

An epoch of Green Finance Research: Insights from PRISMA oriented comprehensive systematic literature review

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Abstract

Green Finance has evolved into the foundation of Worlds's sustainability initiatives promoting rapid development in research in the past ten years. This study main purpose is to conduct a systematic literature review on the Green Finance trends. The preferred reporting item for systematic review and meta-analysis is used in the study. The area of the study does not have an integrated analysis which precisely describes research trends and emerging topics in spite an increase in sources. The aim of the analysis is to clarify the way in which green finance has shifted during 2015 to 2025 through integrating and analyzing the research papers. A lack of systematic literature review on green finance, behavior based and area specific empirical research in green finance. The database Scopus were used in PRISMA oriented systematic literature review 172 research paper are included after initial screening and eligibility review. Since 2015, the amount of research has been growing extensively along with policies and structures, green bonds eco-conscious banking, integration of ESG factors and climate -related risk exposure becoming the primary areas of research. Around ten years of research have been assembled in this evaluation which provide an organized analysis of green finance research patterns as well as specific suggestions for future academic and policy-oriented research. In addition, this study tries to find out inclusive thought on green finance trends.

Keywords- PRISMA, Green Finance, Systematic literature review, Sustainable development.

1. Introduction

In recent decades, escalating environmental challenges such as climate change, environmental degradation, and resource scarcity have significantly reshaped global economic and financial priorities. Traditional financial systems, primarily driven by profit maximization, have increasingly been criticized for neglecting environmental externalities and in response, green finance has emerged as a critical approach aimed at directing financial resources toward environmentally sustainable activities, including renewable energy, low-carbon technologies, sustainable infrastructure, and climate change mitigation. Green finance has thus evolved into a key policy and investment tool supporting broader sustainable development objectives.

The growing relevance of green finance has led to a rapid expansion of academic research across multiple disciplines, including finance, economics, environmental studies, and public policy. Scholars have examined diverse aspects such as green bonds, sustainable investments, ESG integration, and the role of financial regulation in promoting environmental outcomes. However, the interdisciplinary and rapidly evolving nature of green finance research has resulted in a fragmented body of literature, characterized by diverse definitions, methodological approaches, and empirical findings. This fragmentation makes it difficult to derive coherent insights and identify clear research trajectories.

To address these challenges, systematic literature reviews (SLRs), particularly those guided by the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework, have gained prominence. PRISMA-oriented reviews provide a transparent and replicable methodology for identifying, screening, and synthesizing relevant studies, enabling researchers to map trends, thematic clusters, and gaps in the literature. For instance, Simamora et al. (2024) highlight that green bonds, ESG-oriented investment strategies, and clean energy financing constitute the core pillars of green finance research, while also noting conceptual inconsistencies that underscore the need for structured frameworks.

Similarly, Shah et al. (2023) demonstrate that green finance instruments, such as green credit policies and green bonds, significantly contribute to carbon emission reduction in emerging economies, though institutional and regulatory constraints remain critical. Emerging trends, including technology-driven green finance, fintech integration, and climate risk assessment, are highlighted in *Emerging New Themes in Green Finance* (2023). Zournatzidou (2025) emphasizes the interdisciplinary nature of green finance, linking it with Greentech innovation and ESG governance, while Sharma et al. (2025) highlight its role in supporting Sustainable Development Goals, noting limitations such as inconsistent reporting and limited impact assessment.

In addition to these studies, recent research has focused on regional and sectoral applications of green finance. For example, Shaharuddin, Mahdzan, Ismail, and Tareq (2025) examine the role of FinTech in enhancing the efficiency and reach of green finance in ASEAN countries, while Rahman et al. (2024) analyze sustainable banking practices through an integrated systematic review. Other studies emphasize regional strategies and instruments, including economic mechanisms for renewable energy deployment in emerging economies (Ramos

Farroñán et al., 2025), green finance in banking practices (Yameen et al., 2024), and applications in the MENA region (Meesaala, Mohammadi, & Varalakshmi, 2024). These studies collectively highlight that green finance's impact depends on institutional frameworks, innovative instruments, and regional contexts.

