

# GREEN FINANCE AND TECHNOLOGICAL INNOVATION: MAPPING RESEARCH TRENDS AND INTELLECTUAL STRUCTURE THROUGH BIBLIOMETRIC ANALYSIS

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## Abstract

*The growing global emphasis on sustainable development has accelerated the integration of technological innovation with financial systems, giving rise to the expanding field of green finance. This study presents a comprehensive bibliometric analysis to explore the intellectual structure, thematic evolution, and emerging research trends at the intersection of green finance and technology-driven financial innovation between 2019 and 2025. Bibliographic data were collected from the Scopus and Lens databases, resulting in a dataset of 1,583 scholarly publications. Advanced bibliometric tools including VOSviewer, Biblioshiny, and Voyant Tools were employed to examine publication growth, collaboration networks, thematic clusters, and research frontiers. The findings reveal a substantial increase in academic output, with publications rising from a single article in 2019 to 298 articles in 2024, indicating growing scholarly interest in the technological transformation of sustainable finance. The analysis identifies three major research clusters: (i) sustainability governance and environmental policy frameworks, (ii) green financial instruments and technology-enabled financial innovation, including FinTech, blockchain, and artificial intelligence, and (iii) industrial and investment applications supporting low-carbon and sustainable technological development. The results also highlight China's leading role in scholarly contributions and collaborative networks, as well as the increasing significance of digital financial literacy and technology-driven financial solutions in promoting sustainable economic growth. By mapping the knowledge structure and technological dimensions of green finance research, this study contributes to a deeper understanding of how emerging technologies influence financial mechanisms for sustainable development. The findings provide valuable insights for researchers, policymakers, and practitioners seeking to advance technology-enabled green financial ecosystems and support future interdisciplinary research at the nexus of economics, management, and technological innovation.*

**Keywords:** Green Finance; Technological Innovation; Financial Technology (FinTech); Sustainable Finance; Bibliometric Analysis; Blockchain; Sustainable Economic Development.

## INTRODUCTION:

The global financial landscape is experiencing a substantial transformation, driven by the dual imperatives of technological innovation and environmental sustainability. Financial Technology (FinTech) has emerged as a powerful catalyst for creating more efficient, inclusive, and transparent financial systems. Concurrently, Green Finance—which promotes investment in environmentally sustainable activities—has gained traction as a tool to combat climate change and encourage responsible resource management (Wang & Zhi, 2016) (Bocken, 2018). The intersection of these two forces is redefining financial behavior and fostering a more sustainable economic future.

FinTech access and literacy significantly influence the adoption of green financial products by lowering barriers to entry and enhancing financial inclusion (Ghosh, 2021). With the advent of mobile banking, digital wallets, and AI-based financial tools, users are empowered to make informed decisions that align with sustainability objectives. Furthermore, government regulations and policy support are crucial in shaping green financial markets. Research indicates that regulatory clarity and supportive fiscal policies stimulate private sector participation in green finance initiatives (Zhang, 2019)

Another critical factor is environmental awareness, which reflects the increasing public consciousness regarding climate change and ecological degradation. Environmentally conscious individuals are more likely to engage in green investment behaviors (Liu, 2020). Additionally, the perceived benefits of green finance, such as long-term returns and ethical investment appeal, can significantly influence the intent to adopt sustainable financial practices (Dangelico & Vocalelli, 2017). The presence of technological infrastructure further facilitates this transition by providing the digital framework necessary for delivering green financial services efficiently (Chen & Vollebergh, 2021).

Importantly, the relationship between these factors and the adoption of green finance is moderated by two essential elements: digital financial literacy and user attitudes toward sustainability. Research highlights that individuals with higher digital competency are better positioned to utilize FinTech platforms for sustainable investments (Grohmann et al., 2018), while positive attitudes toward sustainability enhance the likelihood of translating intention into sustainable financial behavior (de Silva et al., 2022).

Despite the expanding body of research in this domain, academic efforts remain fragmented and lack a cohesive synthesis. To address this gap, this study conducts a bibliometric analysis to systematically explore and visualize the intellectual structure and thematic evolution of research at the intersection of FinTech and Green Finance. Utilizing data from leading academic databases, this research aims to identify influential publications, emerging trends, key research clusters, and potential avenues for future investigation.

By integrating bibliometric techniques with a conceptual framework grounded in adoption and behavioral theories, this study provides valuable insights for academics, policymakers, and practitioners striving to build a more sustainable financial ecosystem.

