Balkans JETSS (2026) 1: 11-23
DOI: https://doi.org/10.31410/Balkans.JETSS.2026.9.1.11-23

Original Scientific Article

Climate Change in the Financial Spotlight: A Bibliometric Review

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Received: August 6, 2025 / Revised: June 6, 2026 /
Accepted: June 8, 2026 / Published: June 30, 2026
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Abstract: *Climate change is increasingly acknowledged as a systemic macroeconomic and financial risk with significant implications for stability, investment, and governance. This study presents a bibliometric analysis of 1,116 peer-reviewed publications (2000–2024) systematically retrieved from the Web of Science Core Collection. The findings reveal an interdisciplinary domain integrating environmental sciences, economics, policy, and quantitative modelling, with more than 64% of research output published after the 2015 Paris Agreement. Keyword analysis identifies "climate change" as the intellectual nucleus, interconnected with themes of adaptation, financial stability, green finance, and energy transition. Authorship patterns show both sustained contributions from prolific scholars and highly cited landmark studies. Geographical analysis highlights China, the United States, and the United Kingdom as leading contributors, complemented by influential European research. Overall, results confirm the climate–finance nexus as a rapidly expanding and policy-relevant field, central to advancing systemic resilience and enabling the transition toward a sustainable global financial system.*

Keywords: *Climate change, Financial system, Bibliometrics.*

JEL Classification: G20, Q54

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1. INTRODUCTION

Climate change is no longer solely an environmental concern; it now represents a significant macroeconomic risk with wide-ranging implications for financial stability, investment flows, and economic policy. Extreme weather events, rising temperatures, and biodiversity loss are already disrupting global supply chains, altering consumption patterns, and challenging traditional models of growth (IPCC, 2022). As the Intergovernmental Panel on Climate Change notes, without effective policy responses, climate change could reduce GDP by several percentage points in some regions by the end of the century. Global institutions such as the World Bank or the Organization for Economic Co-operation and Development (OECD) emphasize that the costs of inaction will far exceed the investments needed for a sustainable economic transition (OECD, 2021; World Bank, 2021). In this context, the financial system plays a central role - both as a source of climate-related risks and as a driver of the green transformation. Instruments such as green loans and climate-aligned investments are increasingly used to support low-carbon innovation and environmental sustainability (UNFCCC, 2015). Despite the growing relevance of climate-finance linkages, academic research at this intersection remains scattered across disciplines. Bibliometric analysis provides a systematic method to trace the development of this emerging field, identify influential contributors, and map evolving research themes.

Accordingly, this paper aims to provide a systematic bibliometric mapping of the climate change–financial system nexus by identifying its publication dynamics, dominant research themes, leading authors and journals, geographical distribution, and core intellectual contributions, thereby clarifying how this fragmented field has evolved and where its main research frontiers lie.

2. LITERATURE REVIEW

Empirical research underscores the multifaceted impact of climate change on macroeconomic and financial stability. Rising temperatures have been linked to declines in economic performance, with Burke et al. (2015) estimating that a 1°C increase in average temperature can reduce per capita GDP by up to 1.3% annually in warmer, developing countries. Kahn et al. (2019) further demonstrate that repeated climate shocks can cause long-term GDP losses of up to 10%, particularly in disaster-prone regions. Beyond growth, climate change also affects inflation and productivity. Cevik and Jalles (2023) show that a 1°C temperature rise corresponds to a 0.9 percentage point increase in inflation, disproportionately impacting low-income economies, while Szewczyk et al. (2021) report productivity declines of 1.5–2% in European sectors like agriculture and construction during heatwaves. From a fiscal standpoint, climate events disrupt economic and fiscal cycles (Billio et al., 2021) and raise public expenditures if mitigation is delayed (Fernando et al., 2021). Crucially, the effects are unequally distributed - Tol (2022) and the WMO (2024) note GDP losses of up to 8.3% in countries like Bangladesh and Ethiopia. In the financial sector, Campiglio (2016) argues that carbon pricing alone is insufficient to drive low-carbon investment, advocating for green macroprudential tools such as differentiated reserve requirements. Supporting this, Javadi and Masum (2021) find that firms exposed to climate risk face higher loan spreads, especially those with lower credit ratings. To address systemic vulnerabilities, Battiston et al. (2021) and Roncoroni et al. (2021) call for innovative stress-testing and network-based approaches that consider contagion effects and market dynamics, enabling policymakers to manage climate-related financial risks more effectively. Kashi and Shah (2023) show that sustainable-finance research has grown rapidly and increasingly integrates environmental, social and governance considerations into investment and corporate decision-making. Badareu et al. (2024) provide a recent bibliometric investigation of financial development and climate change and demonstrate that the field