Despite the growing body of literature, existing PRISMA-based reviews often focus on specific dimensions or regions, leaving a gap in comprehensive syntheses that capture the overall evolution of green finance research. Addressing this gap, the present study undertakes a PRISMA-oriented comprehensive systematic literature review, integrating insights from global, sectoral, and regional studies to map dominant themes, emerging trends, and research gaps. By doing so, this study contributes to a clearer understanding of green finance as an evolving academic field and provides a foundation for future scholarly and policy-oriented research.

2. Objectives

1. To systematically investigate and review on green finance.
2. To examine conceptual, methodology based and subject specific trends.
3. To identify gaps in research and recommendations for future research.

3. Research Methodology

The PRISMA (Preferred reporting items for systematic reviews and meta-analysis) structure is used for this systematic literature review that ensures accuracy and uniformity. The 2020 PRISMA version aims to ensure feasibility over a diverse range of review and exploratory problems like mixed method systematic review which analyze concepts of association and forecasting as well as those who are not primarily seek to incorporate systematic review. (Peter Tugwell, 2021) This study adopts a systematic review methodology to evaluate diverse ideas and trends in green finance research. The academic database Scopus is used to identify relevant research papers between 2015 to 2025.

3.1 Eligibility Criteria

After abstract as well as titles have been reviewed 173 research papers across Scopus database are considered over possible inclusion which include significance regarding green finance publication between 2015 and 2025. Research articles which are not related to the specific topic which are excluded. After implementing these criteria, only that research involved which are directly contributed towards green finance such as green financing instruments, trends in green finance, behavior towards green finance are chosen for inclusion.

The last compilation of selected research paper is conceptually reliable, context- specific and completely in accordance with the objectives of the systematic literature review due to this comprehensive inclusion analysis.

3.2 Data Sources

The Scopus database is used as the main source of information for this comprehensive review of literature with extensive coverage of academic journals within the area of green finance. Best quality academic research discovered during a systematic investigation which used appropriate search terms and Boolean combination of keywords. A total of 173 documents were retrieved during the search process; all of these were exported in the form of CSV to acquire further screening and eligibility check. In addition to its comprehensive field of study detailed scanning criteria and selection of significant publications. The Scopus database provided the platform for the analysis ensuring the accuracy and academic integrity for the research.

3.3 Data collection method

High quality research evidence has been extracted for this systematic literature review by implementing a systematic and reliable method. The Scopus database has been selected for this review as the main data source for ensuring reliability and uniformity in the literature collected as it represents one of the most accurate and broad databases for published research.

3.4 Exploration strategy

The systematic Literature review searching process complied with comprehensive and reliable exploration technique developed to ensure accuracy in methods. As a consequence of one's extensive coverage of academic journals in the domain of finance, ecological finance and sustainability, the Scopus database is being used as the main source of information. For identifying the most relevant research studies as feasible, a search method had been shaped which combining the controlled words with uncontrolled words on the basis of initial analysis and keywords significance. Keywords such as "Green Finance" were selected. Boolean terms such as "Green Finance" and "Eco-friendly finance" were integrated in the exploration approach to further refine the exploration framework.