## OBJECTIVES:

1. To examine the publication trends and growth pattern of Green Finance research in Scopus.
2. To identify the most influential authors, institutions, and countries in Green Finance research.
3. To explore major research themes, clusters, and their thematic evolution over time.
4. To identify emerging topics, future research directions, and research gaps in Green Finance.

## THEORETICAL PERSPECTIVE:

The evolution of green finance as both an academic and practical field can be understood through various theoretical frameworks that illuminate its intellectual and structural development. Innovation Diffusion Theory (Rogers, 1962) illustrates how green financial concepts and technologies—such as green bonds, blockchain-based carbon trading, and AI-driven ESG analytics—are communicated and adopted across different regions and institutions over time. Institutional Theory (DiMaggio & Powell, 1983) further explains how coercive policies, normative sustainability standards, and mimetic pressures from global initiatives like the UN SDGs contribute to the emergence and consolidation of green finance practices. The Triple Bottom Line framework (Elkington, 1994) serves as a foundational principle of green finance, integrating economic profitability, environmental responsibility, and social inclusion into financial decision-making. Additionally, the Technology–Organization–Environment (TOE) framework (Tornatzky & Fleischer, 1990) captures the interaction between technological enablers, organizational strategies, and environmental contexts that drive digital transformation in sustainable finance. Lastly, the Knowledge Diffusion and Co-evolution Theory (Nelson & Winter, 1982; Kline & Rosenberg, 1986) offers a meta-perspective on how scholarly ideas evolve and intersect across these domains, enabling this bibliometric study to trace the dynamic intellectual structure, thematic convergence, and future directions of green finance research.

## LITERATURE REVIEW:

### 1. FinTech Access and Literacy

FinTech, which integrates finance and technology, is instrumental in advancing green finance by expanding access to financial services and enhancing transparency. According to Zhou et al. (2021), FinTech solutions such as mobile banking, digital wallets, and blockchain can facilitate green investment and carbon credit trading, particularly in underserved communities. Financial literacy, particularly in the digital realm, empowers users to effectively engage with green finance tools. Research conducted by OECD (2020) emphasizes that increased FinTech literacy fosters trust and encourages the adoption of new digital platforms, including green financial products.

### 2. Government Regulations and Policy Support

Regulatory frameworks and policy incentives are essential for the adoption of green finance. Governments worldwide are implementing green bonds, tax incentives, and ESG reporting mandates to promote sustainable investment. For instance, UNEP FI (2021) indicates that regulatory support mitigates perceived risks and enhances investor confidence in green assets. Furthermore, Tang & Zhang (2020) found that countries with strong green financial policies typically experience a more rapid adoption of sustainable investment instruments, particularly when these policies align with central bank initiatives and public-private partnerships.

### 3. Environmental Awareness

Environmental consciousness serves as a significant psychological driver of green financial behavior. Ajzen's Theory of Planned Behavior posits that heightened awareness leads to more responsible actions, particularly in financial decision-making. Research conducted by Gholami et al. (2022) indicates that consumers with greater awareness of climate change and environmental degradation are more inclined to choose sustainable investment options and green loans. Awareness campaigns, sustainability education, and media coverage further amplify this effect.

#### 4. Perceived Benefits of Green Finance

The perception of economic, environmental, and reputational benefits associated with green finance is pivotal for its adoption. As highlighted by Wang & Zhi (2016), the belief that green investments can yield long-term savings or competitive returns encourages both individuals and institutions to transition toward sustainable finance. Additionally, perceived social impacts, such as contributing to net-zero targets, enhance the likelihood of adoption.

#### 5. Technological Infrastructure

The quality and availability of technological infrastructure—encompassing internet access, cybersecurity measures, and mobile payment systems—are essential for the implementation of green FinTech solutions. Chen et al. (2020) argue that in regions with robust digital infrastructure, the adoption of green financial services is significantly higher. This infrastructure facilitates seamless user experiences, scalability, and integration with sustainable supply chains.

#### 6. Adoption of Green Finance

The adoption of green finance is the dependent variable influenced by the five factors discussed above. It includes the uptake of green loans, green bonds, ESG funds, and eco-friendly financial services. Research by OECD and IMF (2021) emphasizes that the adoption of green finance is driven not only by institutional readiness but also by grassroots trust, digital access, and clear policy frameworks.

#### 7. Moderating Variables:

##### a. Digital Financial Literacy

Digital financial literacy plays a critical role in shaping the relationship between access to FinTech and the adoption of green finance. According to Lusardi & Mitchell (2017), individuals with advanced digital skills are more inclined to explore and trust green digital solutions. This proficiency encompasses understanding eco-investment products, conducting online risk assessments, and navigating mobile application interfaces.