has expanded markedly since 2016, while remaining dispersed across journals, institutions and geographical contexts. Recent bibliometric studies on green and climate finance also document a strong post-2019 increase in output and identify emerging themes such as renewable energy, sustainable development goals, green technology, digital economy and regional collaboration patterns (Mohamad, 2025; Wang et al., 2025). These studies confirm the dynamism of the broader field, but they do not fully isolate the financial-system perspective that includes banks, insurers, capital markets, investment funds, central banks, and financial-stability concerns.

Several gaps emerge from the existing literature on the relationship between climate change and the financial system. Although previous bibliometric studies have examined sustainable finance, green finance, or the relationship between financial development and climate change, they often adopt a relatively broad conceptual scope (Badareu et al., 2024; Kashi & Shah, 2023). Consequently, the specific role of the financial system, including banks, insurers, asset managers, capital markets, pension funds, central banks, and monetary authorities, remains insufficiently consolidated within a single bibliometric map. This represents an important limitation, as climate-related risks enter the financial system through multiple institutional channels that cannot be fully captured by studies focused exclusively on green finance, environmental performance, or sustainability-oriented investment. The literature is also fragmented across disciplines and methodological traditions. Environmental science studies tend to emphasise physical climate impacts (IPCC, 2022), while economic research often focuses on growth, inflation, productivity, and fiscal consequences (Burke et al., 2015; Cevik & Jalles, 2023; Kahn et al., 2019). Finance-oriented studies examine loan pricing, asset repricing, systemic risk, and financial stability (Battiston et al., 2021; Javadi & Masum, 2021; Roncoroni et al., 2021), whereas policy-oriented research discusses disclosure standards, regulation, transition planning, and climate governance. This fragmentation makes it difficult to identify the central intellectual anchors of the field and to assess how different research communities interact. A bibliometric review can address this limitation by mapping the thematic architecture of the field through keywords, citations, authors, countries, journals, and influential publications. Existing research also pays uneven attention to geographical and institutional asymmetries. High-output countries tend to dominate the literature, while regions with high climate vulnerability may remain less visible in citation-based analyses. This is particularly relevant because climate-related economic and financial impacts are unevenly distributed across countries and regions (Tol, 2022; WMO, 2024). Moreover, the policy relevance of climate-finance research depends not only on the volume of publications, but also on whether the literature connects bibliometric evidence with issues such as financial stability, climate stress testing, insurance-market resilience, disclosure standards, and transition-finance governance (Battiston et al., 2021; Roncoroni et al., 2021). The present study addresses these gaps by combining descriptive bibliometric indicators with an interpretive discussion of the climate-finance nexus and its implications for building a climate-resilient financial system.

From a methodological perspective, bibliometric analysis is appropriate for mapping large and interdisciplinary research domains because it enables the identification of publication dynamics, intellectual communities, influential authors, core sources, and emerging themes (Donthu et al., 2021; Župič & Čater, 2015). In climate-finance research, this method is particularly useful because the field is distributed across different disciplinary outlets and uses heterogeneous terminology, including climate risk, sustainable finance, green finance, financial stability, insurance, transition risk, disclosure and stress testing. A bibliometric approach therefore provides a structured way to synthesise this dispersed body of knowledge without reducing the analysis to a narrow disciplinary perspective.

3. RESEARCH METHODOLOGY

The final bibliometric corpus for this study comprises 1,116 peer-reviewed documents retrieved from the Web of Science Core Collection, representing a strategically refined subset of the broader literature on the intersection between climate change and the financial system.