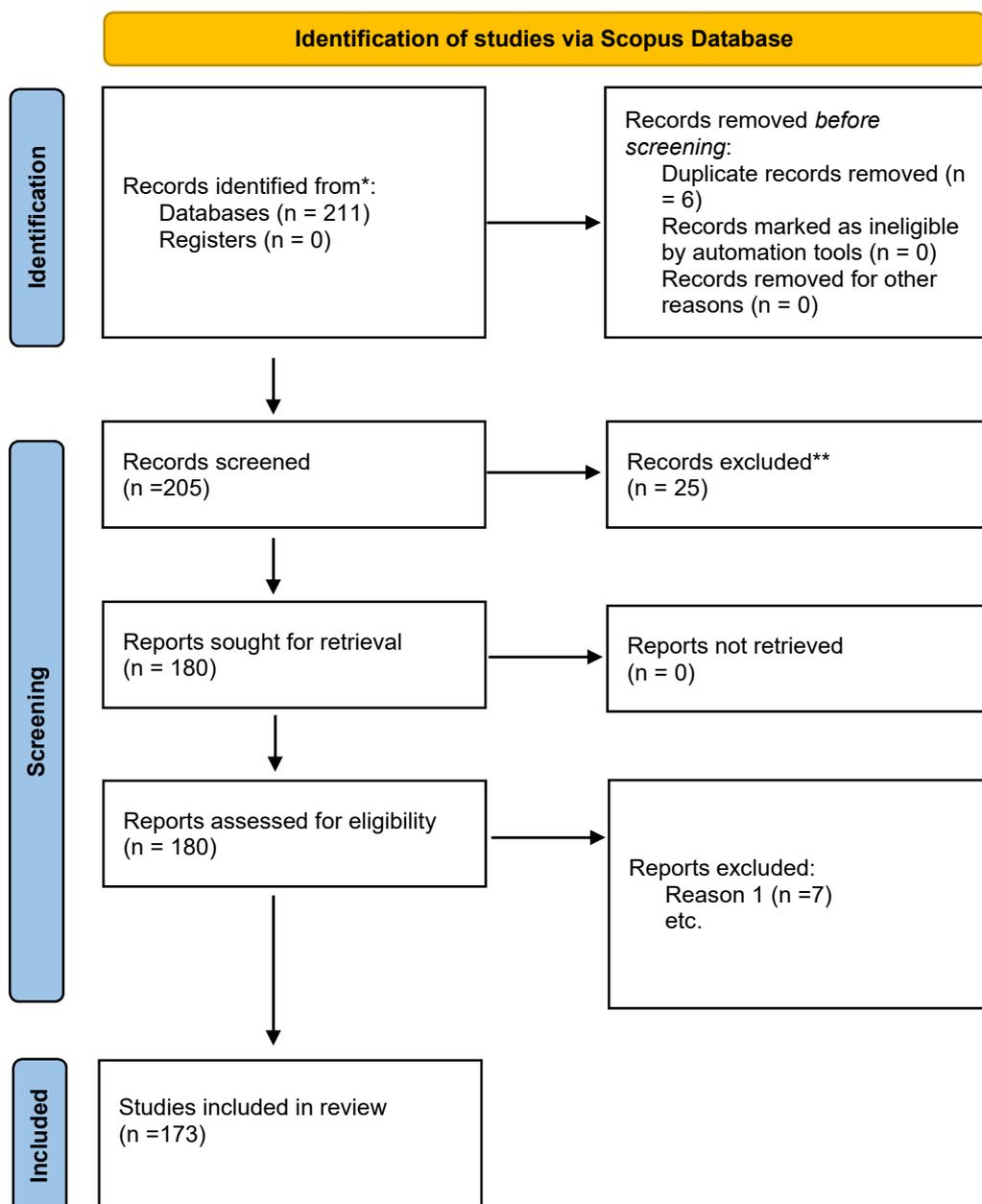
The filter regarding language is (English), document category (Research and Review papers) and publication time frame (2015 to 2025) were used in the study.

3.5 Selection process

The process of selection is carried step by step to determine exclusively those relevant research articles for the purpose of systematic literature review. At first, duplicate documents were removed and the total of 211 documents selected during the initial search. After, the title and summary of every paper were reviewed to find out the reliable academic paper, originally written in English language and connected to the

area of green finance. For the last stage review, only those articles were considered relevant and good quality articles were included. The source of information incorporated in the analysis were reliable, precise and completely related to the research because of basic systematic procedure. In last total of 173 documents are selected during the final search.