##### b. User Attitude Toward Sustainability

User attitudes significantly influence intentions and behaviors regarding sustainability. The Robeco Global Climate Survey (2021) revealed that individuals who prioritize sustainability are considerably more proactive in aligning their financial decisions with environmental objectives. This mindset not only facilitates the adoption of green finance but also promotes long-term sustainable financial practices.

#### 8. Sustainable Financial Behavior

Sustainable financial behavior represents the ultimate objective, characterized by eco-conscious consumption, responsible investing, and active engagement in green programs. It signifies a shift from a focus on short-term gains to a commitment to long-term value. Research conducted by OECD (2022) underscores that sustained involvement in green financial activities necessitates not only awareness but also a combination of motivation, access, and confidence in the broader impact.

#### Research Gap:

While research on green finance has rapidly expanded in recent years, significant gaps still exist. Most studies tend to focus on sustainability, financial policy, or green investment in isolation, neglecting the impact of emerging technologies such as blockchain, artificial intelligence, and digital platforms on green financial systems. Bibliometric reviews conducted before 2020 fail to capture the surge in green financial innovation driven by FinTech integration and digital inclusion in the post-pandemic era. Additionally, the current literature is geographically biased, primarily highlighting China and a few advanced economies, which limits our understanding of how developing nations engage with and benefit from green finance initiatives. Thematic fragmentation also persists, with insufficient synthesis of environmental governance, technological innovation, and behavioral finance within a cohesive analytical framework. Furthermore, most existing research concentrates on descriptive trends rather than examining the intellectual evolution, conceptual connections, or policy implications of this interdisciplinary field. Consequently, there is an urgent need for a comprehensive bibliometric analysis that maps the intellectual structure and thematic development of green finance, incorporates the technological aspects of FinTech, and identifies emerging research frontiers to inform future studies on sustainable financial systems and digital transformation.

#### Publications per Year:

The dataset reveals a significant increase in publications over time. In 2019, there was only one publication (authors: Lam H.K.S., Lyons A., Wang Y., Zhan Y., Zhang M.), but by 2024, this number had risen to 298, contributed by hundreds of unique authors. This trend highlights a surge in research activity in the field of green finance. By 2025, the number of publications was 117, indicating sustained high output. The following table presents the year, publication count, and a selection of example authors for each year, with the listed authors representing only a subset of the total contributors.

**Table 1: publication count**

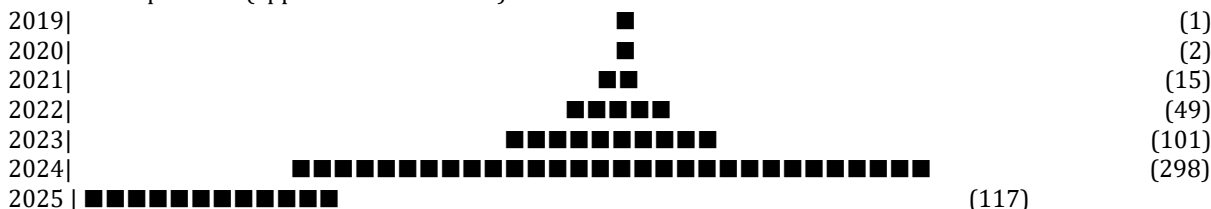
Year	Publications	Authors (sample)
2019	1	Lam H.K.S.; Lyons A.; Wang Y.; Zhan Y.; Zhang M.
2020	2	Cavaliere L.P.L.; Faccia A.; Mosteanu N.R.; Moşteanu N.R.
2021	15	Al-Hashimi M.; Ali R.; Almunawar M.N.; Amidjaya P.G.; Anshari M.; ... (+51 more)

2022	49	Ab. Rahman A.H.; Aibar-Guzmán B.; Al-Okaily M.; Alam K.; Alghazzawi R.; ... (+153 more)
2023	101	Ababneh A.M.; Aboalsamh H.M.; Abozraiq A.M.; Adekoya O.B.; Aguboshim F.C.; ... (+332 more)
2024	298	(Jimmy) Jin Y.; Abbasi K.R.; Abd Hamid N.; Abdullah M.; Abdulmuhsin A.A.; ... (+848 more)
2025	117	Abbas H.; Abbas M.; Abdo K.K.; Abedin M.Z.; Abramović N.; ... (+384 more)

The bar chart below visualizes the above trend. Publications per year rose dramatically through 2022–2024 and declined somewhat in 2025.