The original query - combining climate change–related terms with finance- and governance-related concepts - yielded 1,710 records across all fields. The dataset was then narrowed by document type to include only articles and proceedings papers (1,527), followed by temporal filtering to publications from 2000 to 2024 (1,525). Restricting the language to English reduced the dataset to 1,511 documents, ensuring both scholarly rigor and linguistic consistency. The final thematic refinement, limiting the scope to specific research areas (Business Economics; Environmental Sciences Ecology; Science Technology Other Topics; Government Law; Engineering; Public Administration; Energy Fuels; International Relations; Development Studies; Mathematics; Social Sciences Other Topics; Computer Science; Operations Research Management Science; Sociology; Transportation; Urban Studies; and Social Issues), produced the final sample of 1,116 documents. The inclusion criteria were: indexing in the Web of Science Core Collection; publication as an article or proceedings paper; English language; publication year between 2000 and 2024; and thematic relevance to the relationship between climate change and the financial system. The exclusion criteria were: non-scholarly document types, publications outside the defined period, non-English records and records outside the selected research areas. This temporal span (2000–2024) captures nearly a quarter-century of academic development, including milestone events such as the Kyoto Protocol, the Paris Agreement, and the emergence of climate-related financial disclosure frameworks. Notably, a significant proportion of publications appear in the post-2015 period, reflecting the intensified scholarly focus following the Paris Agreement and the growing integration of climate risk into financial governance. The disciplinary distribution of the final dataset confirms the interdisciplinary nature of the field. The largest thematic clusters are drawn from Environmental Sciences and Ecology, but substantial representation also stems from Business Economics, Government Law, Public Administration, and Energy Fuels, underscoring the fusion of environmental, policy, and financial perspectives. Contributions from Computer Science, Engineering, Operations Research, and related disciplines highlight the increasing use of quantitative modelling, simulation, and data analytics in assessing climate-related financial risks. Additionally, publications in Urban Studies, International Relations, and Sociology indicate the embeddedness of climate-finance issues across institutional, governance, and societal contexts. In summary, the refined dataset offers a methodologically robust and thematically diverse foundation for bibliometric analysis, enabling the mapping of intellectual trends, the identification of high-impact contributions, and the exploration of research frontiers essential for building a climate-resilient financial system.

Table 2 provides an overview of the bibliometric characteristics of the final dataset comprising 1,116 documents published between 2000 and June 2024. These documents were sourced from 458 different publication outlets, including academic journals, books, and conference proceedings. Annual scientific production shows a sustained upward trajectory, with an average annual growth rate of 15.66%. The average age of the documents is 4.57 years, indicating that research in this field is relatively recent and expanding rapidly. In terms of impact, each document has received, on average, 23.91 citations, and the dataset as a whole contains 50,168 references. The thematic diversity is reflected in the 1,539 Keywords Plus (terms extracted from the titles of cited references) and 3,035 author-supplied keywords, underscoring the broad range of topics covered within the climate change–financial system nexus.

Table 1. Dataset Scope and Filtering Criteria

Filter	Description	No. of documents
All Fields	TS=(("financial system" OR "financial sector" OR bank* OR insurance OR insurer* OR "asset manager*" OR "investment firm*" OR "investment bank*" OR "capital market*" OR "stock market*" OR "financial institution*" OR "credit union*" OR "pension fund*" OR "mutual fund*" OR "central bank*" OR "monetary authority*" OR "development bank*") NEAR/10 ("climate change" OR "global warming" OR "climate crisis" OR "climate risk*" OR "climatic change*" OR "climate-related" OR "greenhouse gas*" OR "carbon emission*" OR "climate adaptation" OR "climate mitigation" OR "net zero" OR "low-carbon" OR "carbon neutral*" OR "energy transition" OR "transition risk*")) AND TS=("risk*" OR "vulnerability*" OR "exposure" OR "resilients*" OR "adaptation" OR "mitigation" OR "disclosure" OR "reporting" OR "compliance" OR "standard*" OR "framework*" OR "regulation*" OR "governance" OR "management" OR "best practice*" OR "implementation" OR "investment" OR "financing" OR "policy" OR "strategy" OR "strategies" OR "scenario analysis" OR "stress test*" OR "transition plan*")	1,710
Document Types	Articles; Proceedings Paper	1,527
Publication Year	2000 – 2024	1,525
Languages	English language	1,511
Research Areas	Business Economics; Environmental Sciences Ecology; Science Technology Other Topics; Government Law; Engineering; Public Administration; Energy Fuels; International Relations; Development Studies; Mathematics; Social Sciences Other Topics; Computer Science; Operations Research Management Science; Sociology; Transportation; Urban Studies; Social Issues	1,116
Final Sample	The total number of documents	1,116

