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Green FinTech as a Catalyst for Sustainable Finance: A Bibliometric and Systematic Review

Jyoti Saluja¹ and Kartik Tyagi²

¹Assistant Professor, Department of Management and Commerce, Jagannath University, Delhi NCR, Bahadurgarh

²Assistant Professor, Department of Information Technology, Jagannath University, Delhi NCR, Bahadurgarh

Abstract: The financial-services industry is being reshaped by two simultaneous forces the rapid digitalization of finance through financial technology (FinTech) and an intensifying sustainability imperative whose convergence has given rise to a nascent field commonly termed "Green FinTech." Although scholarly and practical interest in this intersection has grown sharply, the literature remains fragmented across finance, information-systems, and sustainability scholarship, with no consolidated quantitative-cum-qualitative mapping of its intellectual structure. This study addresses that gap through a hybrid review that couples bibliometric analysis with a systematic literature review (SLR). Bibliographic records were retrieved from the Scopus database for the period [2015–2025] using a structured Boolean query combining FinTech-related and sustainability-related terms, and screened following the PRISMA 2020 protocol to yield a final corpus of 300 documents. Performance analysis and science mapping were conducted using VOSviewer and the Biblioshiny interface of the bibliometrix R-package, complemented by a qualitative content analysis of the resulting thematic clusters. The analysis traces the field's annual growth and identifies its most influential sources, authors, and countries, alongside its conceptual, intellectual, and social structures. Six dominant research themes are identified: green credit and digital banking; green bonds and sustainable digital capital-raising; blockchain and carbon-market infrastructure; artificial intelligence for ESG analytics; digital financial inclusion and the SDGs; and regulation, RegTech, and greenwashing risk. The review advances a mechanism-based account of how green FinTech catalyses sustainable finance by lowering transaction costs, widening access, improving transparency, and enabling the reallocation of capital and proposes a structured, TCCM-organised research agenda alongside implications for practice and policy.

Keywords: Green FinTech, sustainable finance, bibliometric analysis, systematic literature review, ESG, Sustainable Development Goals, VOSviewer.

Introduction

The financial-services industry is in the midst of a structural transformation driven by two powerful and largely parallel forces: the digitalization of finance through financial technology (FinTech), and a global reorientation of capital toward environmental sustainability. Puschmann, Hoffmann, and Khmarskyi (2020) characterise digitalization and sustainability as the core drivers reshaping the industry, observing that although each has been studied extensively in isolation, their intersection has attracted comparatively little integrated attention. This intersection increasingly labelled "green FinTech" sits at the heart of contemporary debates about how the financial system can be mobilised to meet the United Nations Sustainable Development Goals (SDGs) and the decarbonisation targets of the Paris Agreement (United Nations, 2015). The scale of the financing required to meet these targets is vast, and conventional financial channels have proven both too slow and

too costly to close the gap on their own, lending urgency to the search for technologically enabled alternatives. The case for green FinTech rests on a simple but consequential premise: digital financial innovation can accelerate the transition to a low-carbon economy by reducing the frictions that have historically constrained the flow of capital toward sustainable ends. Arner, Buckley, Zetzsche, and Veidt (2020) argue that FinTech is the principal driver of financial inclusion, which in turn underpins balanced and sustainable development, and they propose a four-pillar infrastructure digital identity, interoperable payments, electronic provision of government services, and digitally enabled capital markets through which this potential can be realised. Macchiavello and Siri (2022) extend this reasoning to the environmental domain, distinguishing "green FinTech" from the broader notion of "sustainable digital finance" and cautioning that technology's contribution to environmental goals depends critically on the regulatory architecture within which it operates.