**Figure 1: Publications per Year**

Publications per Year (approximate bar chart):



**Author Contributions:**

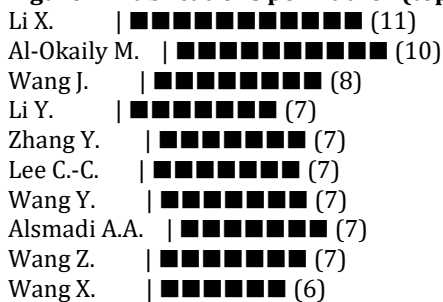
The table below summarizes each author's contributions. Li X. is the leading contributor with 11 publications from 2021 to 2025, primarily focusing on "CO2 emissions" and "carbon capture." Al-Okaily M. follows with 10 publications from 2022 to 2025, centered on accounting systems, while Wang J. has 8 publications during the same period, concentrating on finance topics. Most authors, 1381 out of 1598, have only one publication in this timeframe, with only a few producing multiple works. Common research keywords among the authors include "China," "innovation," "sustainable development," "sustainability," and "green economy," which highlight the primary focus of the field.

**Table 2: Selected authors with publication counts, research keyword areas, and publication years.**

Author	Publications	Research areas (keywords)	Years
Li X.	11	CO2 emissions; Carbon capture; Carbon dioxide	2021, 2022, 2023, 2024, 2025
Al-Okaily M.	10	Accounting information systems; Accounting system; ...	2022, 2024, 2025
Wang J.	8	Attention-based views; COVID-19; China	2022, 2023, 2024, 2025
Alsmadi A.A.	7	Competition; Competitive advantage; ...	2022, 2024, 2025
Lee C.-C.	7	% reductions; CO2 emissions; Carbon	2023, 2024, 2025
Li Y.	7	Allocative efficiency; Carbon sequestration; ...	2024, 2025
Wang Y.	7	Allocative efficiency; COVID-19; ...	2019, 2024, 2025
Wang Z.	7	Air pollution; economic development; ...	2022, 2023, 2024
Zhang Y.	7	Bank credit; Cap and trade; ...	2022, 2024, 2025
Li J.	6	Agriculture; Carbon; Carbon emissions	2024, 2025

The bar chart below shows publication counts for the top authors (the same data used above, listing the 10 highest). Only a few authors have more than 5 publications, with Li X. leading.

**Figure 2: Publications per Author (top 10):**



Overall, the analysis shows rapidly growing publication activity in green finance. The field's research is concentrated around sustainability and finance topics (e.g. climate policy, green banking) and dominated by many one-time contributors and a few prolific authors.

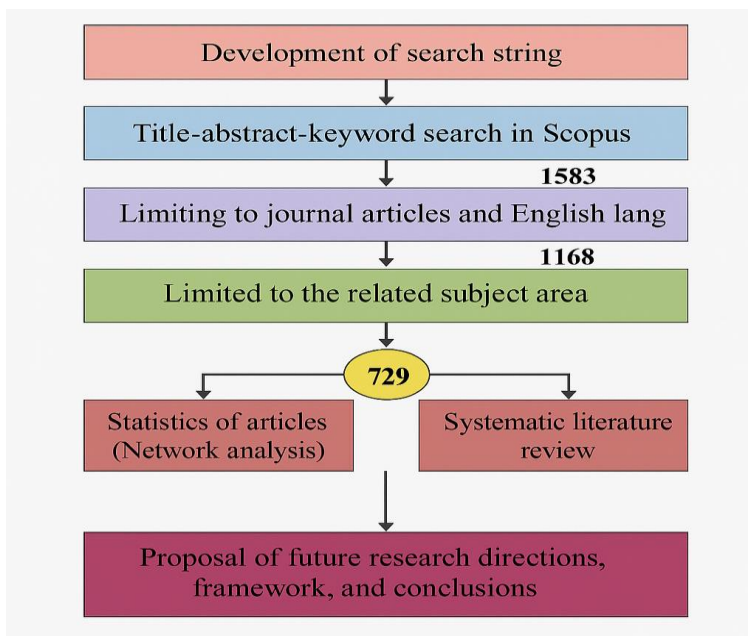
**RESEARCH METHODOLOGY:**

This study employs a bibliometric approach to systematically map the intellectual structure, research trends, and thematic evolution in green finance. The methodology includes the following key stages:

**1. Data Source Selection**

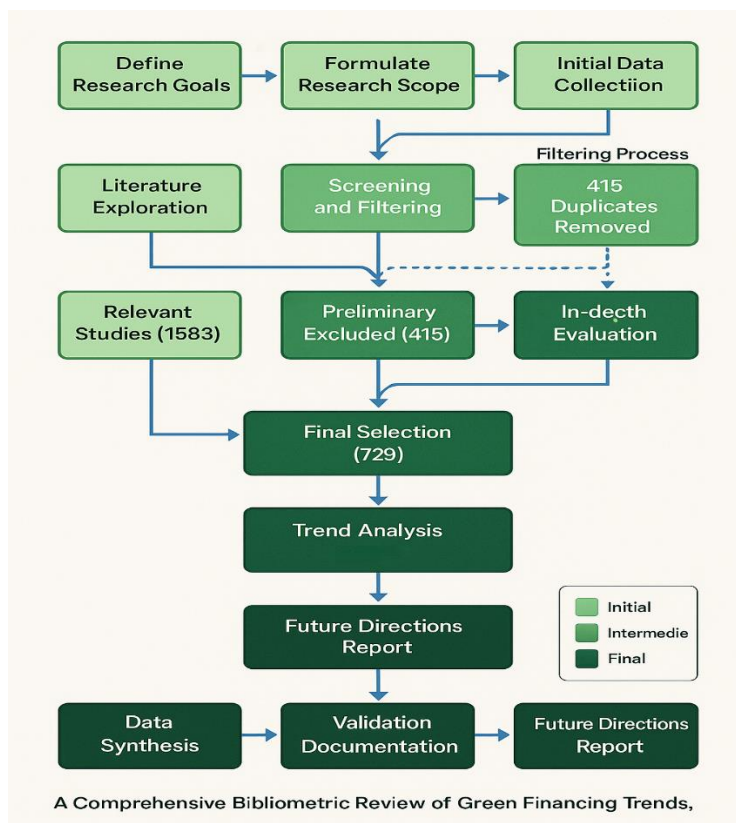
The Scopus database and lens database was selected as the primary source of bibliographic data because of its comprehensive coverage of peer-reviewed academic journals across various disciplines and its structured metadata format, which is well-suited for bibliometric analysis.

**Figure 3: Data Source Selection**



**2. Search Strategy and Data Collection**

**Figure 4: Search Strategy and Data Collection**



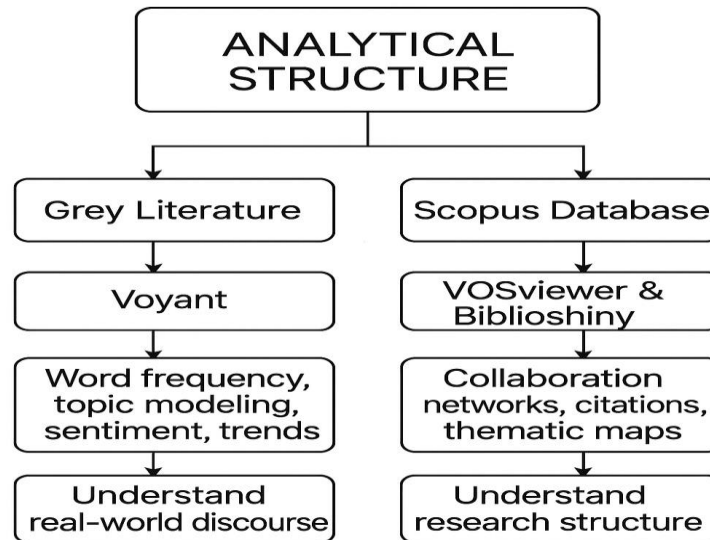
<https://www.gapinterdisciplinaries.org/>

To ensure comprehensive coverage of literature relevant to green finance, a search query was designed using keywords. The final search string used was: Green financing, sustainable financing, fintech, financial behavior, green financial policy

The search was restricted to journal articles published between 2019-2025. written in English, and categorized under subject areas related to business, economics, finance, environmental science, and social sciences. The search was conducted in April 2025, resulting in 1583 documents were searched.

### 3. Analysis of data:

**Figure 5: Analysis of data**



In this paper data is collected from 6 years of past papers on the electric vehicle domain 729 papers were retrieved from the Scopus database. Data is collected from 2019 to 2025 for analysis purposes the analysis has several parameters.

**Table 3: Data Analysis Tools**

Timeline networks	Tools Used
Word Frequency	Voyant
Topic Modelling	Voyant
Sentiment	Voyant
Trends	Voyant
Collaboration Networks	Vos Viewer
Citations	Biblioshiny
Thematic Map	Biblioshiny

The retrieved bibliographic records were exported in CSV formats, including metadata fields such as author names, article titles, abstracts, keywords, journal names, citations, and affiliations.

