

A systematic literature review and bibliometric analysis on inclusive green finance with an emphasis on the digital economy and green growth

Avsheen Kaur and Pooja Singh Negi

*Department of Management, Management Education and Research Institute,
New Delhi, India*

Abstract

Purpose – Updating research is important to assess the progression of existing academic studies. The purpose of the study is to comprehend the role of inclusive green finance in terms of financial and economic inclusion in the digital economy and green growth.

Design/methodology/approach – Bibliometric methodology was employed to assess the progression of the current academic study on inclusive green finance. Scholarly articles were taken from Dimensions and PubMed. A VOS Viewer was used to assess 263 publications, looking at co-authorship, co-occurrence of keywords, citations and co-citations of documents and sources that linked.

Findings – The findings reveal that inclusive green finance plays an important role in green economic development. Inclusive green growth and ecological innovation pave the way for achieving sustainable development. There is a strong relationship between digital financial inclusion and green technological innovation. Interestingly, the analysis found that China is a major player focusing on inclusive green finance.

Originality/value – This study is one of the preliminary steps toward understanding the various barriers and challenges associated with inclusive green finance. This paper can contribute to inclusive green finance literature for further research in each field. The paper also highlights various strategies to overcome challenges related to inclusivity in green finance.

Keywords Inclusive green finance, Green economy, Financial, Digital

Paper type Conceptual paper

1. Introduction

Financial and economic inclusion in the digital economy and green growth has gained the attention of scholars in the last few decades, who are facing the challenge of financial and economic inclusion. The viability of green finance and economic inclusion tackles the matter of new economic prospects through the integration of underprivileged social groups and presents fresh prospects for investors to investigate (Niekerk, 2024). Inclusive green finance focuses on various financial services and support to combat the negative impacts of climate change, loss of biodiversity, promoting a low-carbon economy, and enhancing a sustainable green environment while incorporating economic inclusivity (UNSGSA, 2023). There is a lot of global, regional, and national significance in promoting the concept of inclusive green finance. It plays a major role in achieving globally united nations' sustainable development goals (UNSGSA, 2023), like no poverty (SDG 1), affordable and clean energy (SDG 7 and SDG 13), and climate action (Desalegn and Tangl, 2022). The study motivation is associated

© Avsheen Kaur and Pooja Singh Negi. Published in *Journal of Money and Business*. Published by Emerald Publishing Limited. This article is published under the Creative Commons Attribution (CC BY 4.0) licence. Anyone may reproduce, distribute, translate and create derivative works of this article (for both commercial and non-commercial purposes), subject to full attribution to the original publication and authors. The full terms of this licence may be seen at <http://creativecommons.org/licences/by/4.0/legalcode>



with an emerging valuable mechanism, i.e. inclusive green finance that actually maximizes benefits and minimizes the cost to poor communities by implementing inclusive green financing, which effectively mitigates the adverse effects of climate change also (Aribah Aslam and Ghouse, 2023). Further, the UN report mentioned that there is a significant financial gap estimate of about USD 4.1 trillion, which is needed by 2050 for meeting the targets of climate change, biodiversity, and land degradation (UNDP, 2020). The United Nations Environment Program indicates that there is an increased risk of climate change in emerging and developing economies, which is affecting GDP and economic growth, so there is a call for resilient policies for transformation through financial regulators and policymakers (AFI, 2021). The main causes of the green financing gap are inadequate finance levels, poor green project selection and management, the trade-off between risk and return, and a lack of analytical tools and experience in detecting and evaluating green project risks. Along with the initiatives of the government and various financial institutions, private capital also needs to be enhanced to meet microeconomic challenges like risk-return trade-offs and lack of coordination between financial and environmental problems. The focus should be on contributions to green initiatives of various countries and on how households and individual participation should be increased in green finance (Desalegn and Tangl, 2022). To achieve inclusive green finance, financial institutions need to provide vital support by financing green technologies for promoting green products. To promote green investment and to mitigate economic crisis, returns on green investments must be very high to attract investors. Low-income groups primarily face the challenges of climate change, necessitating financial commitment. The financial gap in green investment is increasing at an alarming rate, so there is a need for global attention on the issues of climate change, sustainability, and financial inclusivity (Desalegn and Tangl, 2022).

Several challenges hinder the effectiveness of green finance, including a lack of awareness and motivation regarding the concept, weak policy coordination, inconsistent policies that create uncertainty for investors, and a lack of financial incentives for investors and institutions willing to support climate change mitigation (Ozili, 2022). The importance of promoting private sector investment for nature-based solutions is also emphasized (Caleb Debrah *et al.*, 2022). Many private investors, financial institutions, and other stakeholders avoid taking the risk of contributing to green finance because it is among the underdeveloped concepts. Green technologies are expensive, which makes low return on investment a major risk factor (Abd Hadi Mustaffa, 2021). There must be integration between private users or borrowers, financial institutions, and the government to make inclusivity more possible. To overcome challenges related to inclusive green finance, the first and foremost step is to raise awareness of the importance of green technologies and products. Financing, if supported by the government, will enhance the confidence among private investors to participate in green financing (Niekerk, 2024). Financial literacy needs to be enhanced by providing proper training to bankers, financiers, and practitioners about the operation of green technology and its applicability. Since inclusive green finance focuses on the three facets of sustainable development—financial, ecological, and societal—it is a crucial strategy for achieving sustainable development goals (Mohanty, 2023).

Three primary obstacles to green finance are undoubtedly policy, economic, and knowledge hurdles. Several methods can be used to get around these possible problems. We need clear green policies, a way to evaluate risk, a way to improve credit, low-cost refinancing, and securitization markets for green products and technology. We also need to combine directed finance with incentive finance and public finance with private finance (Kumar and Shobana, 2024). Green financing is more complex to understand as compared to traditional financing, which makes inclusivity more difficult to achieve. There is a challenge to operational capability among financial institutions. Green financing applications should match technical standards. To deal with various barriers to inclusive green finance, some innovative financing techniques, such as financial inclusion and FinTech, must be adopted. It is suggested that policymakers make viable and energy system-friendly policies to grant green

finance to the energy systems (Hongda Liu, 2021). Fintech facilitates access to new funding and investment sources, so it has the potential to mobilize green finance. By merging big data and artificial intelligence to hasten the shift to a green economy, fintech's role in providing green financing is apparent. Fintech has been said to help ensure green finance (Hongda Liu, 2021). The green financial system can be improved through enhanced policies, infrastructures, and institutional arrangements that attract private funds toward the green industry (Hongda Liu, 2021). If we can transform our financial system, it will create many opportunities to enhance green financial system inclusivity and its instruments (Bhatnagar and Sharma, 2022).

The academic importance of inclusive green finance is immeasurable and can't be ignored, as it helps in bridging a gap between financial inclusion and environmental sustainability. It integrates the financial system with sustainable development goals and channels financial services toward green projects and green infrastructure (UNDP, 2020). Inclusive green finance facilitates green innovation by encouraging green technological advancements and promoting environmentally sustainable projects. In this digital economy, there is an urgent need for digitally inclusive green finance. This, in turn, leads to enhanced ecological environments and improved corporate performance (Chen, 2024).

Our study is all about looking at the idea, problems, and importance of inclusive green finance from the perspective of financial inclusion, technology, policy, investment, sustainability, and climate resilience to give a complete and forward-looking research framework. It helps in integrating the prospects of inclusive green finance's global, regional, and academic significance. It expands our understanding of how inclusive green finance mechanisms can enhance climate resilience and economic stability. The paper examines the feasibility of bridging the gap between financial inclusion and green investment for sustainable development. The next section presents the concepts in literature and explains the methods used and data, followed by the study results in section four, while the discussion is in section five. The final section, six, provides implications and limitations of the study.