PRISMA FLOW DIAGRAM



Source: Page MJ, et al. BMJ 2021;372: n71. doi: 10.1136/bmj. n71

Diagram: 1 shows PRISMA flow of Green Finance Research

Table: 1 shows Systematic Literature Review

S. No	Title of the study	Author	Year	Aim and findings of the study
1	Driving sustainable development in BRICS through green finance and economic growth: A quantile regression perspective	Yu, J.; Long, H.; Shahzad, I.; J.	2026	The study analyzes that green finance and economic growth in the BRICS countries and discover both of them significantly enhance the sustainability of the environment by reducing carbon emission in environmental economic advancement enhancing the consequence of green finance.
2	Greening the economy: Green finance and innovation nexus in developing countries	Alam, M.; Ullah, S.	2025	The research explores the way green finance shapes innovative green technologies in emerging economies and discovers this approach significantly encourages sustainable development with environmental achievements improving this association.
3	Green finance and sustainability in China: Myth or reality?	Anees, A.; Meo, M.S.; Saleem, A.	2025	The study determines the fact that green financing encounters a diverse impact on the carbon emission in Chinese nation and it finds the responsibilities of AI and ICT in addition to the performance of institutions significantly contribute to the green finance.
4	Revolutionizing green finance: The synergistic spillover effects of AI, cloud computing, and blockchain	Ma, W.; Wang, K.-H.; Li, X.	2025	The study reveals how AI, internet based computing and digital currencies influence dynamic risk affects in green finance especially in situation of financial crisis as well as how combining these innovations about green finance may reduce the risk of investments and encourage sustainable development based on environmental policies.
5	Beyond traditional pathways: How green finance drives dual carbon-pollution reduction by heterogeneous innovation and spatial spillovers in Chinese cities	Chen, X.; Wang, G.; Liang, C.	2025	The goal of this research study is to find out about green finance influence and the reduction of carbon dioxide. The findings indicate significantly decreases carbon footprint.

6	Green finance reform and innovation pilot zones: A catalyst for green development efficiency in Chinese cities	Li, Z.; Song, Z.	2025	The study highlights China's green finance reform and development zones can significantly enhance the effectiveness of community sustainable growth along with widespread and geographic uneven consequences due to business transformation financial services and technological advancement.
7	Exploring the research development trajectory and trends of green finance	Tung, P.-H.; Chiu, Y.-H.; Huang, C.-H.	2025	The study depends on bibliometric key direction analysis to depict the evolution of green finance studies, emphasizing significant phases, emerging areas of study and possible avenues onward for promoting green finance progress.
8	Nurturing finance and harvesting intelligence: The green growth of urban industrial intelligence fueled by green finance	Luo, S.; Lu, M.; Ye, J.; Guo, Y.; Hao, Y.	2025	The study evaluates policies related to green finance influence China's Urban industrial intelligent green growth (UIIGG) and indicates both government support and budget expenditures positively impact UIIGG specifically when trading and non-trading methods are integrated.
9	The mechanism of green finance in promoting China's new quality productive forces: Technological innovation and data factor	Zhu, Z.; Hua, Q.; Xu, S.; Lin, W.	2025	This research is focus on the China's innovative quality production forces (NQPFS) which influence by green finance about a particular focus on information-based system and innovations in technology.
10	Reflections on the IPE of green finance	Clapp, J.; Helleiner, E.	2025	This research main aim is to investigate the growth of green finance about the conceptual framework to clarify its background development and distinctive features along with China's past experience and legislative impacts.
11	From Desert to Oasis: Empowering Sahel's Prosperity Through Green Finance	Balogun, F.B.; Dhakir, A.A.; Rozaini, R.	2024	This study main purpose is to explore about green finance influence revenue growth within the Sahel region of Africa (between 2001 -2022) focusing on its influence on equitable growth and influencing regulatory actions for resources, sustainability and investment hazards.

12	The nexus of green finance and renewable energy on CO2 emissions.	El Khoury, R.; Nasrallah, N.; Marashdeh, H.; Atayah, O.F.; Kaliyan, K.	2024	The study main purpose is to determine the influence of sustainable strategies on pollution to the environment in G7 countries.
13	Is green finance a prerequisite for green growth of G-20 economies	Citil, M.	2024	The study discusses to determine how green financing and its associated parameters influence ecological development in G-20 countries. It highlights that green finance significantly encourages equitable economic growth and is supported by taxes on the environment, restrictive laws, energy efficient, technological expansion and academic achievement.
14	Do green banking practices improve the sustainability performance of banking institutions? The mediating role of green finance	Kumar, J.; Rani, G.; Rani, M.; Rani, V.	2024	The study explores about how green financing act as an intermediary among ethical banking procedure and the environmental effectiveness of financial institutions in emerging markets.
15	Framework of green finance to attain sustainable development goals: empirical evidence from the TCCM approach	Annu; Tripathi, R.	2024	The study integrates methods of PRISMA and bibliometric analysis to explore recent advances, discovers new areas of interest and recommend additional areas of study for improving theory and application in field of green finance.
16	Evolution of Green Finance: Mapping Its Role as a Catalyst for Economic Growth and Innovation	Marín-Rodríguez, N.J.; González-Ruíz, J.D.; Botero, S.	2024	This scientific study examines the advancements of green finance analysis that showing multidimensional contributing in energy-efficient technology driven, economical advancement and zero carbon emissions.