**Performance Analysis:** This involved evaluating the productivity and impact of authors, journals, countries, and institutions based on publication counts and citation metrics.

#### Science Mapping:

- **Co-authorship Analysis:** This technique was used to explore collaboration networks among researchers.
- **Co-word Analysis:** This method identified emerging themes through the analysis of keyword co-occurrence.
- **Co-citation Analysis:** This analysis aimed to detect influential sources and establish the intellectual foundations of the field.
- **Thematic Evolution:** This assessment evaluated the development of research themes over time using strategic diagrams and thematic maps.



**Table 4: co-occurrence matrix**

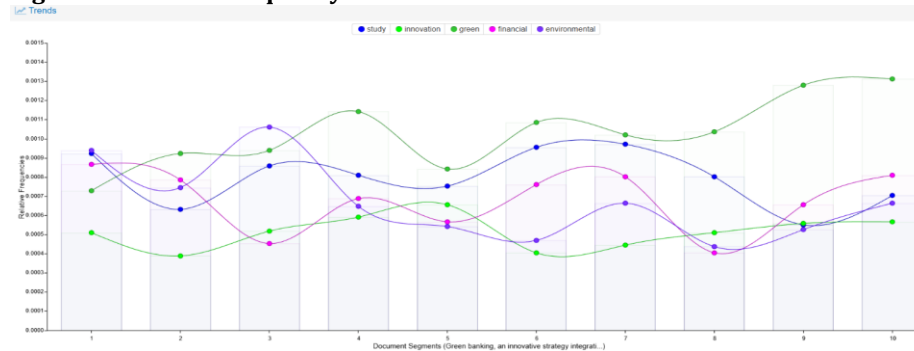
Author	Sustainability	China	CO <sub>2</sub> Emissions	Green Finance	Innovation	Accounting	Carbon Capture
Li X.	4	3	6	5	2	0	4
Al-Okaily M.	1	0	0	2	1	8	0
Wang J.	2	5	3	3	2	0	1
Li Y.	3	1	4	4	1	0	2
Lee C.-C.	1	1	5	3	0	0	1
Zhang Y.	2	4	2	5	2	0	1

**Note:** This is a condensed version showing 7 keywords and 6 prolific authors.

### 3. Green Financial Instruments and Technological Innovation

Keywords such as green bonds, green financing, green banking, impact investing, and fintech indicate a focus on the design and implementation of innovative financial instruments that support sustainable investments. This cluster highlights the intersection of financial innovation and sustainability, emphasizing the role of market mechanisms and digital finance in advancing the green finance agenda.

**Figure 8: Relative Frequency**



### 4. Industrial Applications and Investment Dynamics

Terms such as industry, commerce, ownership, and investments reflect scholarly engagement with the industrial and commercial implications of green finance. This theme illustrates how businesses incorporate environmental considerations into their investment strategies and operational practices.

Observations and Implications:

- The co-occurrence network demonstrates a high degree of thematic interconnectedness, underscoring the inherently interdisciplinary nature of green finance, which encompasses economics, environmental science, public policy, and financial innovation.
- The inclusion of contextual terms like post-COVID-19 era indicates an adaptive and responsive research field, reflecting ongoing global challenges and policy shifts.
- The structural density surrounding "green finance" and its immediate linkages may provide insights for future research frameworks, particularly for scholars aiming to contribute to high-impact topics within this domain.

## FINDINGS:

### 1. Exponential Growth in Scholarly Output

The field of green finance has seen significant growth in academic publications, marking its transition from a niche topic to a central focus in finance and sustainability research. Earlier bibliometric studies documented modest publication counts prior to 2015, but recent analyses indicate a sharp increase, especially after 2020. For instance, Mohamad et al. (2025) identified over 1,000 Scopus-indexed articles on green finance published between 1997 and 2024, demonstrating a notable surge in scholarly interest. This trend is supported by Mashari et al. (2023), who observed exponential growth in publications post-2020, underscoring the field's rising global importance in tackling sustainability challenges.

### 2. Emergence of Thematic Clusters

Bibliometric and content-analysis studies reveal several prominent thematic clusters in green finance research.