Source: Own processing

Table 2. Descriptive statistics of the dataset

Description	Results	Description	Results
Timespan	2000-2024	Authors	2776
Sources (Journals, Books, etc.)	458	Authors of single-authored docs	196
Documents	1116	Single-authored docs	210
Annual Growth Rate %	15,66	Co-Authors per Doc	3,03
Document Average Age	4,57	International co-authorships %	31,09
Average citations per doc	23,91	article	1053
References	50168	article; proceedings paper	7
Keywords Plus (ID)	1539	article; retracted publication	2
Author's Keywords (DE)	3035	proceedings paper	54

Source: Own processing

The authorship analysis reveals contributions from 2,776 unique authors, with 196 authors responsible for single-authored documents. In total, 210 documents were single-authored, while the

average number of co-authors per document was 3.03. Furthermore, 31.09% of publications involved international co-authorship, highlighting the global scope of collaboration in this research domain. Regarding document types, the dataset consists of 1,053 journal articles, 54 conference proceedings papers, 7 hybrid records labeled as both articles and proceedings papers, and 2 retracted publications. This distribution illustrates the strong representation of peer-reviewed journal outputs, complemented by significant contributions from conference-based research, which often captures emerging topics and applied methodologies.

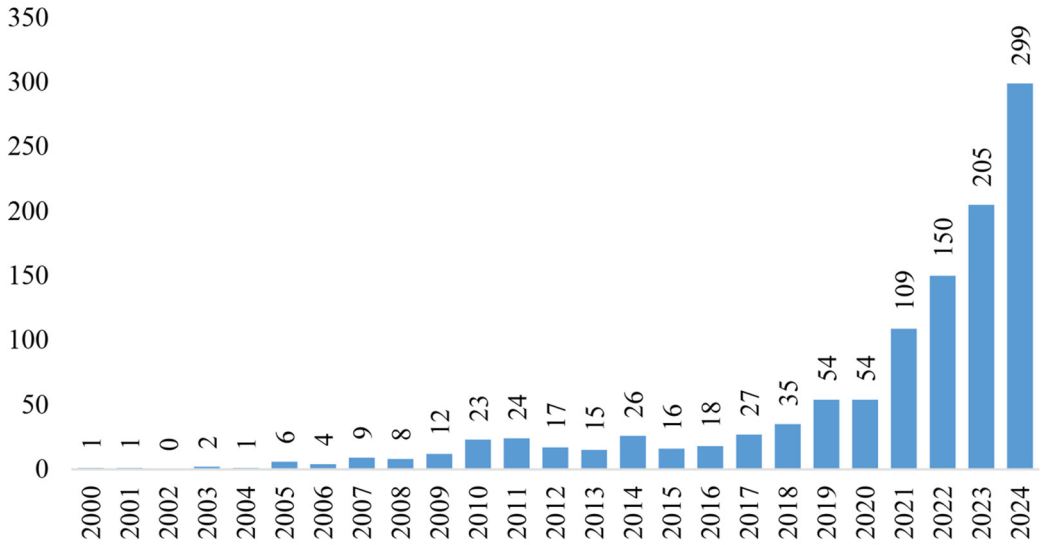

Figure 1. Publication trend
Source: Own processing

The publication trend from 2000 to 2024 shows steady growth in research on the climate change–financial system nexus, with a sharp rise in recent years. The early phase (2000–2009) saw minimal activity, rarely exceeding a dozen publications annually. Between 2010 and 2016, output increased gradually, reaching up to 26 articles per year. A turning point occurred in 2017, followed by rapid growth after 2019, from 54 publications in 2019 and 2020 to 109 in 2021. The upward trend accelerated further with 150 publications in 2022, 205 in 2023, and a peak of 299 in 2024. Over 64% of all publications appeared after 2015, reflecting rising regulatory focus, advances in climate risk modelling, and expanded funding for interdisciplinary research. This confirms the climate-finance nexus as an emerging priority in both academic and policy arenas.