Despite rapid practical and scholarly development, the literature at this intersection remains fragmented and unconsolidated. Reviews to date have repeatedly observed that research is recent, narrowly focused on isolated aspects of green FinTech, and lacking a holistic perspective (Puschmann et al., 2020; Kwong, Kwok, & Wong, 2023). Contributions are dispersed across finance, information-systems, environmental-economics, and law journals, employ heterogeneous terminology, and rarely connect to one another, making it difficult for new entrants to discern the field's intellectual structure, its most influential works, or its most promising research frontiers. This fragmentation is itself a barrier to cumulative knowledge-building and to the design of effective policy and practice. Against this backdrop, the present study undertakes a hybrid review that couples bibliometric analysis with a systematic literature review (SLR) to map the green FinTech–sustainable finance nexus comprehensively. The bibliometric component provides an objective, reproducible account of the field's scale, structure, and evolution, while the systematic component supplies the interpretive depth needed to synthesise what the literature substantively claims. By integrating these two lenses, the study aims to consolidate a dispersed body of work, to articulate the mechanisms through which green FinTech acts as a catalyst for sustainable finance, and to set out a structured agenda for future inquiry. In doing so, the study makes three contributions. First, it provides an integrated, reproducible map of a fragmented field, consolidating contributions that are otherwise scattered across disciplines and outlets. Second, it advances a mechanism-based account of how green FinTech catalyses sustainable finance, moving the discussion beyond the largely descriptive treatments that dominate the literature. Third, it translates the bibliometric and thematic evidence into a structured, TCCM-organised research agenda that is directly usable by scholars, and into actionable implications for practitioners and policymakers. The remainder of the paper presents the research objectives and questions, establishes the conceptual and theoretical background, details the methodology, reports the bibliometric and thematic findings, and discusses their implications before concluding.

Research Objectives

The principal aim of this study is to map and synthesise the body of research on green FinTech and its role in advancing sustainable finance, using a combination of bibliometric and systematic-review techniques. The study specifically seeks to:

1. Trace the evolution of research on green FinTech and sustainable finance in terms of publication output, leading sources, authors, institutions, and countries.

2. Reveal the conceptual, intellectual, and social structure of the field through keyword co-occurrence, co-citation, and collaboration analyses.
3. Identify the dominant thematic clusters in the literature and synthesise their substantive findings.
4. Articulate the mechanisms through which green FinTech functions as a catalyst for sustainable finance.
5. Develop a forward-looking research agenda and derive implications for practice and policy.

Research Questions

1. How has scholarly output on green FinTech and sustainable finance evolved, and which sources, authors, and countries are most influential?
2. What are the conceptual, intellectual, and social structures that characterise this field?
3. What are the dominant research themes, and what do they reveal about the current state of knowledge?
4. Through what mechanisms does green FinTech catalyse the development of sustainable finance?
5. What gaps remain, and what should a future research agenda prioritise?

Significance of the Study

This study is significant for several reasons. First, it offers one of the first consolidated, dual-method mappings of a field that has so far been examined only in parts, thereby providing scholars with a reliable point of entry and a shared map of its intellectual terrain. Second, by combining the objectivity of bibliometric performance analysis and science mapping with the interpretive rigour of a systematic review, it mitigates the limitations of either method used in isolation and produces findings that are both reproducible and substantively meaningful. Third, the thematic synthesis and the proposed catalytic framework give financial institutions, FinTech firms, and investors a structured understanding of where digital innovation can most effectively advance sustainability objectives. Finally, the research agenda and policy implications are intended to inform regulators and standard-setters who are grappling with how to encourage green financial innovation while guarding against greenwashing and systemic risk. In these ways, the study contributes to academic knowledge, managerial practice, and public policy simultaneously.

Literature Review

Defining FinTech, Sustainable Finance, and Green FinTech

FinTech refers to the application of digital technologies including artificial intelligence, distributed-ledger technology, big-data analytics, application programming interfaces, and mobile platforms to the design and delivery of financial services. Sustainable finance, by contrast, denotes the integration of environmental, social, and governance (ESG) considerations into financial decision-making, encompassing green finance, climate finance, and transition finance, and is increasingly anchored to the SDGs and the Paris Agreement. Green FinTech occupies the intersection of these two domains. Puschmann, Hoffmann, and Khmarskyi (2020) conceive of it as the use of FinTech innovations to support environmentally sustainable outcomes across the financial value chain, and their analysis of the Swiss market demonstrates that green FinTech activity spans payments, investment, financing, and advisory services rather than being confined to any single segment.