2. Literature review

2.1 The theoretical foundations

Even the strong economic forces were greatly impacted by human-caused environmental changes. In spite of creating a nationwide plan for addressing climate change within the Paris Agreement, the country is held back from reaching its objectives due to shortcomings in the green financial sector and foundational infrastructure (Freytag, 2020). Prior studies have concentrated on the quantity of green bonds without thoroughly analyzing the market's stagnation. Green finance is essential for financial performance and environmental impact (Mohanty, 2023). The evolution of green finance (GF) is driven by global environmental concerns, leading to academic and policy interest in innovative and sustainable financial systems. A bibliometric analysis explores GF's growth and enablers (Bhatnagar and Sharma, 2022). Recent research has shown that the green financing gap is a significant challenge in addressing global environmental issues. This study systematically analyzes green finance, highlighting research trends and proposing strategies to fill the gap. Regulatory issues are identified as a key challenge, with suggestions for enhancing green finance and attracting private investors (Desalegn and Tangl, 2022). Dongyang Zhang *et al.* (2021) reveals that green economic growth fluctuates due to inconsistent government policies. While public R&D spending positively influences sustainability, its effects vary across countries, particularly those with higher GDP per capita. The study reveals that green energy technology investments help foster a green economy. Increasing green finance access is crucial for emerging economies facing a \$2.5 trillion annual gap. This study in India identifies barriers and strategies for promoting green finance adoption, highlighting policy, economic, and knowledge barriers (Wasan *et al.*, 2021). The Paris Agreement resulted in a rise in green funding, yet obstacles such as financial limitations, stringent regulations, and perceived risks impede global involvement (Abd Hadi Mustafa, 2021).

The role of digital financial inclusion, creative innovations, and green finance enhances banking stability (Giang Thi Huong Vuong *et al.*, 2025). Prudential green policies urgently need to be aligned with the scaling-up of green finance to support a sustainable and resilient green economy and prevent climate and biodiversity crises. The author highlights the integration of two separate areas—green finance and inclusive finance—into a holistic concept of inclusive green finance. The IGF-related policy framework will help various countries to meet the commitments of the Paris Agreement and the sustainable development agenda (Volz, 2022). Ma (2023) also mentioned that digital inclusive finance plays a major role in promoting corporate green technology innovations. Some financing constraints play a mediating role in this relationship, while various internal controls can enhance the process of digital inclusive finance for driving sustainable green corporate innovations.

Green inclusive finance is crucial for promoting sustainable and inclusive development (Xuxia Wang, 2020). Financial inclusion can be promoted through green innovations for a sustainable future, integrating with the global goal of carbon neutrality (Mohsen Brahmi *et al.*, 2023). The study mentioned that to speed up the green transition, we need a regulatory framework that supports it, financing that is easy for everyone to get, and policies that recognize the importance of financial inclusion through innovation. Financial inclusion, green finance, and green growth are driving forces of sustainable development in both low- and high-financial development countries (LFDCs) and high-financial development countries (HFDCs) (Oanh, 2024). In the same manner, Abbas (2024) mentioned that foreign direct investment (FDI), green innovation, and trade openness positively contribute to green economic growth. The study recommends advocating for environmentally constrained financial inclusion to support sustainable development. Xingqi Zhao *et al.* (2024) highlights the role of green finance policies in sustainable development and found that green energy efficiency in innovation pilot zones was driven by green innovation and environmental regulations. The author also recommends tailoring green finance policies for regional ecological needs. Niekerk (2024) shows the problem regarding persistent economic exclusion and resource depletion and focuses on tackling the SDGs issues. Green finance is a beneficial resource for advancing economic inclusivity and a sustainable economy, leading to the achievement of SDGs. Green finance (GF) plays a vital role in addressing climate change and reaching international sustainability objectives. GF is a growing area that spans multiple disciplines and focuses on topics such as the green bond market, green credit, carbon investment, green banking, market stress, and climate finance policies (Caleb Debrah *et al.*, 2022).

Many empirical studies have been conducted to demonstrate the effect of green financing on energy efficiency (Hossain, 2024; Yuchen Li *et al.*, 2024). According to Hossain (2024), the significance of financial digitization and R&D investment promotes green innovation and green finance initiatives. This exploration of dynamic relationships examines 15 developed and emerging economies. The study in 30 Chinese provinces (2011–2021) reveals that inclusive finance significantly enhances green inclusive growth (Yuchen Li *et al.*, 2024). Similarly, Zhimin He (2024) states that financial support is crucial for green development. Digital inclusive finance's impact on green development efficiency through Provincial Digital Financial Inclusion Index data offers insights for sustainable growth in China's provinces. Green bonds encounter difficulties in determining their value and are susceptible to the danger of misleading claims about their environmental benefits. Limitations of the research involve a small number of participants and restricted data on greenwashing within financial transactions (Freytag, 2020). Falcone (2019) highlights the institutional and financial hurdles that prevent the drive for environmentally sustainable innovation specifically for biomass producers. There should be long-term effective policy interventions to mitigate financial risks and encourage green investments. Green credit guarantee schemes (GCGSs) help diminish risks and enhance profits by funneling tax revenue generated from green energy projects back to investors (Taghizadeh-Hesary and Yoshino, 2019). A finance ecosystem approach is necessary for ensuring complementary funding mechanisms for low-carbon investments. Additionally, there is a need for strong

public sector funding that can help sustainably focused businesses, and there is an urgent need for strong entrepreneurial skills development and investment readiness support to drive impactful climate change solutions (Robyn Owen *et al.*, 2018).

Fintech plays a major role in advancing green innovation and supporting the achievement of the Paris Agreement and Sustainable Development Goals (Nassiry, 2018). The study focuses on blockchain applications for sustainable development and, interestingly, innovations in financial instruments such as developing green bonds (Nassiry, 2018). Additionally, the paper explores the implications of these technologies for developing economies in Asia and provides preliminary policy recommendations for harnessing fintech and blockchain to drive low-carbon, climate-resilient investments. The role of central banks in greening financial systems is through allocating resources for a sustainable green economy and curbing financial allocation towards environmentally harmful activities (Volz, 2017). It also looks into how central banks and financial regulators can change investment and credit allocation using different policy tools, such as monetary policies, micro- and macroprudential regulations, climate-related stress testing, disclosure requirements, and different reserve or capital requirements based on how they affect the environment.

2.2 Research gap

There is a wide-ranging gap found after reviewing an extensive review of literature published in the related context and found that there are hardly any studies shepherded on the role of inclusive green finance in terms of financial inclusion in the green growth, which is a challenge to the digital economy (Oanh, 2024). Therefore, an existing study attempted to comprehend the role of inclusive green finance with a systematic literature review and bibliometric analysis, which is a challenge to sustainable development goals (UNSGSA, 2023; Abbas, 2024; Desalegn and Tangl, 2022). There is still a noteworthy research gap in the specific area of economic inclusion, despite the growing interest in digitalization and its impact on green investment. This is due to the fact that there is a financial gap in green investment that is growing constantly. Henceforth, additional research needs to be conducted to understand the global challenges on the issues of climate change, sustainability, and financial inclusivity (Oanh, 2024; Desalegn and Tangl, 2022). In addition, the importance of inclusive green finance is immense for bridging the gap between financial inclusion and environmental sustainability. Attention needs to be shifted to integrating the financial system with sustainable development goals toward a green economy (UNDP, 2020). This type of research can assist the economy in the process of encouraging green technological advancements and promoting environmentally sustainable projects. Inclusive green finance facilitates green innovation by improving ecological environments and corporate performance (Chen, 2024).

3. Methodology

3.1 Database

The study used a bibliometric study to analyze the concept of inclusive green finance and identify various challenges and barriers. The computer-assisted method helps find out the different connections between authors, documents, citations, organizations, and sources in a certain field of study. It accomplishes these goals by examining all publications related to the subject, specifically “inclusive green finance.” After having decided about the publications, a dataset of literature is created to clearly outline steps followed to acquire relevant literature (Öztürk, 2024). You can open the Microsoft CSV file containing the dataset for bibliometric analysis with the downloaded VOS Viewer program. The exported data included title, abstract, source, publication year, volume, issue, authors’ affiliation, number of times cited, and cited references.