4. RESULTS

4.1. Interpretation of Keyword Co-Occurrence Patterns

The co-occurrence analysis of keywords reveals the thematic architecture and intellectual priorities within the scholarly literature on the interplay between climate change and the financial system. The table presents the most frequently occurring terms among the 1,116 peer-reviewed documents in the final dataset, providing insight into dominant research agendas and conceptual clusters. Unsurprisingly, climate change emerges as the most prevalent keyword (304 occurrences), serving as the conceptual nucleus of the field. Closely related terms such as adaptation (41), sustainability (25), and climate risk (54) emphasize the literature's dual focus on systemic

climate-related risks and the capacity for institutional and economic resilience. This indicates a framing of climate dynamics not solely as environmental concerns but as integral factors in financial stability and policy-making. Terms such as carbon emissions (37), renewable energy (22), and energy transition (18) highlight an operational and policy-oriented approach to decarbonization, with an emphasis on both technological pathways and governance structures. The presence of ESG (20), green finance (27), and sustainable finance (25) reflects the growing integration of sustainability metrics into investment strategies, regulatory frameworks, and corporate reporting practices. From a financial sector perspective, keywords such as financial development (37), financial stability (37), banks (17), central banks (17), and stock market (17) point to the intersection between macro-financial stability and climate-related risks. Meanwhile, insurance (56) and risk management (21) highlight the role of risk transfer mechanisms and institutional resilience strategies. The appearance of geographically specific terms, notably China (27), indicates significant research activity focused on national or regional case studies, often in the context of regulatory innovation or large-scale transition policies. In summary, the keyword distribution illustrates a well-established and increasingly interdisciplinary research field, where environmental science, financial economics, and governance intersect. The prominence of terms related to finance, regulation, and decarbonization strategies underscores the field's evolution toward solutions-oriented research that supports a climate-resilient financial system.

Table 3. The most co–occurrence keywords

Keyword	Occurrences	Keyword	Occurrences
Climate Change	304	Sustainable Finance	25
Insurance	56	Climate Finance	22
Climate Risk	54	Renewable Energy	22
Adaptation	41	Risk Management	21
Carbon Emissions	37	ESG	20
Financial Development	37	Energy Transition	18
Financial Stability	37	Banks	17
China	27	Central Banks	17
Green Finance	27	Global Warming	17
Sustainability	25	Stock Market	17

Source: Own processing

4.2. Leading Authors and Citation Impact in Climate-Finance Research

An author-level analysis identifies the intellectual leaders whose work has shaped the evolving discourse on climate change and the financial system. The top authors in the dataset combine high publication output, strong citation performance, and thematic breadth across climate finance, economics, and risk governance. Muhammad Umar stands as both the most prolific and most cited author, with 8 publications and 947 citations, reflecting sustained research activity and broad influence. His work covers green finance, sustainable investment strategies, and the integration of climate risk into financial decision-making. W. J. Wouter Botzen (7 publications, 233 citations) focuses on climate risk perception, insurance markets, and adaptation economics, while Irene Monasterolo (7 publications, 605 citations) is known for pioneering climate stress-testing frameworks and green finance taxonomies. Stefano Battiston (6 publications, 451 citations) specializes in systemic risk modelling and climate-related financial networks, whereas Shouwei Li (6 publications, 82 citations) and Jyh-Horng Lin (6 publications, 39 citations) contribute to research on low-carbon investment pathways and energy transition economics. Several scholars achieve notable citation impact despite fewer publications. Ella Mae Matsumura, Rachna Prakash, and Sandra

C. Vera-Muñoz each have a single publication with 898 citations, demonstrating exceptional influence on sustainability reporting and climate-related disclosure practices. Nawazish Mirza (5 publications, 554 citations) bridges corporate finance with sustainability, and Van den Bergh, J. C. J. M. (3 publications, 555 citations) provides key insights into the economics of climate change mitigation and policy evaluation. This distribution reveals a dual structure in the field: a core group of prolific authors consistently contributing across multiple themes, and a smaller set of scholars producing landmark studies with disproportionate influence. Together, these authors represent the intellectual vanguard of climate-finance research, shaping theoretical frameworks, guiding empirical inquiry, and informing regulatory approaches for building a climate-resilient global financial system.