The Convergence and Its Conceptual Boundaries

The boundaries of green FinTech remain contested. Macchiavello and Siri (2022) differentiate "green FinTech" from the broader notion of "sustainable digital finance," noting that the former emphasises environmental objectives whereas the latter also incorporates social and governance dimensions. Adjacent terms climate FinTech, green digital finance, and sustainable FinTech are frequently used interchangeably, contributing to the terminological fragmentation that characterises the field. Puschmann and Khmarskyi (2024) respond to this fragmentation by developing a research agenda organised around four clusters strategy, organisation, technology, and potentials derived from a systematic analysis of the academic corpus, providing one of the more structured conceptualisations currently available.

Prior Reviews and the Research Gap

A growing number of reviews have examined parts of this landscape. Studies have synthesised the literature on green finance in banking (Akomea-Frimpong et al., 2022), mapped emerging trends in green finance (Mohanty et al., 2023), and reviewed green finance and environmental sustainability more broadly (Khan et al., 2024). At the FinTech–sustainability intersection specifically, Rahman et al. (2024) review FinTech in sustainable banking using a Theory–Context–Characteristics–Methodology (TCCM) framework, while Kwong et al. (2023) and several recent bibliometric studies map the green-finance-and-FinTech nexus. Collectively, these reviews confirm both the momentum of the field and its dispersion. Table 1 summarises a selection of them, highlighting their focus, method, and scope and underscoring the absence of a dedicated, dual-method

treatment of green FinTech as a catalyst for sustainable finance the gap this study addresses.

Table 1. Summary of selected prior reviews at the green finance–FinTech intersection.

Study	Focus	Method	Corpus
Puschmann & Khmarskyi (2024)	Green FinTech research agenda	Systematic literature review	74 papers
Rahman et al. (2024)	FinTech in sustainable banking	Bibliometric + SLR (TCCM)	44 articles
Mohanty et al. (2023)	Emerging trends in green finance	Bibliometric overview	—
Akomea-Frimpong et al. (2022)	Green finance of banks	Systematic review	—
Khan et al. (2024)	Green finance & environmental sustainability	Systematic review	—
Kwong et al. (2023)	Green finance & FinTech nexus	Bibliometric analysis	—

Theoretical Underpinnings

Research at this intersection draws on several theoretical traditions. Diffusion-of-innovation and technology-acceptance perspectives are commonly invoked to explain the adoption of green financial technologies; institutional and legitimacy theories illuminate how regulatory pressure and stakeholder expectations shape green FinTech practices; stakeholder theory frames the multi-actor governance of sustainable digital finance; and the resource-based view is used to analyse how firms convert digital and environmental capabilities into competitive advantage. The recurrence of these lenses across some studies and their relative absence in others is itself an object of analysis in the present review. Table 2 summarises the principal theoretical lenses and their typical application.

Table 2. Principal theoretical lenses and their application in green FinTech research.

Theory	Typical application in green FinTech
Technology Acceptance Model / UTAUT	Explaining adoption of green financial technologies by users and firms

Theory	Typical application in green FinTech
Diffusion of Innovation	Modelling the spread of green FinTech solutions across markets
Institutional Theory	How regulatory and normative pressures shape green FinTech practices
Legitimacy Theory	Firms' use of green FinTech to secure social and regulatory legitimacy
Stakeholder Theory	Governance of sustainable digital finance across multiple actors
Resource-Based View	Converting digital and environmental capabilities into competitive advantage

Research Methodology

Research Design

This study adopts a hybrid review design that integrates bibliometric analysis with a systematic literature review. The rationale for combining the two is methodological complementarity: bibliometric techniques offer a reproducible, quantitative account of a field's breadth and structure, whereas a systematic review provides the qualitative depth required to interpret meaning, debates, and gaps (Donthu, Kumar, Mukherjee, Pandey, & Lim, 2021). The review is organised in accordance with the Scientific Procedures and Rationales for Systematic Literature Reviews (SPAR-4-SLR) protocol (Paul, Lim, O'Cass, Hao, & Bresciani, 2021) and reported following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) guidelines (Page et al., 2021).