3.1.1 Selecting the database. For the current study of inclusive green finance, the authors extracted data from Dimensions and PubMed. Dimensions offer interlinked and in-depth data for analysis. For bibliometric analysis, authors used data extracted from dimensions, as it is partly a free scholarly database that includes a vast collection of research outputs, including journal articles, conference papers, and patents. Dimensions is a viable alternative to Scopus and Web of Science for citation analysis and research evaluation. (Thelwall, 2018). Few scholarly articles are taken from PubMed for systematic literature review to enhance the clarity and depth of analysis for well-supported and meaningful conclusions, rather than pursuing a broad bibliometric analysis. In the second step, a search query is created by using relevant keywords and titles, aiming to reduce or eliminate irrelevant results as much as possible. Various key terms and concepts are used to run a search query, such as “inclusive green finance,” “green finance,” “inclusive green growth,” “sustainable green growth,” “financial inclusion and green innovation,” “green finance: challenges and barriers,” and many more to get diverse results from the dataset in the respective area.

Further, *filtering* was done to limit the scope of research and eliminate papers and articles outside this scope, thereby restricting the aim of the research. For the latest literature review, filtering was done to include scholarly papers covering the publication time span of 2016–2024. Research fields are also refined, including “Commerce, Management, Tourism and Services, Banking, Finance and Investment, Sustainable Cities and Communities, Climate Action, Affordable and Clean Energy, Reduced Inequalities, Good Health and Well-Being, Gender Equality, Peace, Justice and Strong Institutions, Industry, Innovation and Infrastructure, or Decent Work and Economic Growth.” Ensuring transparency and systematicity in this process enhances research credibility. For the data screening and validation, the authors screened the dataset by applying inclusion and exclusion criteria.

Regarding the inclusion criteria, the first step is to include scholarly articles that discuss inclusive green finance or green finance approaches. Secondly, covering the key concepts of green finance, sustainable growth, green financial innovation, green growth, digital finance, inclusive green growth, challenges, and barriers related to green finance was included. Lastly, articles related to the objectives of research cover the publication time span of around the last 10 years for the latest review (Naveen Donthu et al., 2021).

For the exclusion criteria, the dataset excludes duplicate scholarly articles and irrelevant records that are not suitable for the research work. Secondly, titles and abstracts are screened to exclude records that are not relevant to the research. Lastly, records excluded those that lack essential information like a title, relevant keywords, an abstract, citations, etc., or are in a language other than English.

3.1.2 Bibliometric analysis. We have used the open-access software Vos Viewer for bibliometric analysis to facilitate descriptive and exploratory research and provide new research directions. This software is compatible; it helps in constructing and visualizing bibliometric relationships between various research variables. Kirby (2023) conducted a study using a network visualization map. To effectively study bibliometric relationships, co-citation maps of authors or journals and co-occurrence maps of keywords were created because they gave a clearer picture of large amounts of data and were free (Nees Jan van Eck, 2010).

From Figure 1, it's been observed that Inclusive green finance is a growing area of research, and much work has already been done in the field of green finance. A total of 3,252 records have been extracted from the database, “Dimensions”; about 54 articles have been removed on account of duplicity and ineligibility. We incorporate inclusion and exclusion criteria and then screen the articles based on their relevance, as determined by their title and abstract. Approximately 943 articles have been excluded after screening. A total of 2,251 articles have been included for bibliometric analysis.

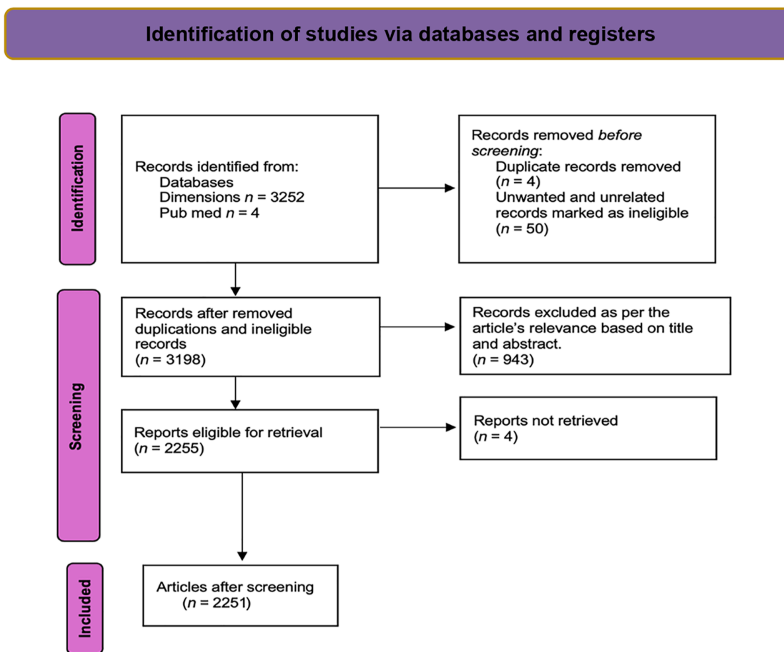


Figure 1. Flow diagram of systematic literature review on inclusive green finance. **Note(s):** This work is licensed under CC BY 4.0. To view a copy of this license, visit: <https://creativecommons.org/licenses/by/4.0/>. **Source(s):** Page *et al.* (2021)

4. Results

4.1 Co-citation analysis

Table 1 highlight the growing academic focus on inclusive green finance. Top-cited studies like Irfan *et al.* (2022) and Razzaq and Yang (2023) examine how green and digital finance promote innovation and green growth under policy frameworks. Several studies, such as Lee and Wang (2022) and Zheng and Li (2022), explore the role of *digital inclusive finance* in reducing carbon intensity and emissions.

Table A1 (Appendix), and Figure 2 present the geographical distribution of publications in the field of “inclusive green finance.” In the field of finance, it is crucial to scrutinize the contributions made by various nations. Table A1 (Appendix) also provides insights into the country-wise contributions to publications in this field. China has the highest contribution, with 520 publications from 2015 to 2024, accounting for 29.73% of the total publications, followed by the United Kingdom (330) and the United States (191). The total number of citations for China’s publications is about 7,344. On the other hand, the United Kingdom has a total of 11,874 citations, which is higher than China’s, followed by the United States (5,857), Italy (2,662), Malaysia (2,295), India (2,618), Australia (3,167), Spain (2,491), Pakistan (2,420), South Africa (1,425), and so on. This analysis shows the global nature of research collaborations, with major hubs in China, the UK, and South Africa leading international partnerships.

4.2 Cluster analysis

Table 2 highlights the cluster analysis of geographical distribution of publications on inclusive green finance, representing regional collaboration patterns. It identifies 5 clusters demonstrating how research efforts are geographically grouped and interconnected, often reflecting regional priorities and partnerships.

Table 1. Top 10 cited documents on inclusive green finance

Rank	Study	Title	Total citations
1st	Irfan <i>et al.</i> (2022)	Influence mechanism between green finance and green innovation: Exploring regional policy intervention effects in China	370
2nd	Zahoor <i>et al.</i> (2021)	Clean energy investment and financial development as determinants of environment and sustainable economic growth: evidence from China	182
3rd	Lee and Wang (2022)	How does digital inclusive finance affect carbon intensity?	133
4th	Razzaq and Yang (2023)	Digital finance and green growth in China: Appraising inclusive digital finance using web crawler technology and big data	105
5th	Nenavath (2022)	Impact of fintech and green finance on environmental quality protection in India: By applying the semi-parametric difference-in-differences (SDID)	84
6th	Ahmad and Satrovic (2022)	Relating fiscal decentralization and financial inclusion to environmental sustainability: Criticality of natural resources	67
7th	Desalegn and Tang (2022)	Enhancing Green Finance for Inclusive Green Growth: A Systematic Approach	63
8th	Akomea-Frimpong <i>et al.</i> (2022)	Green finance for green buildings: A systematic review and conceptual foundation	59
9th	Gao <i>et al.</i> (2022)	The Impact of Digital Inclusive Finance on Agricultural Green Total Factor Productivity: Evidence from China	54
10th	Quatrini (2021)	Challenges and opportunities to scale up sustainable finance after the COVID-19 crisis: Lessons and promising innovations from science and practice	45
11th	Zheng and Li (2022)	The impact of digital financial inclusion on carbon dioxide emissions: Empirical evidence from Chinese provinces data	45