17	The Role of Technology in Promoting Green Finance: A Systematic Literature Survey and the Development of a Framework	Saeedi, M.; Ashraf, B.N.	2024	The study reveals how innovative technologies such as artificial intelligence, machine learning, internet of things (Iot) and financial technology are crucial for solving major challenges in green finance through improving risk evaluation, innovative products and legal compliance.
18	The Spatial Analysis of the Role of Green Finance in Carbon Emission Reduction	Xiao, M.; Guo, X.; Chen, G.; Ji, X.; Sun, W.	2024	The study focusses on the indirect and technology driven implications of sustainable on emission levels in Chinese provinces in an effort to measure its structures as well as impact regarding the dual emission goal.
19	Towards data and analytics driven B2B-banking for green finance: A cross-selling use case study	Chang, V.; Hahm, N.; Xu, Q.A.; Vijayakumar, P.; Liu, L.	2024	The study suggests that implementing artificial intelligence along with data insights in business-to-business banking such as green financing, enhances revenue efficiency, productivity and management of risk, model based on random forest offer the superior accuracy in forecasting.
20	Does green finance reform hit urban employment? — Evidence from China's green finance pilot policy	Xin, B.; Zhou, L.; Santibañez-González, E.D.R.	2024	The research determines that the China country innovative green finance pilot program increases local employment job creation yet reduces business level job growth through workforce shift towards more stable enterprises and service-oriented sectors.
21	Green finance insights: evolution of the green bonds market	Gabr, D.H.; ElBannan, M.A.	2024	The study addresses green finance concepts and shows what the rapidly expanding green bond sector is crucial over contributing fund towards energy efficiency encouraging growth in the economy and supporting goals related to climate change mitigation.

22	DIMENSIONS OF SUSTAINABLE DEVELOPMENT IN RATIONALIZING DECISIONS TO GRANT GREEN FINANCE IN SAUDI BANKS	Belouadah, F.; Abdallah, A.S.R.; Mohammed, M.O.M.	2023	The study indicates that Saudis' National banks acceptance of green finance has been encouraged by the economic, social and environmental dimensions of sustainable growth indicating the Gulf cooperation council areas immense potential for green financing.
23	The contribution of green finance to energy security in the construction of new energy system: Empirical research from China	Shi, Y.; Zhao, Y.	2023	The study demonstrated that green finance provides a long-term beneficial influence on the China's energy supply even though its immediate effect is delayed, ultimately contributing to energy resilience through continuous growth.
24	Green finance sources in Iberian listed firms: A socially responsible investment approach	Leitão, J.; Ferreira, J.; Santibañez-González, E.D.R.	2023	The study reveals that issuance of green bonds is mostly influenced by overall market, financial stability, company structure and ethical innovations in technology with creativity acting as an essential indicator of ethical business practices.
25	A Comparative Analysis of Green Finance Awareness in Poland and Romania	Siemionek-Ruskań, M.; Lepczyński, B.; Fanea-Ivanovici, M.	2022	This study analyzes Romania and Poland, which discovers both nations have a significant level of involvement in green financing alongside Poland citizens having more awareness.

Source: Authors own compilation

4. Results

Table 1 summarizes detailed specifications of the 25 research studies among 172 because of the inadequate space. The studies listed above were shortlisted on the basis of the quality of the methodology, significant contributions to the existing literature and connection with research goals. Additionally, document file S1 in the excel spreadsheet provides complete information about each included study with the objective of authenticity.