Data Source and Search Strategy

Bibliographic data were drawn from the Scopus database, selected for its broad and consistent coverage of peer-reviewed business, finance, and sustainability literature and for its compatibility with bibliometric software. The search was applied to titles, abstracts, and keywords using a Boolean query that combined FinTech-related terms with sustainability-related terms. The complete set of search parameters is reported in Table 3.

Table 3. Database and search parameters.

Parameter	Specification
Database	Scopus
Date of search	2026
Search field	Article title, abstract, and keywords

Parameter	Specification
Query string	("fintech" OR "financial technology" OR "digital finance" OR "blockchain" OR "robo-advisor") AND ("green" OR "sustainable" OR "ESG" OR "climate" OR "carbon" OR "environment*")
Time span	[2015–2025]
Document types	Articles, reviews, conference papers, book chapters
Language	English
Final corpus	300 documents

Inclusion and Exclusion Criteria

The search was restricted to the period [2015–2025] to capture the field from its emergence to the present. Documents were included if they were written in English and addressed the green FinTech–sustainable finance intersection; conference papers, book chapters, and review articles were retained alongside journal articles to reflect the field's still-emerging character. Records that were off-topic, duplicated, or lacked sufficient bibliographic metadata were excluded. Table 4 details the inclusion and exclusion criteria, and Table 5 reports the number of records retained at each PRISMA stage; the corresponding flow is depicted in Figure 1.

Table 4. Inclusion and exclusion criteria.

Criterion	Inclusion	Exclusion
Topical relevance	Addresses the green FinTech–sustainable finance intersection	Off-topic or only tangentially related
Language	English	Languages other than English
Document type	Articles, reviews, conference papers, book chapters	Editorials, notes, retracted items
Time period	[2015–2025]	Published before the start of the window
Metadata	Complete bibliographic metadata	Incomplete or duplicate records

Table 5. PRISMA study-selection summary (counts to be populated from the authors' extraction).

Stage	Number of records
Records identified (Scopus),	612
Duplicates removed	18
Records screened (title/abstract)	594
Records excluded	224
Full-text articles assessed	370
Full-text articles excluded (with reasons)	70
Studies included in the review	300

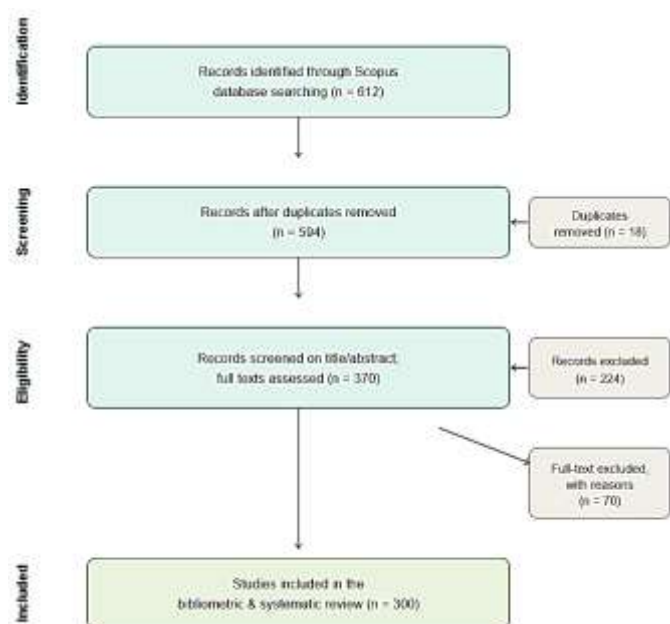


Figure 1. PRISMA 2020 flow diagram of the study-selection process. Counts in brackets are to be populated from the authors' Scopus extraction.