Source(s): The authors

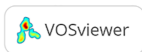
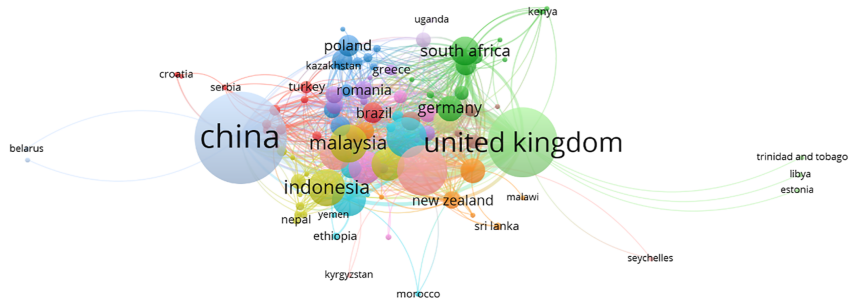


Figure 2. Geographical distribution of publications on inclusive green finance. Source(s): The authors

4.3 Co-authorship of countries

Co-authorship of various countries helps us to know about the countries' collaboration in the field of "inclusive green finance." Figure 2 denotes various clusters; each cluster contains the countries that have undertaken studies in the specific areas or sub-areas of inclusive green finance. In this study, China has a strong relationship and strong similarities with the United Kingdom, United States, Indonesia, Germany, South Africa, Malaysia, Italy, Poland,

Table 2. Cluster analysis of geographical distribution of publications on inclusive green finance

Cluster	Name	Key insights
Blue	China-centric	The region is dominated by China, with strong links to Malaysia, Indonesia, Romania, Poland, and Turkey
Green	United Kingdom-centric	The region is led by the United Kingdom, with strong ties to Germany, South Africa, New Zealand, and Kenya
Yellow	Malaysia-Indonesia	The centers are located around Malaysia and Indonesia, with links to Nepal, Ethiopia, and Sri Lanka
Light green	South Africa-African Collaboration	South Africa is the key player, connected with Uganda, Kenya, Malawi, Libya, and Seychelles
Red/Blue	Eastern Europe and Central Asia Cluster	Includes Romania, Poland, Kazakhstan, Turkey, Serbia, and Croatia

Source(s): The authors

New Zealand, and Romania. China has contributed highly to the field of inclusive green finance with 520 publications. It has connections with 57 countries with a total link strength of 575. Various countries like Sri Lanka, Kenya, Nepal, Uganda, Serbia, Canada, Turkey, Iceland, Morocco, Luxembourg, Greece, Norway, and Kuwait have recently joined the group of countries that publish and work on the area of inclusive green finance.

The closeness of the clusters indicates the volume of publications and the collaborative ties between countries through co-authorship. The network visualization map of co-authorship of countries provides a comprehensive picture of the collaboration of countries in the field of inclusive green finance. It provides a clear view of the contributions of various nations to the growth of inclusivity in the field of green finance.

4.4 Keywords analysis

“Inclusive green finance promotes sustainability and inclusivity in green growth.” Figures 3 and 4 visually illustrate the co-occurrence of the authors’ keywords and all keywords through a network visualization map. Analysis of the author’s keywords indicates the growth and research in the areas of “digital inclusive finance,” “sustainable development,” “green technology innovation,” “environmental regulations,” “agricultural green development,” “inclusive green growth,” “government intervention,” and “ecological innovation.” However,

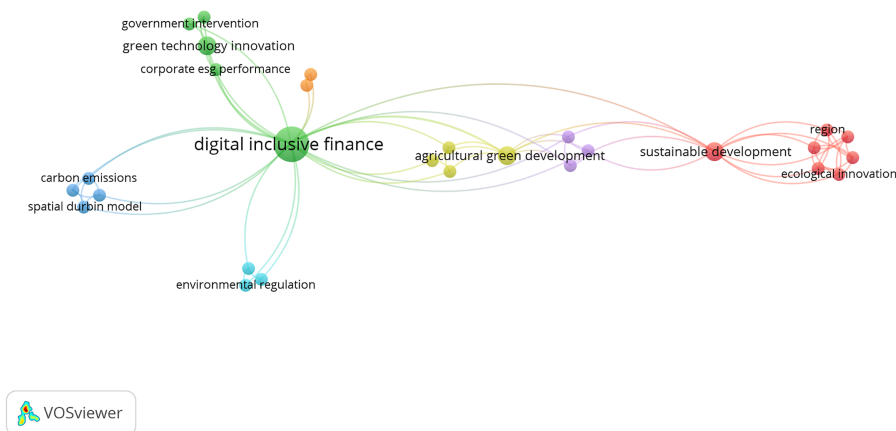


Figure 3. Cluster analysis (keywords) on inclusive green finance. **Source(s):** The authors

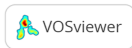
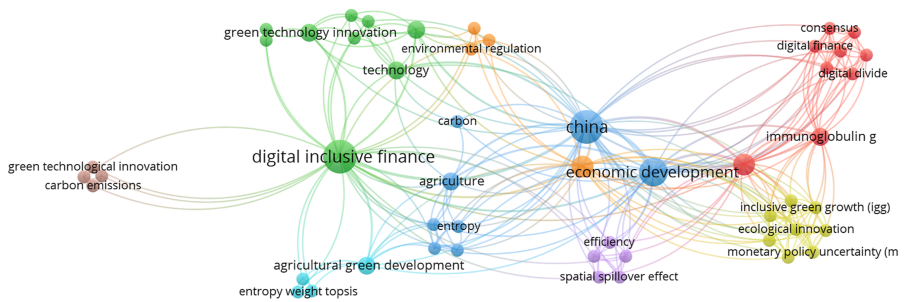


Figure 4. Cluster analysis (keywords and countries) on inclusive green finance. **Source(s):** The authors

the analysis of [Figure 2](#) of co-occurrences of all keywords shows that “digital inclusive finance,” “sustainability,” “economic development,” “green technological innovation,” and “inclusive green growth” were found to have the highest occurrences as compared to “digital divide,” “carbon emissions,” “digital finance,” “monetary policy uncertainty,” “green finance gap,” and low carbon investment.

The green cluster ([Figure 3](#)) depicts that digital inclusive finance and green technology play a major role, followed by environmental impact and regulations. Subsequently, the focus shifts to agriculture, green development, sustainable development, and finance. Clustering in red focuses on ecological innovation and regional development. Governmental intervention is necessary to increase inclusivity in green finance. Initiatives toward the introduction and promotion of various green investment instruments can solve the various issues related to inclusive green finance. Participation and accountability among all green stakeholders can improve sustainability and green growth initiatives. Econometricians and financial economists, along with environmental economists and scientists, need to collaborate to advance the field of green finance and work toward sustainability and inclusivity.

The blue cluster in [Figure 4](#) centers around China and its economic development, whereas the green one depicts inclusive digital finance and green technology. The red cluster mentioned the role of the digital divide and financial inclusion. The article discusses monetary policy, uncertainty, and inclusive green growth under the yellow and brown focus on green technological innovation and carbon emissions.

[Figure 5](#), a trend chart illustrates the publication trend in the area of inclusive green finance and green finance according to the respective dataset. It is clear from the above chart that there is an upward trajectory in the number of publications, particularly from 2020 onward, reflecting growing research interest in the field. The highest number of publications occurred in 2023, reaching 559, followed by a decline to 361 in 2024. The significant increase between 2019 and 2023 suggests increased awareness and academic engagement in green finance. There is a slight decrease in publication trend in 2024; this pattern aligns with typical research trends, where rapid expansion is often followed by stabilization or diversification into new subfields.