Table 4. Top 10 authors by documents and citations

№	Author	Documents	Citations
1	Umar, Muhammad	8	947
2	Botzen, W. J. Wouter	7	233
3	Monasterolo, Irene	7	605
4	Battiston, Stefano	6	451
5	Li, Shouwei	6	82
6	Lin, Jyh-Horng	6	39
7	Ji, Qiang	5	77
8	Johannsdottir, Lara	5	52
9	Mirza, Nawazish	5	554
10	Aerts, Jeroen C. J. H.	4	71
№	**Author**	**Documents**	**Citations**
1	Umar, Muhammad	8	947
2	Matsumura, Ella Mae	1	898
3	Prakash, Rachna	1	898
4	Vera-Munoz, Sandra C.	1	898
5	Monasterolo, Irene	7	605
6	Botzen, W. J. W.	3	555
7	Van Den Bergh, J. C. J. M.	3	555
8	Mirza, Nawazish	5	554
9	Battiston, Stefano	6	451
10	Campiglio, Emanuele	3	430

Source: Own processing

4.3. Geographical Distribution of Scholarly Output and Impact

The analysis of national contributions provides a macro-level perspective on where scientific leadership and research capacity are concentrated within the interdisciplinary field of climate change and financial systems. The top ten contributing countries reveal a geographically diverse yet asymmetrically distributed research landscape, shaped by differences in institutional capacity, policy priorities, and funding structures. China leads the dataset with 307 documents and 8,121 citations, reflecting its growing prominence in climate-finance research. This leadership is supported by significant national investments in green finance, renewable energy policy, and climate risk management frameworks. The United States follows with 205 documents and 5,809 citations, indicating sustained academic engagement with climate-related financial risks, supported by a broad research infrastructure and interdisciplinary collaborations between universities, federal agencies, and the private sector.

England (123 documents, 3,311 citations) and Germany (86 documents, 1,867 citations) represent core European contributors. The UK's strong performance is linked to its active role in shaping global climate finance governance - exemplified by initiatives like the Bank of England's climate stress-testing programs - while Germany's output reflects its expertise in environmental economics, sustainable finance, and systems modelling. Among mid-tier contributors, Australia (60 documents, 1,557 citations), France (60 documents, 2,760 citations), and Italy (60 documents, 2,114 citations) maintain a balanced mix of applied and theoretical research, often focused on energy transition strategies, adaptation policies, and financial market resilience. Notably, the Netherlands (42 documents, 1,540 citations) and Spain (41 documents, 1,583 citations) exhibit strong citation performance relative to their output. In the case of the Netherlands, this reflects concentrated, high-impact work on climate-economic modelling and transition risk assessment, while Spain's contributions emphasize climate policy, governance, and renewable energy integration. Canada (53 documents, 1,259 citations) completes the top ten, with research often centered on climate policy evaluation, sustainable investment frameworks, and adaptation in resource-dependent economies. Overall, the geographical distribution underscores a blend of large-scale producers and smaller but high-impact contributors, illustrating both the global reach and the uneven distribution of research capacity in climate-finance scholarship.