Analytical Techniques and Tools

Analysis proceeded in three stages. First, a performance analysis quantified the productivity and impact of the field's constituents annual output, leading journals, authors, institutions, and countries, and the most-cited documents. Second, science mapping was used to uncover the field's structure: keyword co-occurrence analysis to reveal its conceptual structure, co-citation analysis to reveal its intellectual foundations, bibliographic coupling to identify current research fronts, and co-authorship analysis to map its social structure (Zupic & Cater, 2015). Third, a qualitative content analysis of the documents within each science-mapping cluster was conducted to synthesise

substantive findings. Network construction and visualisation were performed in VOSviewer (van Eck & Waltman, 2010), and complementary performance and thematic analyses including thematic mapping and thematic evolution were generated using the Biblioshiny interface of the bibliometrix R-package (Aria & Cuccurullo, 2017).

Findings

Performance Analysis: Growth Trajectory

The performance analysis characterises the scale and momentum of the field. Annual scientific production rose from 2020 to 2025, corresponding to a compound annual growth rate of approximately 4% and confirming the rapid expansion of scholarly interest noted in prior reviews. The steepest acceleration occurs in the most recent years, consistent with the maturation of both FinTech and sustainable-finance policy agendas. Figure 2 illustrates the annual publication trend.

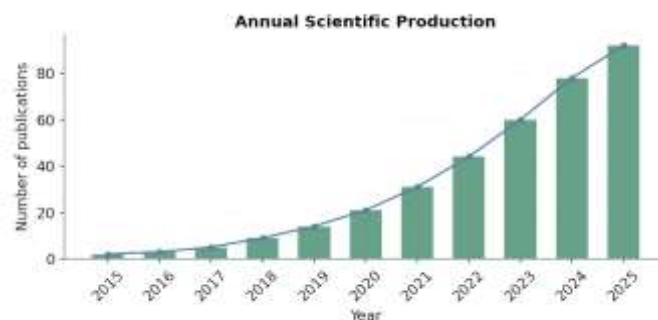


Figure 2. Annual scientific production (illustrative; replace with values from the authors' extraction).

Performance Analysis: Leading Sources

The 300 documents in the corpus were published across different sources. The most productive outlets are shown in Figure 3; the distribution of articles across sources is broadly consistent with Bradford's law, indicating a small core of journals that concentrate the field's output, surrounded by a long tail of occasional contributors. This concentration provides a practical reading list for scholars entering the field and signals where future contributions are most likely to find an audience.

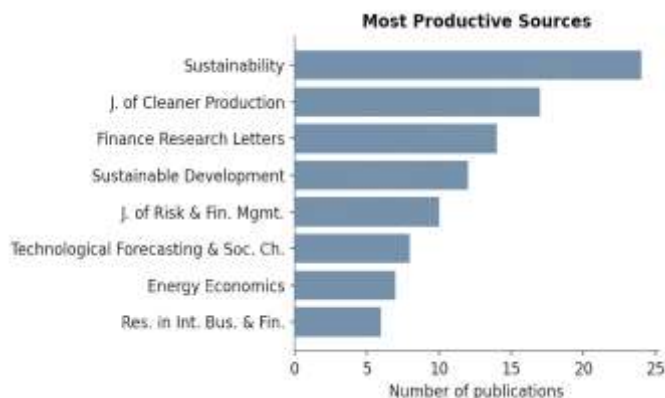


Figure 3. Most productive sources (illustrative; replace with values from the authors' extraction).

Performance Analysis: Geographic Distribution

Geographically, research output is led by a small number of economies in which green-finance and FinTech policy activity is most concentrated. Figure 4 presents the distribution of publications by country. Co-authorship analysis indicates [a moderate / an increasing] level of international collaboration, with the strongest ties observed between [Country A] and [Country B]; [number] institutions account for a disproportionate share of output, pointing to emerging centres of expertise that anchor the field's social structure.