According to [Table 3](#), firstly, under the productive journal for inclusive green finance, sustainability, and the International Journal of Environmental Research and Public Health are associated with Switzerland, whereas in the 3rd rank, environmental science and pollution research are associated with Switzerland. Further, the Journal of Risk and Financial Management from Switzerland ranked 4th, and Technological Forecasting and Social Change

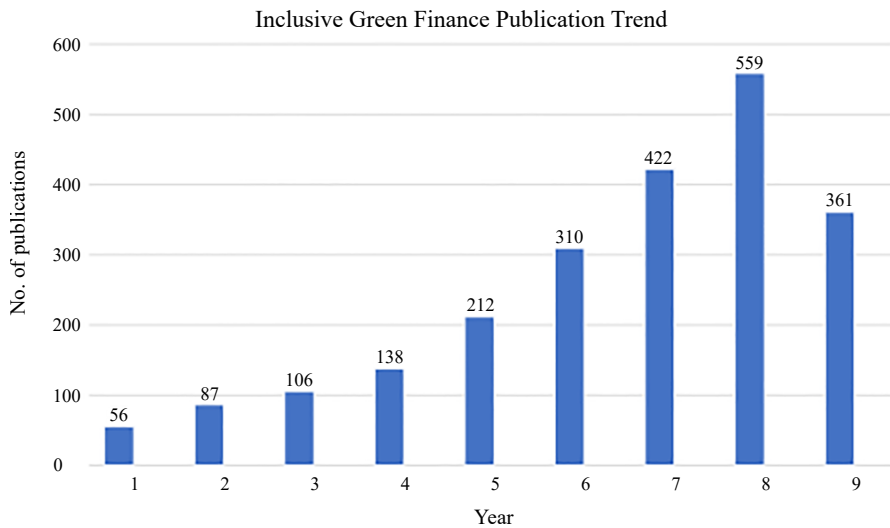


Figure 5. Publication trend of inclusive green finance. **Source(s):** Graph by authors

Table 3. Top 10 productive journals of inclusive green finance research

Rank	Source	Country	TP	TP%	TC	Total link strength
1	<i>Sustainability</i>	Switzerland	320	52.89	5,274	197
2	<i>International Journal of Environmental Research and Public Health</i>	Switzerland	73	12.06	1,402	31
3	<i>Environmental Science and Pollution Research</i>	Germany	70	11.57	1,639	58
4	<i>Journal of Risk and Financial Management</i>	Switzerland	32	5.289	589	38
5	<i>Technological Forecasting and Social Change</i>	United States	28	4.62	2,453	17
6	<i>Journal of Innovation and Knowledge</i>	Netherlands	22	3.63	502	30
7	<i>Business Strategy and the Environment</i>	United Kingdom	17	2.80	332	8
8	<i>Journal of Environmental Management</i>	United States	16	2.64	654	11
9	<i>Green Finance</i>	China	15	2.48	197	11
10	<i>Financial Innovation</i>	Germany	14	2.31	520	14

Source(s): The authors

of the US ranked 5th. The Journal of Innovation and Knowledge of the Netherlands and Business Strategy and Environment of the UK ranked 6th and 7th, respectively. The Journal of Environmental Management of the US, Green Finance of China, and Business Strategy and the Environment ranked 8th, 9th, and 10th.

The Figure 6 represents the network visualization map of the scholarly landscape of research related to inclusive green finance. Through analysis it is revealed that journal of sustainability positioned centrally with a significantly larger node, indicating it is a pivotal source frequently cited alongside others in this domain. Its strong linkages with journals like the *Journal of Risk and Financial Management* and *Environmental Science and pollution* indicate a multidisciplinary convergence of environmental, financial, and policy-focused research. Diverse knowledge bases across sustainability, innovation systems and financial policy suggests growing academic integration and the evolving maturity of this research area.

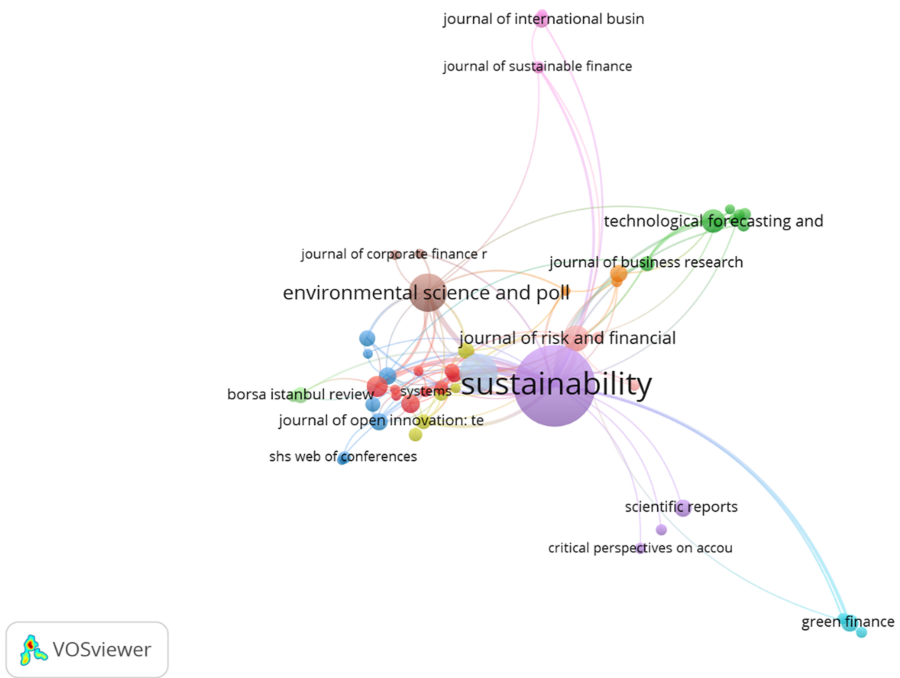


Figure 6. Network visualization map of citation-wise sources. **Source(s):** The authors

Table 3 displays the top 10 prolific journals on “inclusive green finance.” An analysis indicates that the journal “Sustainability” has the highest number of publications, approximately 320, along with the highest number of citations, 5,274 times. According to the country-wise analysis, Switzerland has the highest number of sources, with about 3 productive journals, followed by the United States and Germany, each with 2 sources out of 10. This analysis indicates that inclusive green finance is a new approach with significant future potential. As per the overall analysis, “Sustainability” is the most connected journal of inclusive green finance research with 197 total strength links. It is noted that “The Journal of Environmental Management,” “Green Finance,” and “Financial Innovation” have fewer publications.

4.5 Content analysis

Content analysis is a method used for analyzing the content of various studies and literature reviews. It enhances the understanding of data and strengthens the research design. It is a rigorous qualitative and quantitative contextual analysis. (Harwood and Garry, 2003). It is considered to be the most common method for evaluating existing knowledge and identifying an intellectual framework (Ajai Gaur and Kumar, 2018).

The Table 4 and Table A2 (Appendix) exhibits content analysis of scholarly contributions focusing on finance and sustainability with emphasis on green finance, digital finance and financial inclusion. The study by Irfan *et al.* (2022), with 370 citations, stands out for its exploration of regional policy intervention effects on green innovation in China. Similarly, Zahoor *et al.* (2021) highlight the role of clean energy investment and financial development in fostering sustainable economic growth. Digital finance’s role is further examined by Lee and Wang (2022), who investigate its impact on carbon intensity, and Razzaq and Yang (2023), who focus on digital finance’s contribution to green growth. The analysis highlights the