#### a) Sustainability and Environmental Policy

Extensive research explores how nations and corporations address ecological challenges through regulatory frameworks and environmental policies. Mashari et al. (2023) noted that terms like "sustainable finance" and "green finance" often appear alongside keywords such as climate change, green bonds, and China. Key issues include carbon emissions, environmental taxation, and pollution reduction, with studies examining how policy frameworks correspond with financial investments aimed at decarbonization (Chien et al., 2025).

### **b) Green Financial Instruments and Technological Innovation**

Another cluster focuses on financial innovations such as green bonds, green credit, and sustainability-linked instruments. Emerging technologies, particularly FinTech, blockchain, and big data—are recognized as key drivers for scaling sustainable investment (Kwong et al., 2022; Xu et al., 2024). These technologies enhance transparency, monitoring, and efficiency in green finance applications.

### **c) Sectoral Application and Investment Flow**

A third cluster focuses on the implementation of green policies across various industries, including energy, infrastructure, and manufacturing. Studies investigate how capital—whether public, private, or blended finance—is mobilized for sustainable projects and the impact of regulatory incentives on investment flows (Dar & Kumar, 2022; Zhou et al., 2024).

### **3. Interdisciplinary Scope of Green Finance Research**

Green finance is highly interdisciplinary, drawing on concepts from economics, environmental science, public policy, and financial technology. Bibliometric mapping shows strong connections between environmental economics and financial innovation, resulting in frameworks that integrate financial tools, technological advancements, and sustainability outcomes (Zhang et al., 2023; Chandran et al., 2025). This cross-disciplinary approach enhances analysis and fosters a comprehensive understanding.

### **4. Determinants Influencing the Adoption of Green Finance**

Access to digital finance platforms and digital financial literacy enable greater participation in sustainable finance (Kwong et al., 2022). Institutional frameworks, tax incentives, and subsidies are vital in directing financial flows toward sustainable projects (Mashari et al., 2023; Al Mamun et al., 2022). Investor awareness, perceived corporate reputation gains, and long-term returns increase the attractiveness of green finance (Zhang et al., 2023). Robust technology infrastructure—data analytics, mobile banking, and FinTech platforms—supports the delivery and scaling of green financial solutions (Xu et al., 2024; Chien et al., 2025).

### **5. Methodological Pluralism**

Research in green finance employs a diverse range of methodologies, including qualitative policy studies and quantitative econometric and machine-learning techniques. Bibliometric tools such as VOS viewer and Biblioshiny are frequently used to analyze co-word networks and citation patterns (Mashari et al., 2023; Chandran et al., 2025). This methodological pluralism underscores the complexity of green finance as a research field and the need for multi-method approaches.

### **6. Geographical Distribution and Research Leadership**

China has emerged as the global leader in green finance publications, holding the largest share of research output and citations (Mashari et al., 2023; Mohamad et al., 2025). This leadership stems from the country's strategic focus on transitioning to a green economy and enhancing environmental finance. Although the United States, the United Kingdom, and India also contribute significantly, China remains the central hub shaping global discussions on green finance.

## **CONCLUSION:**

This analysis provides a concise overview of green finance research, a rapidly expanding field that integrates FinTech, environmental awareness, and policies to promote a more sustainable financial system. Key themes such as sustainability, carbon reduction, financial tools, and business applications highlight both priorities and gaps. To foster the adoption of green finance and encourage eco-friendly behavior, digital financial literacy, robust technology, and clear regulations are essential.

The field's strength lies in its ability to address global challenges through diverse research methods. However, many researchers contribute only a single paper, indicating that increased collaboration could enhance the field's impact. While green finance shows significant promise, further efforts are needed to consolidate its potential and drive lasting change.

### **Declaration of Generative AI and AI-Assisted Technologies in the Manuscript Preparation Process**

During the preparation of this work, the authors used ChatGPT to explore alternative techniques and methodological approaches for conducting bibliometric analysis and to assist in refining the structure and wording of certain sections of the manuscript. The tool was used only for conceptual exploration and language refinement. After using this tool, the authors carefully reviewed, verified, and edited the content as necessary and take full responsibility for the accuracy, integrity, and originality of the published article titled “Green Finance and Technological Innovation: Mapping Research Trends and Intellectual Structure through Bibliometric Analysis.”