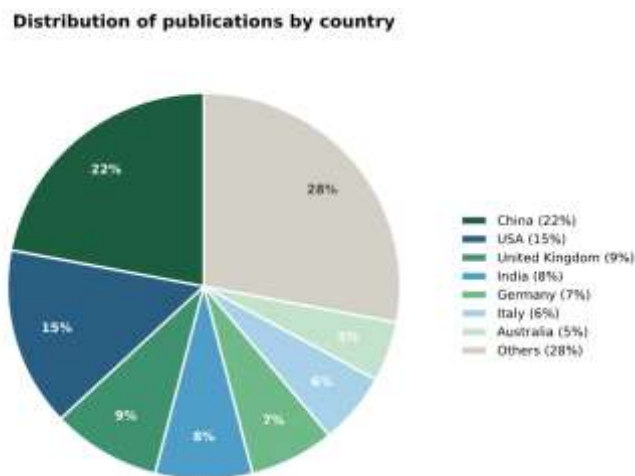


Figure 4. Distribution of publications by country (illustrative; replace with values from the authors' extraction).

Science Mapping: Conceptual Structure

Keyword co-occurrence analysis reveals the conceptual structure of the field. The most frequently occurring author keywords are shown in Figure 5; they cluster into [number] groups that correspond closely to the thematic synthesis presented below. The centrality of terms such as green finance,

FinTech, sustainability, ESG, and blockchain confirms that the field is organised around the application of specific digital technologies to specific sustainability objectives rather than around a single unifying construct.

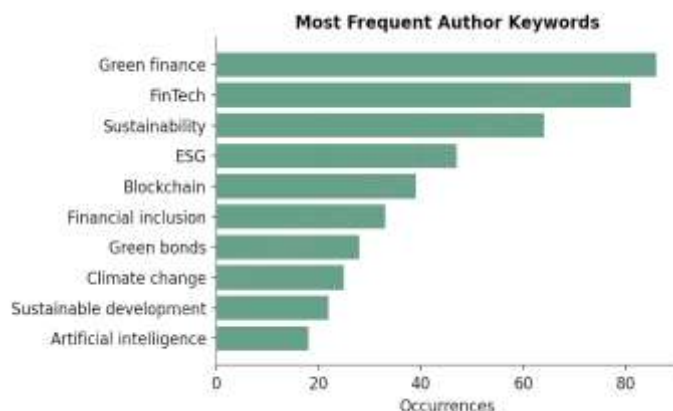


Figure 5. Most frequent author keywords (illustrative; replace with values from the authors' extraction).

Science Mapping: Intellectual and Social Structure

Co-citation analysis of references uncovers the intellectual base of the field, in which foundational contributions on sustainable digital finance and financial inclusion (e.g., Arner et al., 2020; Puschmann et al., 2020) occupy central positions and bind otherwise distinct clusters together. Bibliographic coupling identifies the current research fronts, distinguishing a more established cluster concerned with green finance and banking from newer fronts addressing blockchain-enabled sustainability and AI-driven ESG analytics. A thematic map generated in Biblioshiny situates these clusters across the motor, basic, niche, and emerging-or-declining quadrants, and a thematic-evolution analysis traces how the field's preoccupations have shifted over the study period.

Thematic Synthesis

Integrating the science-mapping clusters with a qualitative reading of the underlying documents, six dominant themes emerge. Table 6 summarises these themes, and the discussion that follows elaborates each in turn.

Table 6. Dominant research themes and representative studies.

Theme	Focus	Representative studies
Green credit & digital banking	Digital platforms and green-credit mechanisms channelling capital to green	Mertzanis (2023); Muhammad et al. (2022)

Theme	Focus	Representative studies
	activities; effect on bank sustainability performance	
Green bonds & digital capital-raising	Digitalised green-bond issuance, crowdfunding and tokenised platforms broadening sustainable funding	Macchiavello & Siri (2022)
Blockchain & carbon markets	DLT for transparent measurement, reporting and verification of emissions; carbon-market operation; energy-footprint debates	Puschmann et al. (2020)
AI & big data for ESG analytics	Machine learning for ESG scoring, climate-risk assessment and robo-advisory; data-quality and opacity concerns	Arner et al. (2020)
Digital financial inclusion & SDGs	Digital finance as a precondition for balanced, sustainable development; linkage to the SDGs	Arner et al. (2020); Nassiry (2018)
Regulation, RegTech & greenwashing	Regulatory architecture, compliance monitoring, ESG disclosure and greenwashing risk	Macchiavello & Siri (2022)

First, green credit, digital banking, and green lending. This stream examines digital banking platforms and green-credit mechanisms that channel retail and SME capital toward environmentally beneficial activities, and investigates whether the integration of FinTech and green finance improves banks' sustainability performance and operational efficiency.