Table 4. Content analysis

Theme	Study	Title	Total citations
Green finance and green innovation	Irfan <i>et al.</i> (2022)	Influence mechanism between green finance and green innovation: Exploring regional policy intervention effects in China	370
Financial development and environment and sustainable economic growth	Zahoor <i>et al.</i> (2021)	Clean energy investment and financial development as determinants of environment and sustainable economic growth: evidence from China	182
Digital inclusive finance	Lee and Wang (2022)	How does digital inclusive finance affect carbon intensity?	133
Digital finance and green growth	Razzaq and Yang (2023)	Digital finance and green growth in China: Appraising inclusive digital finance using web crawler technology and big data	105
Fintech and green finance on environmental quality protection	Nenavath (2022)	Impact of fintech and green finance on environmental quality protection in India: By applying the semi-parametric difference-in-differences (SDID)	84
Financial inclusion and environmental sustainability	Ahmad and Satrovic (2022)	Relating fiscal decentralization and financial inclusion to environmental sustainability: Criticality of natural resources	67
Green Finance for Inclusive Green Growth	Desalegn and Tangl (2022)	Enhancing Green Finance for Inclusive Green Growth: A Systematic Approach	63
Green finance	Akomea-Frimpong <i>et al.</i> (2022)	Green finance for green buildings: A systematic review and conceptual foundation	59
Digital Inclusive Finance on Agricultural Green Total Factor Productivity	Gao <i>et al.</i> (2022)	The Impact of Digital Inclusive Finance on Agricultural Green Total Factor Productivity: Evidence from China	54
Sustainable finance after the COVID-19 crisis	Quatrini (2021)	Challenges and opportunities to scale up sustainable finance after the COVID-19 crisis: Lessons and promising innovations from science and practice	45
Digital financial inclusion on carbon dioxide emissions	Zheng and Li (2022)	The impact of digital financial inclusion on carbon dioxide emissions: Empirical evidence from Chinese provinces data	45

Source(s): The authors

growing scholarly emphasis on integration of financial innovation with sustainability, indicating the major roles of inclusive green growth and the digital economy in driving environmentally responsible and equitable economic development.

5. Discussion

The present study has mainly focused on contributing to inclusive green finance with an emphasis on the digital economy and green growth. According to the analysis, China has contributed highly to enhancing inclusivity in green finance ([Gao *et al.*, 2022](#); [Zheng and Li, 2022](#); [Zahoor *et al.*, 2021](#)). There is a noticeable growing trend of an increasing number of publications and documents in the study of inclusive green finance ([Quatrini, 2021](#)). As shown in [Figure 1](#), many countries are collaborating with other groups to promote inclusivity in green finance ([Aribah Aslam and Ghouse, 2023](#)). Inclusivity in green finance can be achieved when all developed and developing countries increase their initiative in the

field of green finance (Desalegn and Tangl, 2022). To overcome challenges in this field, several strategies can be adopted, such as “Financially excluded households should get easy financing to invest in green technologies.” “Policies should prioritize inclusion as a key goal.” “Emphasize the significance of embracing green products and green technologies (Desalegn and Tangl, 2022).” “Enhancement of green credit guarantee schemes,” “Governmental and political support is necessary to enhance initiatives towards green investment (Zhang, 2022).” “Increased investment in green projects,” “Addressing knowledge gaps and market challenges,” “More initiative towards research and development of sustainable green finance,” “Joint partnership of private and public institutions for promoting investments in green technologies,” “Promotion of green investment banks primarily focusing on green infrastructure,” “Development of bond market,” “Reduction in transaction cost of green investment,” and “We must proactively develop diverse measures to track the progress and enhance inclusivity in green finance effectively.”

6. Conclusion, implications and limitations

Inclusive Green finance is considered to be the most trending and relatively new approach in the field of environmental governance. The main aim of this study is to analyze the overall holistic overview of the contribution, challenges, and strategies toward enhancing inclusivity in green finance. The present study focused on recognizing the influence of authors and countries in the respective domain, analyzed the most commonly used keywords in this research area, and conducted bibliometric and network analyses.

The existing study suggests implications for policymakers, professionals, and different government agencies. The findings of this study show a noticeable increasing trend of publications of inclusive green finance that will motivate the government to enhance initiatives towards green investment. The joint partnership of different banking and non-financial institutions will promote professionals to engage in investments in green technologies. The study mentioned the significance of green products and green technologies, which motivate the policymakers to channel inclusivity in green finance.

The empirical limitations of this study can be used for future research. This research has focused on only one database, i.e. Dimensions; more databases, such as Google Scholar and Lens, should be used for bibliometric analysis. The scope of this paper was limited to contributions, challenges, and general strategies, but more areas, such as specific strategies to enhance inclusivity in green finance, the role of digital inclusive finance in sustainable green economic development, inclusive green growth, etc., should be focused on in terms of direction for the future.

References

- Abbas, D.N., Dastgeer, G., Nasreen, S., Kousar, S., Riaz, U., Arsh, S. and Imran, M. (2024), “How financial inclusion and green innovation promote green economic growth in developing countries”, *Sustainability*, Vol. 16 No. 15, p. 6430, doi: [10.3390/su16156430](https://doi.org/10.3390/su16156430).
- Abd Hadi Mustafa, N.A. (2021), “A systematic literature review on barriers to green financing participation worldwide”, *Global Business and Management Research: International Journal*, Vol. 13 No. 4, pp. 66-79.
- AFI (2021), *Integrating Inclusive Green Finance Policies into National Financial Inclusion Strategies*, Alliance for Financial Inclusion (AFI), Kuala Lumpur.
- Ahmad, M. and Satrovic, E. (2022), “Relating fiscal decentralization and financial inclusion to environmental sustainability: criticality of natural resources”, *Journal of Environmental Management*, Vol. 325, 116633, doi: [10.1016/j.jenvman.2022.116633](https://doi.org/10.1016/j.jenvman.2022.116633).

- Ajai Gaur, M.K. and Kumar, M. (2018), "A systematic approach to conducting review studies: an assessment of content analysis in 25 years of IB research", *Journal of World Business*, Vol. 53 No. 2, pp. 280-289, doi: [10.1016/j.jwb.2017.11.003](https://doi.org/10.1016/j.jwb.2017.11.003).
- Akomea-Frimpong, I., Kukah, A.S., Jin, X., Osei-Kyei, R. and Pariafsai, F. (2022), "Green finance for green buildings: a systematic review and conceptual foundation", *Journal of Cleaner Production*, Vol. 356, 131869, doi: [10.1016/j.jclepro.2022.131869](https://doi.org/10.1016/j.jclepro.2022.131869).
- Aribah Aslam, G.G. and Ghouse, G. (2023), "Targeting the new sustainable inclusive green growth: a review", *Cleaner and Responsible Consumption*, Vol. 11, 100140, doi: [10.1016/j.clrc.2023.100140](https://doi.org/10.1016/j.clrc.2023.100140).
- Bhatnagar, S.D. and Sharma, D. (2022), "Evolution of green finance and its enablers: a bibliometric analysis", *Renewable and Sustainable Energy Reviews*, Vol. 162, 112405, doi: [10.1016/j.rser.2022.112405](https://doi.org/10.1016/j.rser.2022.112405).
- Caleb Debrah, A.D., Darko, A. and Chan, A.P.C. (2022), "A bibliometric-qualitative literature review of green finance gap and future research directions", *Climate and Development*, Vol. 15 No. 5, pp. 432-455, doi: [10.1080/17565529.2022.2095331](https://doi.org/10.1080/17565529.2022.2095331).
- Cheng Chen, M.F., Fan, M. and Fan, Y. (2024), "The role of digital inclusive finance in green innovation", *PLoS One*, Vol. 19 No. 12, e0315598, doi: [10.1371/journal.pone.0315598](https://doi.org/10.1371/journal.pone.0315598).
- Desalegn, G. and Tangl, A. (2022), "Enhancing green finance for inclusive green growth: a systematic approach", *Sustainability*, Vol. 14 No. 12, p. 7416, doi: [10.3390/su14127416](https://doi.org/10.3390/su14127416).
- Dongyang Zhang, M.M.-H., Mohsin, M., Rasheed, A.K., Chang, Y. and Taghizadeh-Hesary, F. (2021), "Public spending and green economic growth in BRI region: mediating role of green finance", *Energy Policy*, Vol. 153, 112256, doi: [10.1016/j.enpol.2021.112256](https://doi.org/10.1016/j.enpol.2021.112256).
- Freytag, J. (2020), "Challenges for green finance in India: an analysis of deficiencies in India green financial market".
- Gao, Q., Cheng, C., Sun, G. and Li, J. (2022), "The impact of digital inclusive finance on agricultural green total factor productivity: evidence from China", *Frontiers in Ecology and Evolution*, Vol. 10, doi: [10.3389/fevo.2022.905644](https://doi.org/10.3389/fevo.2022.905644).
- Giang Thi Huong Vuong, W.B., Barky, W. and 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*, Vol. 11 No. 1, 100434, doi: [10.1016/j.joitmc.2024.100434](https://doi.org/10.1016/j.joitmc.2024.100434).
- Harwood, T.G. and Garry, T. (2003), "An overview of content analysis", *The Marketing Review*, Vol. 3 No. 4, pp. 479-498, doi: [10.1362/146934703771910080](https://doi.org/10.1362/146934703771910080).
- Hongda Liu, P.Y. (2021), "Impact of Green financing, FinTech, and financial inclusion on energy efficiency", *Environmental Science and Pollution Research*, Vol. 29 No. 13, pp. 18955-18966, doi: [10.1007/s11356-021-16949-x](https://doi.org/10.1007/s11356-021-16949-x).
- Hossain, R.S., Rao, A., Sharma, G.D., Dev, D. and Kharbanda, A. (2024), "Empowering energy transition: green innovation, digital finance, and the path to sustainable prosperity through green finance initiatives", *Energy Economics*, Vol. 136, 107736, doi: [10.1016/j.eneco.2024.107736](https://doi.org/10.1016/j.eneco.2024.107736).
- Irfan, M., Razaq, A., Sharif, A. and Yang, X. (2022), "Influence mechanism between green finance and green innovation: exploring regional policy intervention effects in China", *Technological Forecasting and Social Change*, Vol. 182, 121882, doi: [10.1016/j.techfore.2022.121882](https://doi.org/10.1016/j.techfore.2022.121882).
- Kirby, A. (2023), *Exploratory Bibliometrics: Using VOSviewer as a Preliminary Research Tool*.
- Kumar, J.S. and Shobana, D. (2024), "A study on challenges and opportunities in implementing green finance in India", *The Academic: International Journal of Multidisciplinary Research*, Vol. 2 No. 10, pp. 14-28.
- Lee, C.-C. and Wang, F. (2022), "How does digital inclusive finance affect carbon intensity?", *Economic Analysis and Policy*, Vol. 75, pp. 174-190, doi: [10.1016/j.eap.2022.05.010](https://doi.org/10.1016/j.eap.2022.05.010).
- Ma, K. (2023), "Digital inclusive finance and corporate green technology innovation", *Finance Research Letters*, Vol. 55, 104015, doi: [10.1016/j.frl.2023.104015](https://doi.org/10.1016/j.frl.2023.104015).