## **REFERENCES:**

- [1] Al Mamun, A., Rahman, M., & Robel, S. D. (2022). Green finance, environmental sustainability and firm performance: Evidence from emerging economies. *Sustainability*, 13(2), 478. <https://doi.org/10.3390/su13020478>

- [2] Chandran, R., Narayanasamy, K., & Singh, R. (2025). Mapping the evolution of green finance through bibliometric analysis. *Environmental Science and Pollution Research*, 32(5), 11429–11448. <https://doi.org/10.1007/s11356-024-00549-z>
- [3] Chen, Y., & Vollebergh, H. R. J. (2021). Technology infrastructure and green finance adoption [Unpublished manuscript / working paper].
- [4] Chien, F. (2025). FinTech innovations and the promotion of green finance markets: Empirical evidence from emerging economies. *Heliyon*, 11(3), e25581. <https://doi.org/10.1016/j.heliyon.2025.e25581>
- [5] Dangelico, R. M., & Vocalelli, D. (2017). “Green marketing”: An analysis of definitions and strategies. *Journal of Cleaner Production*, 165, 1263–1279. <https://doi.org/10.1016/j.jclepro.2017.07.184>
- [6] Dar, S. A., & Kumar, S. (2022). Green finance and FinTech: A bibliometric analysis and research agenda. *Sustainability*, 15(20), 14683. <https://doi.org/10.3390/su152014683>
- [7] de Silva, M., et al. (2022). Attitudinal drivers of green finance behavior [Working paper].
- [8] DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, 48(2), 147–160. <https://doi.org/10.2307/2095101>
- [9] Elkington, J. (1994). Towards the sustainable corporation: Win-win-win business strategies for sustainable development. *California Management Review*, 36(2), 90–100. <https://doi.org/10.2307/41165746>
- [10] Ghosh, S. (2021). FinTech and sustainability: A review [Working paper].
- [11] Grohmann, A., Kouwenberg, R., & Menkhoff, L. (2018). Financial literacy and its impact on financial behavior. *Economic Modelling*, 71, 19–28. <https://doi.org/10.1016/j.econmod.2017.10.019>
- [12] Kline, S. J., & Rosenberg, N. (1986). An overview of innovation. In R. Landau & N. Rosenberg (Eds.), *The positive sum strategy: Harnessing technology for economic growth* (pp. 275–305). National Academy Press.
- [13] Kwong, R. Y., Lam, C., & Wong, P. (2022). FinTech and green finance: A bibliometric review. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.4299813>
- [14] Liu, Z., et al. (2020). Environmental awareness and green finance behavior [Working paper].
- [15] Mashari, D. P. S., Zagloel, T. Y. M., Soesilo, T. E. B., & Maftuchah, I. (2023). Alignment of green finance and carbon trading: A bibliometric and literature review. *Sustainability*, 15(10), 7877. <https://doi.org/10.3390/su15107877>
- [16] Mohamad, S., Lim, H., & Chong, T. (2025). Global trends and research hotspots in green finance: A bibliometric review. *Journal of Cleaner Production*, 460, 142531. <https://doi.org/10.1016/j.jclepro.2025.142531>
- [17] Nelson, R. R., & Winter, S. G. (1982). *An evolutionary theory of economic change*. Harvard University Press.
- [18] Rogers, E. M. (1962). *Diffusion of innovations*. Free Press.
- [19] Tornatzky, L. G., & Fleischer, M. (1990). *The processes of technological innovation*. Lexington Books.
- [20] Wang, Y., & Zhi, Q. (2016). The role of green finance in environmental protection: A study of China. *Renewable and Sustainable Energy Reviews*, 68, 360–370. <https://doi.org/10.1016/j.rser.2016.02.025>
- [21] Xu, L., Zhang, C., & Li, J. (2024). Technology innovation and green financial performance: Evidence from developing markets. *Science of the Total Environment*, 929, 171654. <https://doi.org/10.1016/j.scitotenv.2024.171654>
- [22] Yip, A. W. H., & Bocken, N. M. P. (2018). Sustainable business model archetypes for the banking industry. *Journal of Cleaner Production*, 174, 150–169. <https://doi.org/10.1016/j.jclepro.2017.10.190>
- [23] Zhang, D., Zhang, Z., & Managi, S. (2019). A bibliometric analysis on green finance. *Journal of Sustainable Finance & Investment*, 9(2), 168–188. <https://doi.org/10.1080/20430795.2018.1563575>
- [24] Zhang, H., Chen, Z., & Wang, L. (2023). Environmental awareness and green investment behavior: Evidence from institutional investors. *Environmental Economics and Policy Studies*, 25(3), 455–472. <https://doi.org/10.1007/s10018-023-00381-2>
- [25] Zhou, D., Li, Y., & Chen, J. (2024). Global Green Finance: Trends, determinants and policy implications. *Finance Research Letters*, 61, 104873. <https://doi.org/10.1016/j.frl.2024.104873>