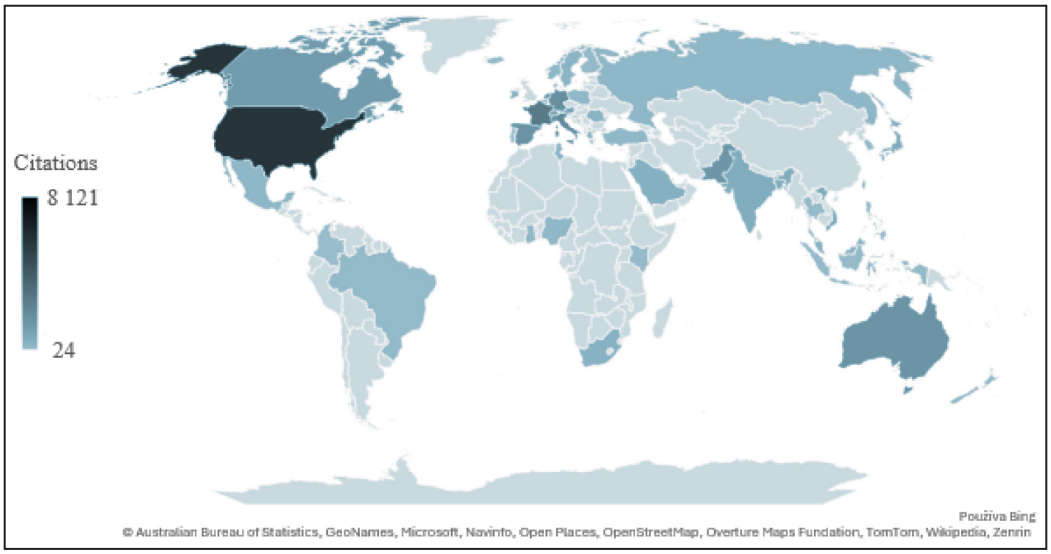

Figure 2. Geographical distribution
Source: Own processing

4.4. Core Publications and Intellectual Anchors in Climate-Finance Research

The most cited documents in the dataset highlight the conceptual and empirical cornerstones of scholarly work at the intersection of climate change and financial systems. These studies address a range of themes - from monetary policy and banking regulation to insurance mechanisms, loan pricing, and systemic financial stability - demonstrating the field's interdisciplinary depth. The most cited publication, "Beyond carbon pricing: The role of banking and monetary policy in financing the transition to a low-carbon economy" (404 citations), provides a seminal analysis of how central banks and monetary policy tools can accelerate the financing of low-carbon transitions. It has become a reference point for both academic debate and policy design in sustainable finance. "Insurance in a Climate of Change" (261 citations) offers

a comprehensive assessment of the insurance sector's role in mitigating and transferring climate-related risks, integrating perspectives from risk modelling, adaptation strategies, and regulatory frameworks. "The impact of climate change on the cost of bank loan" (256 citations) and "Climate risks and financial stability" (254 citations) each focus on the transmission of climate risks into the banking sector, exploring how physical and transition risks can influence credit risk, lending costs, and systemic stability. Finally, "Climate risk and financial stability in the network of banks and investment funds" (140 citations) applies network analysis to model the propagation of climate-related shocks through interconnected financial institutions, offering a methodological basis for climate stress-testing and macroprudential oversight. Together, these highly cited works form the intellectual backbone of climate-finance scholarship, shaping both theoretical frameworks and applied policy measures aimed at ensuring the resilience of financial systems in the face of climate change.

Table 5. Top 5 documents by citations

№	Document	Citations
1	Beyond carbon pricing: The role of banking and monetary policy in financing the transition to a low-carbon economy	404
2	Insurance in a Climate of Change	261
3	The impact of climate change on the cost of bank loan	256
4	Climate risks and financial stability	254
5	Climate risk and financial stability in the network of banks and investment funds	140

Source: Own processing

4.5. Leading Journals in Climate-Finance Scholarship

The distribution of academic output across journals provides valuable insight into the disciplinary scope and research priorities within the climate-finance nexus. The top five journals in the dataset highlight a strong presence of economics, policy, and environmental science perspectives, illustrating the field's inherently interdisciplinary nature. Ecological Economics leads in total citations, with 20 documents and 1,676 citations, reflecting its pivotal role in integrating ecological systems thinking with economic and financial analysis. Contributions in this journal frequently address the valuation of natural capital, the economics of climate mitigation, and the governance of sustainable investment. Energy Policy (10 documents, 1,522 citations) ranks second, underscoring the importance of policy frameworks and energy transition strategies in shaping financial risk landscapes. Articles in this outlet often link regulatory design to investment decision-making in low-carbon pathways. The Journal of Financial Stability (18 documents, 1,203 citations) is the leading finance-focused journal in the dataset, providing critical contributions on systemic risk, climate stress-testing, and the transmission of climate shocks through banking and capital markets. Energy Economics (22 documents, 1,067 citations) offers a complementary macroeconomic perspective, connecting climate and energy market dynamics to investment flows, asset pricing, and long-term economic resilience. Finally, Environmental Science and Pollution Research (36 documents, 1,065 citations) brings a strong environmental science base, with studies on pollution metrics, environmental risk assessment, and the implications of environmental degradation for financial stability and sustainable finance instruments. Collectively, these journals represent the intellectual infrastructure of climate-finance scholarship, bridging environmental science, economics, and policy. Their combined contributions ensure that both empirical evidence and theoretical insights are translated into frameworks for managing the financial risks of climate change.

Table 6. Top 5 journals by citations

№	Journals	Documents	Citations
1	Ecological Economics	20	1,676
2	Energy Policy	10	1,522
3	Journal of Financial Stability	18	1,203
4	Energy Economics	22	1,067
5	Environmental Science And Pollution Research	36	1,065

Source: Own processing

5. DISCUSSION

The results show that climate-finance research has moved from a marginal and fragmented topic to a rapidly expanding field with clear policy relevance. The sharp post-2015 increase in publications corresponds with the institutionalisation of the Paris Agreement and the growing recognition of climate risk in financial governance. This pattern is consistent with broader bibliometric evidence on sustainable finance and climate-related financial development, which also shows that the field has accelerated as regulatory, investor and central-bank attention has intensified (Badareu et al., 2024; Kashi & Shah, 2023).