- Mohanty, S., Nanda, S.S., Soubhari, T., S, V.N., Biswal, S. and Patnaik, S. (2023), "Emerging research trends in green finance: a bibliometric overview", *Risk and financial management*, Vol. 16 No. 2, p. 108, doi: [10.3390/jrfm16020108](https://doi.org/10.3390/jrfm16020108).
- Mohsen Brahmi, L.E., Esposito, L., Parziale, A., Dhayal, K.S., Agrawal, S., Giri, A.K. and Loan, N.T. (2023), "The role of greener innovations in promoting financial inclusion to achieve carbon neutrality: an integrative review", *Economies*, Vol. 11 No. 7, p. 194, doi: [10.3390/economies11070194](https://doi.org/10.3390/economies11070194).
- Nassiry, D. (2018), *The Role of Fintech in Unlocking Green Finance: Policy Insights for Developing Countries*, Asian Development Bank Institute (ADB), Tokyo.
- Naveen Donthu, S.K., Kumar, S., Mukherjee, D., Pandey, N. and Lim, W.M. (2021), "How to conduct a bibliometric analysis: an overview and guidelines", *Journal of Business Research*, Vol. 133, pp. 285-296, doi: [10.1016/j.jbusres.2021.04.070](https://doi.org/10.1016/j.jbusres.2021.04.070).
- Nees Jan van Eck, L.W. (2010), "Software survey: VOSviewer, a computer program for bibliometric mapping", *Scientometrics*, Vol. 84 No. 2, pp. 523-538.
- Nenavath, S. (2022), "Impact of fintech and green finance on environmental quality protection in India: by applying the semi-parametric difference-in-differences (SDID)", *Renewable Energy*, Vol. 193, pp. 913-919, doi: [10.1016/j.renene.2022.05.020](https://doi.org/10.1016/j.renene.2022.05.020).
- Niekerk, A.J. (2024), "Economic inclusion: green finance and the SDGs", *Sustainability*, Vol. 16 No. 3, p. 1128, doi: [10.3390/su16031128](https://doi.org/10.3390/su16031128).
- Oanh, T.T. (2024), "Sustainable development: driving force from the relationship between finance inclusion, green finance and green growth", *Sustainable Development*, Vol. 32 No. 3, pp. 2811-2829, doi: [10.1002/sd.2808](https://doi.org/10.1002/sd.2808).
- Oğuzhan Öztürk, R.K., Kocaman, R. and Kanbach, D.K. (2024), "How to design bibliometric research: an overview and a framework proposal", *Review of Managerial Science*, Vol. 18 No. 11, pp. 3333-3361, doi: [10.1007/s11846-024-00738-0](https://doi.org/10.1007/s11846-024-00738-0).
- Ozili, P.K. (2022), "Green finance research around the world: a review of literature", *International Journal of Green Economics*, Vol. 16 No. 1, p. 1, doi: [10.1504/ijge.2022.10048432](https://doi.org/10.1504/ijge.2022.10048432).
- Page, M.J., McKenzie, J.E., Bossuyt, P.M., Boutron, I., Hoffmann, T.C., Mulrow, C.D., Shamseer, L., Tetzlaff, J.M., Akl, E.A., Brennan, S.E., Chou, R., Glanville, J., Grimshaw, J.M., Hróbjartsson, A., Lalu, M.M., Li, T., Loder, E.W., Mayo-Wilson, E., McDonald, S., McGuinness, L.A., Stewart, L.A., Thomas, J., Tricco, A.C., Welch, V.A., Whiting, P. and Moher, D. (2021), "The PRISMA 2020 statement: an updated guideline for reporting systematic reviews", *BMJ*, Vol. 372, n71, doi: [10.1136/bmj.n71](https://doi.org/10.1136/bmj.n71).
- Pasquale Marcello Falcone, A. E. and Sica, E. (2019), "Assessing the opportunities and challenges of green finance in Italy: an analysis of the biomass production sector", *Sustainability*, Vol. 11 No. 2, p. 517, doi: [10.3390/su11020517](https://doi.org/10.3390/su11020517).
- Quatrini, S. (2021), "Challenges and opportunities to scale up sustainable finance after the COVID-19 crisis: lessons and promising innovations from science and practice", *Ecosystem Services*, Vol. 48, 101240, doi: [10.1016/j.ecoser.2020.101240](https://doi.org/10.1016/j.ecoser.2020.101240).
- Razzaq, A. and Yang, X. (2023), "Digital finance and green growth in China: appraising inclusive digital finance using web crawler technology and big data", *Technological Forecasting and Social Change*, Vol. 188, 122262, doi: [10.1016/j.techfore.2022.122262](https://doi.org/10.1016/j.techfore.2022.122262).
- Robyn Owen, G.B., Brennan, G. and Lyon, F. (2018), "Enabling investment for the transition to a low carbon economy: government policy to finance early stage green innovation", *Current Opinion in Environmental Sustainability*, Vol. 31, pp. 137-145, doi: [10.1016/j.cosust.2018.03.004](https://doi.org/10.1016/j.cosust.2018.03.004).
- Taghizadeh-Hesary, N.Y. and Yoshino, N. (2019), "The way to induce private participation in green finance and investment".
- Thelwall, M. (2018), "Dimensions: a competitor to Scopus and the Web of Science?", *Journal of Informetrics*, Vol. 12 No. 2, pp. 430-435, doi: [10.1016/j.joi.2018.03.006](https://doi.org/10.1016/j.joi.2018.03.006).
- UNDP, U.N. (2020), "The role of inclusive green finance in achieving the SDGs", available at: <https://www.undp.org/>

