, B., Krasteva-Hristova, R. (2024), Challenges and trends in green finance in the context of sustainable development-a bibliometric analysis. Journal of Risk and Financial Management, 17(7), 0301.
Kumar, B., Kumar, L., Kumar, A., Kumari, R., Tagar, U., Sassanelli, C. (2024), Green finance in circular economy: A literature review. Environment, Development and Sustainability, 26(7), 1641916459.
Larcker, D.F., Watts, E.M. (2020), Where's the greenium? Journal of Accounting and Economics, 69(2), 101312.
Lee, C.C., Lee, C.C. (2022), How does green finance affect green total factor productivity? Evidence from China. Energy Economics, 107, 105863.
Lim, W.M., Kumar, S., Verma, S., Chaturvedi, R. (2022), Alexa, what do we know about conversational commerce? Insights from a systematic literature review. Psychology and Marketing, 39(6), 11291155.
Lim, W.M., Rasul, T., Kumar, S., Ala, M. (2022), Past, present, and future of customer engagement. Journal of Business Research, 140, 439458.
Linnenluecke, M.K., Chen, X., Ling, X., Smith, T., Zhu, Y. (2017), Research in finance: A review of influential publications and a research agenda. Pacific-Basin Finance Journal, 43, 188199.
Liu, J.Y., Xia, Y., Fan, Y., Lin, S.M., Wu, J. (2017), Assessment of a green credit policy aimed at energy-intensive industries in China based on a financial CGE model. Journal of Cleaner Production, 163, 293302.
Liu, X., Wang, E., Cai, D. (2019), Green credit policy, property rights

and debt financing: Quasi-natural experimental evidence from China. Finance Research Letters, 29, 129135.
Lotka, A.J. (1926), The frequency distribution of scientific productivity. Journal of the Washington Academy of Sciences, 16(12), 317323.
MacAskill, S., Roca, E., Liu, B., Stewart, R.A., Sahin, O. (2021), Is there a green premium in the green bond market? Systematic literature review revealing premium determinants. Journal of Cleaner Production, 280, 124491.
Markoulli, M.P., Lee, C.I.S.G., Byington, E., Felps, W.A. (2017), Mapping human resource management: Reviewing the field and charting future directions. Human Resource Management Review, 27(3), 367396.
Martin, V. (2023), Green finance: Regulation and instruments. Journal of Central Banking Theory and Practice, 12(2), 185209.
Mashari, D.P.S., Zagloel, T.Y.M., Soesilo, T.E.B., Maftuchah, I. (2023), A bibliometric and literature review: Alignment of green finance and carbon trading. Sustainability, 15(10), 7877.
Miyan, M.S., Cheong, C.W.H., Sharif, A., Afshan, S. (2024), Three decades of green finance: The state of the art and way forward. International Journal of Energy Economics and Policy, 14(6), 88105.
Muhmad, S.N., Cheema, S., Mohamad Ariff, A., Nik Him, N.F., Muhmad, S.N. (2024), Systematic literature review and bibliometric analysis of green finance and renewable energy development. Sustainable Development, 32(6), 73427355.
Napitupulu, R.M., Sukmana, R., Rusydiana, A.S., Cahyani, U.E., Wibawa, B.M. (2024), The nexus between halal industry and Islamic green finance: A bibliometric analysis. Journal of Islamic Marketing, 15(10), 25082527.
Nyagadza, B. (2022), Sustainable digital transformation for ambidextrous digital firms: Systematic literature review, meta-analysis and agenda for future research directions. Sustainable Technology and Entrepreneurship, 1(3), 100020.
Paul, J., Lim, W.M., O'Cass, A., Hao, A.W., Bresciani, S. (2021), Scientific procedures and rationales for systematic literature reviews (SPAR-4-SLR). International Journal of Consumer Studies, 45(4), 12695.
Ragazou, K., Passas, I., Garefalakis, A., Dimou, I. (2022), Investigating the research trends on strategic ambidexterity, agility, and open innovation in SMEs: Perceptions from bibliometric analysis. Journal of Open Innovation: Technology, Market, and Complexity, 8(3), 118.
Ravichandran, S., Roy, M. (2022), Green finance : A key to fight with climate change. Indian Journal of Economics and Finance, 2(2), 3438.
Razi, U., Karim, S., Cheong, C.W.H. (2024), From turbulence to resilience : A bibliometric insight into the complex interactions between energy price volatility and green finance. Energy, 304, 131992.
Reboredo, J.C. (2018), Green bond and financial markets: Co-movement, diversification and price spillover effects. Energy Economics, 74, 3850.
Reboredo, J.C., Ugolini, A. (2020), Price connectedness between green bond and financial markets. Economic Modelling, 88, 2538.
Reboredo, J.C., Ugolini, A., Aiube, F.A.L. (2020), Network connectedness of green bonds and asset classes. Energy Economics, 86, 104629.
Ribeiro-Navarrete, S., Piñeiro-Chousa, J., López-Cabarcos, M.Á., Palacios-Marqués, D. (2022), Crowdlending: Mapping the core literature and research frontiers. Review of Managerial Science, 16(8), 23812411.
Schueth, S. (2003), Socially responsible investing in the United States. Journal of Business Ethics, 43(3), 189194.
Setyorini, M., Hakam, D.F. (2025), The impact of green banking activities on environmental performance: A youth-driven perception study in Indonesian financial institutions. Journal of Risk and Financial Management, 18(10), 558.
Sharma, R., Mehta, K., Ahuja, S. (2023), A bibliometric analysis of green finance: Present state and future directions. In: Mehta, R.S., Yu, P., éditors. Advances in Finance, Accounting, and Economics. United States: IGI Global. p135154.