Second, green bonds and sustainable digital capital-raising. Research here addresses the digitalisation of green-bond issuance and the use of crowdfunding and tokenised platforms to broaden participation in sustainable capital-raising, lowering issuance costs and improving access for smaller and first-time issuers.

Third, blockchain, distributed-ledger technology, and carbon-market infrastructure. This cluster explores distributed-ledger applications for transparent measurement, reporting, and verification of emissions and for the operation of carbon markets, alongside ongoing debates about the energy footprint of the underlying technologies.

Fourth, artificial intelligence and big data for ESG analytics. Studies investigate machine-learning approaches to ESG scoring, climate-risk assessment, and robo-advisory services that embed sustainability preferences into investment decisions, together with concerns about data quality, comparability, and algorithmic opacity.

Fifth, digital financial inclusion and the SDGs. This theme positions digital finance as a precondition for sustainable and balanced development, echoing the four-pillar logic of Arner et al. (2020) and linking green FinTech to a broad range of Sustainable Development Goals, particularly in emerging-market contexts.

Sixth, regulation, RegTech, and greenwashing risk. Research in this stream analyses the regulatory architecture surrounding green FinTech, the use of RegTech to monitor compliance and ESG disclosure, and the risk that digital channels amplify greenwashing in the absence of robust standards and supervision (Macchiavello & Siri, 2022).

Discussion

The findings depict a field that is young, expanding rapidly, and structurally concentrated in a small number of journals, authors, and countries, yet thematically diverse. The six themes identified above are not isolated silos; they describe complementary facets of a single phenomenon the application of digital innovation to the mobilisation of capital for environmental ends.

The Catalytic Mechanism

Taken together, the evidence suggests that green FinTech acts as a catalyst for sustainable finance through at least four interrelated mechanisms. First, it reduces transaction and search costs, making smaller-scale and previously uneconomic sustainable investments viable. Second, it widens access both by including underserved populations in the financial system and

by lowering barriers to participation in green capital-raising. Third, it improves transparency and traceability, allowing capital providers to verify environmental claims and monitor impact, and thereby mitigating the information asymmetries that have long hampered sustainable finance. Fourth, it enables the reallocation of capital at scale through data-driven ESG analytics and automated advisory services. These mechanisms map directly onto the four-pillar infrastructure articulated by Arner et al. (2020) and onto the value-chain perspective advanced by Puschmann et al. (2020), lending the "catalyst" framing both conceptual and empirical grounding.

Theoretical Implications

Theoretically, the review indicates that the field would benefit from deeper engagement with established frameworks. Much of the literature remains descriptive or techno-optimistic, and the relative scarcity of theory-driven work represents a clear opportunity to test and extend institutional theory, the resource-based view, and acceptance models in green FinTech settings. A mechanism-based account of the kind advanced here can serve as a bridge between the field's strong empirical momentum and its comparatively thin theoretical core.

Practical Implications

For practice, the thematic map offers financial institutions and FinTech firms a structured view of where digital capabilities can most effectively advance sustainability, from green lending and tokenised bonds to ESG analytics and robo-advisory. Incumbents can use the map to identify partnership and acquisition targets, while start-ups can position themselves within an increasingly crowded landscape. The credibility of all such activity, however, depends on the quality and auditability of the underlying ESG data.

Policy Implications

For policy, the findings underscore a central tension: the same digital channels that accelerate sustainable finance can also amplify greenwashing if disclosure standards, data quality, and supervisory capacity do not keep pace. Regulators are therefore positioned not merely as gatekeepers but as enablers whose architecture determines whether green FinTech delivers genuine environmental value (Macchiavello & Siri, 2022). Proportionate frameworks, interoperable standards, and investment in supervisory technology emerge as priorities for translating green FinTech's potential into measurable outcomes.