The keyword structure confirms that the field is not limited to green finance or environmental investment. Instead, it combines several interconnected research streams related to climate risk, financial stability, insurance, carbon emissions, energy transition, ESG, sustainable finance, banks, and central banks. This supports the argument that climate change has become a systemic financial issue rather than a sector-specific environmental concern. The literature increasingly examines how physical and transition risks are transmitted through balance sheets, credit pricing, insurance mechanisms, market expectations and regulatory frameworks. The author and document analyses reveal a dual intellectual structure. The field is shaped both by sustained research programmes and by landmark publications that opened new pathways in monetary policy, banking regulation, insurance, systemic risk modelling and climate stress testing. This suggests that climate-finance research is still developing its theoretical coherence, while already producing policy-relevant tools for understanding and managing climate-related financial risks. The geographical distribution also has practical implications. Research capacity remains concentrated in major economies, while regions with high exposure to physical climate risks may be less visible in citation-based evidence. This imbalance matters because the financial consequences of climate change are unevenly distributed across countries and regions. Future research should therefore pay greater attention to emerging markets, small open economies and climate-vulnerable financial systems. Overall, the paper's contribution is both descriptive and interpretive. Descriptively, it consolidates a dispersed body of literature into a structured map of publication trends, themes, contributors and outlets. Interpretively, it shows that the climate-finance nexus is evolving toward a solution-oriented research agenda focused on resilience, disclosure, stress testing, transition planning and the mobilisation of finance for decarbonisation. This evidence is relevant for academics, policymakers, central banks, financial supervisors and financial institutions seeking to understand where the field is mature and where further conceptual and empirical development is needed.

6. CONCLUSION

This bibliometric analysis offers a comprehensive overview of the scholarly landscape at the intersection of climate change and the financial system. By systematically refining an initial dataset of 1,710 records from the Web of Science Core Collection to a final sample of 1,116 peer-reviewed documents, the study ensures methodological rigor, thematic relevance, and disciplinary breadth. The findings reveal a distinctly interdisciplinary field. Core research clusters span environmental sciences, economics, governance, and policy, supplemented by contributions from engineering, computer science, and social sciences. Keyword co-occurrence analysis identifies "climate change" as the conceptual anchor, surrounded by themes such as adaptation, climate risk, carbon emissions, and green finance, highlighting the integration of environmental and financial considerations in addressing systemic risks. Authorship analysis shows both sustained contributions from prolific scholars and high-impact landmark publications, reflecting a dual structure of steady thematic development and influential conceptual contributions. The geographical distribution points to global engagement, but also to an uneven concentration of research capacity in major economies. The most cited works form the intellectual backbone of the field, advancing understanding of monetary policy's role in low-carbon transitions, the financial implications of climate risks, and systemic resilience mechanisms. Leading journals serve as key platforms bridging scientific evidence, economic analysis, and policy relevance. Overall, the study highlights a rapidly evolving, solution-oriented research domain with increasing policy relevance. The observed trends point toward a continued expansion of climate-finance scholarship, driven by regulatory initiatives, methodological innovation, and cross-sectoral collaboration - elements essential for building a climate-resilient global financial system.

The analysis has several limitations. First, the dataset is limited to the Web of Science Core Collection and therefore may exclude relevant publications indexed in Scopus, SSRN, working-paper series or policy repositories. Second, the study is based on English-language articles and proceedings papers, which may underrepresent regional or non-English research. Third, bibliometric indicators capture visibility and citation impact, but they do not fully measure theoretical quality, policy influence or practical implementation. Finally, citation-based analysis may favour older publications and research produced in countries with stronger academic infrastructures.

Future research could extend the analysis by comparing Web of Science and Scopus datasets, applying longitudinal thematic evolution techniques, examining co-citation and bibliographic-coupling networks in greater detail, and focusing on underrepresented regions. Further studies could also combine bibliometric mapping with qualitative content analysis to examine how climate-risk disclosure, central-bank policy, insurance-market resilience, stress testing and transition-finance frameworks are treated in the literature. Such extensions would deepen understanding of how climate-finance research can support a more resilient and sustainable global financial system.

Acknowledgment

This research was supported by Technical University of Kosice, Faculty of Economics [grant number EkF TUKE P4/2024].

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