- UNSGSA, O.O.G. (2023), “Inclusive green finance: a policy and advocacy approach”.
- Volz, U. (2017), “On the role of central banks in enhancing green finance”, *UN Environment Inquiry: Design of a Sustainable Financial System*, pp. 1-26.
- Volz, P.K. (2022), “Inclusive green finance”, in Schoenmaker, D.A. (Ed.), *Scaling up Sustainable Finance and Investment in the Global South*, SOAS University of London, London, pp. 149-160.
- Wasan, P., Kumar, A. and Luthra, S. (2021), “Green finance barriers and solution strategies for emerging economies: the case of India”, *IEEE Transactions on Engineering Management*, Vol. 71, pp. 414-425, doi: [10.1109/tem.2021.3123185](https://doi.org/10.1109/tem.2021.3123185).
- Xingqi Zhao, B.Z., Zeng, B., Zhao, X., Zeng, S. and Jiang, S. (2024), “Impact of green finance on green energy efficiency: a pathway to sustainable development in China”, *Journal of Cleaner Production*, Vol. 450, 141943, doi: [10.1016/j.jclepro.2024.141943](https://doi.org/10.1016/j.jclepro.2024.141943).
- Xuxia Wang, S.W. (2020), “The impact of green finance on inclusive economic growth—empirical analysis based on spatial panel”, *Journal of Business and Management*, Vol. 8 No. 5, pp. 2093-2112.
- Yuchen Li, G.J., Jin, G., Cui, Z., Lv, B. and Xu, Z. (2024), “Does digital inclusive finance promote regional green inclusive growth?”, *Finance Research Letters*, Vol. 62, 105163, doi: [10.1016/j.frl.2024.105163](https://doi.org/10.1016/j.frl.2024.105163).
- Zahoor, Z., Khan, I. and Hou, F. (2021), “Clean energy investment and financial development as determinants of environment and sustainable economic growth: evidence from China”, *Environmental Science and Pollution Research*, Vol. 29 No. 11, pp. 16006-16016, doi: [10.1007/s11356-021-16832-9](https://doi.org/10.1007/s11356-021-16832-9).
- Zhang, M.T.-H. (2022), “Does green finance counteract the climate change mitigation: asymmetric effect of renewable energy investment and R&D”, *Energy Economics*, Vol. 113.
- Zheng, H. and Li, X. (2022), “The impact of digital financial inclusion on carbon dioxide emissions: empirical evidence from Chinese provinces data”, *Energy Reports*, Vol. 8, pp. 9431-9440, doi: [10.1016/j.egy.2022.07.050](https://doi.org/10.1016/j.egy.2022.07.050).
- Zhimin He, H.C. (2024), “The impact of digital inclusive finance on provincial green development efficiency, empirical evidence from China”.

Further reading

- Roberto Moro-Visconti, S.C., Cruz Rambaud, S. and López Pascual, J. (2020), “Sustainability in FinTechs: an explanation through business model scalability and market valuation”, *Sustainability*, Vol. 12 No. 24, p. 10316, doi: [10.3390/su122410316](https://doi.org/10.3390/su122410316).

Corresponding author

Avsheen Kaur can be contacted at: kauravsheen@gmail.com

Table A1. Geographical distribution of publications on *inclusive green finance*

130

Country name	TP	TP%	TC	Total link strength
China	520	29.73	7,344	298
United Kingdom	330	18.86	11,874	392
United States	191	10.92	5,857	259
Italy	133	7.60	2,662	143
Malaysia	119	6.80	2,295	129
India	98	5.60	2,618	96
Australia	96	5.48	3,167	143
Spain	95	5.43	2,491	87
Pakistan	90	5.14	2,420	147
South Africa	77	4.40	1,425	76
Source(s): The authors				

Table A2. Content analysis

Study	Title	Total citations	Emerging theme	Methodology	Journal	Key insights
Irfan <i>et al.</i> (2022)	Influence mechanism between green finance and green innovation: Exploring regional policy intervention effects in China	370	Influence of green finance on green innovation	Empirical analysis: difference-in-differences, mediation effects, and panel vector autoregression models	Technological Forecasting and Social Change	Green finance is the major contributor to green innovation. Policy intervention in pilot zones had a great impact on green financial innovation. Green innovation is majorly influenced green finance through three core transmission channels, i.e. industrial structure, economic growth and research and development investment
Zahoor <i>et al.</i> (2021)	Clean energy investment and financial development as determinants of environment and sustainable economic growth: evidence from China	182	Clean energy investment and financial development	Econometric modelling	Environmental science and pollution research	Local government can play a crucial role in addressing to the challenges of cleaner energy investments. Sustainable development objectives can be achieved by financial sector through green finance strategies
Lee and Wang (2022)	How does digital inclusive finance affect carbon intensity?	133	Digital inclusive finance and carbon intensity	Regression analysis	Economic analysis and Policy	Digital inclusive finance had a direct impact on reducing carbon intensity through optimizing good technological environment and better industrial structure. Promotion of green credit policy helps in cutting down carbon intensity

(continued)

Table A2. Continued

Study	Title	Total citations	Emerging theme	Methodology	Journal	Key insights
Razzaq and Yang (2023)	Digital finance and green growth in China: Appraising inclusive digital finance using web crawler technology and big data	105	Digital inclusive finance and green growth	Big data analytics and web crawler technology for digital finance assessment	Technological forecasting and social change	Green growth can be encouraged by digital finance through the support of digital transformation of enterprises which also helps in addressing energy poverty
Nenavath (2022)	Impact of fintech and green finance on environmental quality protection in India: By applying the semi-parametric difference-in-differences (SDID)	84	Fintech and green finance in India	Semi-parametric difference-in-differences (SDID) approach	Renewable Energy	Growth of the Fintech has positively contributed towards reduction of SO ₂ (Sulphur dioxide) emissions and boost up the environmental safety and investment enterprises India is considered to be the great competitor in green finance strategy operation There is a need on the part of policymakers to increase the role of fintech in improving environmental quality
Ahmad and Satrovic (2022)	Relating fiscal decentralization and financial inclusion to environmental sustainability: Criticality of natural resources	67	Fiscal decentralization, financial inclusion and sustainability	Empirical analysis	Journal of Environmental Management	Fiscal decentralization enhances financial inclusion, which in turn supports environmental sustainability Efficient allocation of natural resources is crucial in ensuring sustainable development under decentralized fiscal policies

(continued)

Table A2. Continued

Study	Title	Total citations	Emerging theme	Methodology	Journal	Key insights
Desalegn and Tangl (2022)	Enhancing Green Finance for Inclusive Green Growth: A Systematic Approach	63	Systematic approach to enhancing green finance	Bibliometric analysis: systematic literature review	Sustainability	Financial gap has been observed in green finance initiatives because of low finance levels, poor green project selection and management, and a lack of analytical tools and expertise in assessing green project risks
Akomea-Frimpong et al. (2022)	Green finance for green buildings: A systematic review and conceptual foundation	59	Green finance for sustainable buildings	Systematic literature review	Journal of Cleaner Production	Systematic literature review highlights green finance is essential source for developing sustainable buildings For reducing environmental impact there is a need for the stronger financial incentives to support green construction
Gao et al. (2022)	The Impact of Digital Inclusive Finance on Agricultural Green Total Factor Productivity: Evidence from China	54	Digital finance and agricultural sustainability	Empirical analysis	Frontiers in Ecology and Evolution	Digital finance improves agricultural sustainability enhancing green total factor productivity Empirical analysis confirms that financial inclusion supports eco-friendly farming practices
Quatrini (2021)	Challenges and opportunities to scale up sustainable finance after the COVID-19 crisis: Lessons and promising innovations from science and practice	45	Sustainable finance post COVID-19	Qualitative analysis of sustainable finance trends post-pandemic	Ecosystem services	The COVID-19 crisis presents both challenges and opportunities for scaling up sustainable finance Innovations in sustainable finance post-pandemic are crucial for economic recovery and climate resilience

Source(s): The authors