Soundarrajan, P., Vivek, N. (2016), Green finance for sustainable green economic growth in India. Agricultural Economics (Czech Republic), 62(1), 3544.
Sumarta, N., Amidjaya, P., Prabowo, M., Mulyaningsih, T. (2023), Post-issue of sustainability report: Does market valuation improve? International Journal of Economics and Management, 17, 7791.
Sun, J., Wang, F., Yin, H., Zhang, B. (2019), Money talks: The environmental impact of China's green credit policy. Journal of Policy Analysis and Management, 38(3), 653680.
Taghizadeh-Hesary, F., Yoshino, N. (2019), The way to induce private participation in green finance and investment. Finance Research Letters, 31, 98103.
Tan, X., Sirichand, K., Vivian, A., Wang, X. (2020), How connected is the carbon market to energy and financial markets? A systematic analysis of spillovers and dynamics. Energy Economics, 90, 104870.
Tan, Y., Zhu, Z. (2022), The effect of ESG rating events on corporate green innovation in China : The mediating role of financial constraints and managers' environmental awareness. Technology in Society, 68, 101906.
Tang, D.Y., Zhang, Y. (2020), Do shareholders benefit from green bonds? Journal of Corporate Finance, 61, 101427.
Tolliver, C., Fujii, H., Keeley, A.R., Managi, S. (2021), Green innovation and finance in Asia. Asian Economic Policy Review, 16(1), 6787.
Tolliver, C., Keeley, A.R., Managi, S. (2020a), Drivers of green bond market growth: The importance of Nationally Determined Contributions to the Paris Agreement and implications for sustainability. Journal of Cleaner Production, 244, 118643.
Tolliver, C., Keeley, A.R., Managi, S. (2020b), Policy targets behind green bonds for renewable energy : Do climate commitments matter? Technological Forecasting and Social Change, 157, 120051.
Usman, B.M., Johl, S.K., Khan, P.A. (2024), Fusion of green governance for sustainable development and world ecology: A tempting systematic review and bibliometric analysis. Journal of Open Innovation: Technology, Market, and Complexity, 10(3), 100309.
Verma, D., Kalra, R., Baheti, S.S. (2023), Examining the domain of green finance through bibliometric research analysis of 22 years (2000–2022): An analytical retrospective. Vision, 29(2), 244-265.
Vuong, G.T.H., Barky, W., Nguyen, M.H. (2025), Stabilizing the national banking system through digital financial inclusion, creative innovations, and green finance in low-financially developed economies. Journal of Open Innovation: Technology, Market, and Complexity, 11(1), 100434.
Wang, H., Qi, S., Zhou, C., Zhou, J., Huang, X. (2022), Green credit policy, government behavior and green innovation quality of enterprises. Journal of Cleaner Production, 331, 129834.
Wang, J., Chen, X., Li, X., Yu, J., Zhong, R. (2020), The market reaction to green bond issuance : Evidence from China. Pacific Basin Finance Journal, 60, 101294.
Wang, M., Li, X., Wang, S. (2021), Discovering research trends and opportunities of green finance and energy policy: A data-driven scientometric analysis. Energy Policy, 154, 112295.
Wang, Q.J., Wang, H.J., Chang, C.P. (2022), Environmental performance, green finance and green innovation: What's the long-run relationships among variables? Energy Economics, 110, 106004.
Wang, X., Wang, Q. (2021), Research on the impact of green finance on the upgrading of China's regional industrial structure from the perspective of sustainable development. Resources Policy, 74, 102436.
Wang, Y., Zhi, Q. (2016), The role of green finance in environmental protection: Two aspects of market mechanism and policies. Energy Procedia, 104, 311316.
Weber, O. (2017), Corporate sustainability and financial performance of Chinese banks. Sustainability Accounting, Management and Policy

Journal, 8(3), 358385.
Wen, H., Lee, C.C., Zhou, F. (2021), Green credit policy, credit allocation efficiency and upgrade of energy-intensive enterprises. Energy Economics, 94, 105099.
Wu, S., Niu, R. (2024), Development of carbon finance in China based on the hybrid MCDM method. Humanities and Social Sciences Communications, 11(1), 156.
Xu, X., Li, J. (2020), Asymmetric impacts of the policy and development of green credit on the debt financing cost and maturity of different types of enterprises in China. Journal of Cleaner Production, 264, 121574.
Yang, Y., Su, X., Yao, S. (2021), Nexus between green finance, fintech, and high-quality economic development: Empirical evidence from China. Resources Policy, 74, 102445.
Yao, S., Pan, Y., Sensoy, A., Uddin, G.S., Cheng, F. (2021), Green credit policy and firm performance : What we learn from China. Energy Economics, 101, 105415.
Yoshino, N., Taghizadeh-Hesary, F., Nakahigashi, M. (2019), Modelling the social funding and spill-over tax for addressing the green energy financing gap. Economic Modelling, 77, 3441.
Zerbib, O.D. (2019), The effect of pro-environmental preferences on bond prices: Evidence from green bonds. Journal of Banking and Finance, 98, 3960.
Zhang, D., Mohsin, M., Taghizadeh-Hesary, F. (2022), Does green finance counteract the climate change mitigation: Asymmetric effect of renewable energy investment and R&D. Energy Economics, 113, 106183.
Zhang, D., Zhang, Z., Managi, S. (2019), A bibliometric analysis on green finance: Current status, development, and future directions. Finance Research Letters, 29, 425430.
Zhao, L., Chau, K.Y., Tran, T.K., Sadiq, M., Xuyen, N.T.M., Phan, T.T.H. (2022), Enhancing green economic recovery through green bonds financing and energy efficiency investments. Economic Analysis and Policy, 76, 488501.