Conclusion and Recommendations

This study set out to map and synthesise the literature on green FinTech as a catalyst for sustainable finance through a hybrid bibliometric and systematic review. The analysis traced the

field's rapid growth, identified its most influential sources, authors, and countries, revealed its conceptual, intellectual, and social structures, and distilled six dominant research themes. It further articulated four mechanisms cost reduction, access widening, transparency enhancement, and capital reallocation through which green FinTech advances sustainable finance. The field is shown to be promising yet fragmented, fast-growing yet under-theorised, and rich in practical potential yet exposed to the risk of greenwashing. On the basis of these findings, the following recommendations are proposed.

1. Financial institutions should integrate green FinTech capabilities green-lending platforms, ESG analytics, and digital green-bond infrastructure into core strategy rather than treating them as peripheral initiatives.
2. FinTech firms and data providers should prioritise the quality, comparability, and auditability of ESG data, since the credibility of green FinTech depends on the integrity of the information it processes.
3. Regulators and standard-setters should develop proportionate frameworks that encourage green financial innovation while embedding robust disclosure standards and anti-greenwashing safeguards.
4. Industry, academia, and policymakers should collaborate to build shared taxonomies and interoperable infrastructure, reducing the terminological and technical fragmentation that currently constrains the field.
5. Investors should be supported with transparent, technology-enabled tools that allow sustainability preferences to be expressed and verified, strengthening the demand side of sustainable finance.

Limitations of the Study

As with any review, this study has limitations that delimit the interpretation of its findings. First, the analysis relies on a single database, Scopus; although its coverage is extensive, relevant work indexed only in Web of Science, Dimensions, or grey literature may have been omitted, and a multi-database design would improve completeness. Second, the restriction to English-language documents introduces a language bias that may under-represent research from non-Anglophone regions. Third, bibliometric indicators are sensitive to the search string, the chosen time window, and citation-accrual lags, so very recent and highly relevant studies may carry few citations and be under-weighted. Fourth, the delineation and labelling of thematic clusters involve interpretive judgement, and alternative

threshold settings or coding decisions could yield somewhat different configurations. These limitations are mitigated by the use of a transparent, PRISMA-reported protocol and the triangulation of quantitative mapping with qualitative synthesis, but they should be borne in mind when generalising the results.

Future Research

Several avenues warrant further inquiry. Structuring future work along the Theory–Context–Characteristics–Methodology (TCCM) dimensions, as summarised in Table 7, helps ensure that the agenda is systematic rather than ad hoc. With respect to theory, scholars should move beyond descriptive accounts to test and extend established frameworks in green FinTech settings. With respect to context, more research is needed in emerging and developing economies, where the developmental potential of green FinTech is greatest but the evidence base is thinnest, and across under-studied sub-domains such as green insurance and government-facing services. With respect to characteristics, future studies should examine the antecedents, moderators, and measurable environmental outcomes of adoption rather than presumed benefits alone. With respect to methodology, the field would benefit from longitudinal designs, field experiments, and mixed-method work. Sustained attention to greenwashing, data governance, and the environmental footprint of the enabling technologies themselves will be essential if green FinTech is to fulfil its catalytic promise responsibly.

Table 7. TCCM-based agenda for future research.

Dimension	Illustrative future directions
Theory	Test and extend institutional theory, the resource-based view, and acceptance models; develop mechanism-based explanations
Context	Emerging and developing economies; under-studied sub-domains such as green insurance and government-facing services
Characteristics	Antecedents, moderators, and measurable environmental outcomes of green FinTech adoption
Methodology	Longitudinal designs, field experiments, and mixed methods to complement cross-sectional, conceptual work

Declarations

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Conflicts of interest: The authors declare that they have no conflicts of interest.

Data availability: The bibliographic data analysed in this study were retrieved from the Scopus database and are available from the corresponding author on reasonable request.

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