Following the criteria established by the PRISMA 2020 standard an organized and thorough process of screening is being used to identify feasible research for this study. The database search was used to discover 211 documents at initial screening. 172 research studies among them were incorporated in the final review after duplicate

dataset were removed and determined criteria for both inclusion and exclusion were implemented. The whole selection of studies approach which involves selection, initial screening, investigation and final approval is represented in the PRISMA flow structure. The studies that were included indicate an enormous amount of variability with regard to theme, approaches to methodology and the extent of coverage. Although fewer investigations involved more qualitative or combination of approaches, the vast majority of studies incorporated quantitative methods which include survey centred techniques, mathematical modelling analysis and data from secondary information evaluation. The studies which are included indicate a significant number of disparities with respect to a specific focus, methods adopted and extent of coverage. However, a smaller number of investigations engaged with descriptive or mixed method strategies, the vast majority of studies adopted statistical methods especially survey centred approaches.

Based on the systematic literature review conducted with accordance of PRISMA standards, an in-depth knowledge of green finance is offered by this review of selected research studies. With respect to first objective, research indicates that green finance has transformed directly into an essential instrument for promoting decisions which are sustainable for the environment with instruments such as sustainable bonds, green banking, ESG (Environmental, Social and Governance) investments, climate funding and funding for clean energy.

In respond to the second objective, emerging abstract, methodologies and discipline specific pattern were noticed with strong preference of quantitative and statistical approaches and an overall transition from general environmental sustainability discussion towards more specific fields like policy structures, financial market collaboration, behaviour of investors and management of green finance risk in financial market. With regard to last objective, the analysis highlights significant research gaps which include a deficit of ongoing and impact-oriented studies, the absence of supporting data from nations that are developing as well as the inadequate review regarding the organizational and psychological aspect of green financing. These findings indicate that forthcoming studies should utilize cross country comparison research design, advanced method of statistical analysis and further comprehensive analysis of responses from stakeholders and policy effectiveness.

5. Discussion

This systematic review of literature discovers an ongoing rising research interest in green financing, sustainability focused and ethical banking practices. A significant number of research published between 2015 to 2025 according to the evaluation of 172 Scopus indexed research papers concentrated on analysing how perception and knowledge of finance influence the acceptance of green financing. An important number investigation additionally examines towards organizational contribution

towards promoting green finance framework which encourage transitions to sustainability specifically among banks and lawmakers.

The evolving preference of consumers towards green financing especially in response to risk associated with climate change and ecological obligations indicates a notable shift which has come into focus. A number of studies indicate how crucial societal benefit, assurance and specific environmental beliefs contribute to the acceptance of consumers. Meanwhile, in several domain such as nations that are developing, poor literacy in finance and limited awareness still remain major obstacles. In addition, the examined studies highlight the way in which online platform, system based on artificial intelligence and financial technology-based strategies have become significant in improving and expanding green financial solutions.

6. Conclusion

The research done on green financing has evolved from an integrative environmental sustainability discourse to a strategic and organized domain that aims in particular instruments for investment, organizational structures and market places which promote ecological objectives as this overview thoroughly summarizes. The analysis of abstract, technique and specific topic developments indicates that statistical and empirical analysis is increasing. Renewable energy bonds, investment related to ESG, green banking and climate finance in particular receive greater attention which demonstrates the rapid advancement of environmental influences into decision about finances. The overview additionally reveals notable study, gaps which includes the lack of longitudinal and evaluation of impact, limited representation of emerging and developing countries and lack of behavioural aspects and institutional dynamic behaviour.

7. Practical implication

The information gathered for this review provide several practical implications-

- 1- Using the research findings, Government officials could establish and enhance incentive systems and legal frameworks that encourages the developments and implementation of green financing which may include sustainable bonds, green loans and ESG based investment opportunities.
- 2- Financing institution should include green financing practices directly into their business strategies and risk analysis methods in order to encourage green practices as they were enhancing their financial stability over time.

8. Future Research Trends

- 1- Performing longitudinal research and cross-country empirical comparison to determine the long run sustainability and the financial implications in green financial resources in many organizations and regulatory bodies.
- 2- Psychological and innovative predictive techniques, such as machine learning, data mining and exploratory techniques need to be enhanced for a better understanding of investor, public and organizational purchasing decisions and to determine the performance of green finance practices and dynamics of the market.

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