

“Development of innovative financing: A bibliometric analysis”

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DEVELOPMENT OF INNOVATIVE FINANCING: A BIBLIOMETRIC ANALYSIS

Abstract

The present study undertakes a bibliometric analysis of the scientific discourse pertaining to innovative financing. The objective of the study is the bibliometric mapping and systematization of the structural evolution of this discourse through analysis of publications indexed in the Scopus database for the period 1974–2025. The methodological framework integrates descriptive analysis of publication and citation dynamics, co-authorship network modelling, and keyword co-occurrence analysis provided using VOSviewer. The analysis identifies five key findings. First, a tripartite periodization of research activity is formalized: a formative stage (prior to 2010), a stage of diversification and institutionalization (2010–2020), and a phase of acceleration and thematic convergence (2021 – present). Second, pronounced fragmentation of co-authorship networks is documented: of 2,610 identified authors, 172 have at least 2 publications, and only 18 of them form interconnected clusters. Third, keyword co-occurrence analysis delineates three dominant thematic clusters that are related to environment, human development, and healthcare. Their inter-cluster connectivity is mediated by the bridging categories of 'international cooperation', 'funding', 'cost effectiveness', 'economics', 'financing', 'public-private partnership', 'human'. Fourth, the geographical and institutional distribution of analyzed publications establishes the dominance of anglophone research systems and health-oriented institutions, alongside a structurally significant supranational research stratum. Fifth, the pronounced interdisciplinarity of the field is confirmed by the distributional dominance of Social Sciences, Engineering, and Environmental Science.

Keywords

innovative financing, climate, healthcare, sustainability,
sustainable development, financial instrument, ESG

JEL Classification

G23, G28, O31, Q56, Q58

INTRODUCTION

Innovative financing has become an important research category in contemporary financial studies, reflecting the search for new instruments, mechanisms and institutional solutions for mobilizing capital under conditions of uncertainty, long investment horizons and growing needs for economic and social development. In contemporary scientific discourse, innovative financing is increasingly associated with mechanisms that combine public and private resources, contribute to a more efficient allocation of risks, enhance the transparency of financial processes and support the implementation of investment projects across different sectors of the economy.

The relevance of this topic is reinforced by the transformation of financial systems under the influence of digitalization, the globalization of capital markets, the development of financial technologies and the need to finance large-scale structural changes. New financial instruments, blended finance, guarantee mechanisms, impact investing, crowdfunding, fintech solutions and other financing models are increasingly considered as means of expanding access to capital, supporting innovative activity, developing infrastructure, modernizing

the social sphere and stimulating economic growth. At the same time, the concept of innovative financing remains terminologically heterogeneous and is often used alongside related categories such as sustainable finance, impact finance, blended finance, fintech finance and alternative finance. This terminological and thematic diversity complicates the systematic understanding of how the scientific discourse on innovative financing has evolved, which research areas dominate, which institutions and countries contribute most actively, and how thematic clusters are formed.

The relevance of the study is derived from the fact that with changing macroeconomic conditions, society faces new challenges and needs for innovative financial solutions. In particular, on the path to sustainable development, there is a need to finance the green transition, modernize healthcare, and environmental practices. For example, green course goals and climate priorities in Europe are transforming not only the structure of the real sector, but also the architecture of financial intermediation, as the role of instruments that link the cost of capital, disclosure requirements, and financial contract parameters to environmental performance and key sustainability indicators is growing. In practice, this is shown as the expansion of the range of innovative financial instruments (market and quasi-market), the complexity of their structures (coupon parameterization, covenants, verification, taxonomic compliance, guarantee mechanisms) and the strengthening of standards and regulatory frameworks to ensure comparability and reduce the risks. Thus, the research problem is that innovative financing has become a cross-sectoral and terminologically heterogeneous category, yet its bibliometric structure, thematic clusters, collaboration patterns, and institutional geography remain insufficiently systematized.

1. LITERATURE REVIEW

Innovative financing in contemporary research is viewed as a multidimensional phenomenon that encompasses not only new financial instruments but also institutional, technological, and organizational changes in the functioning of financial systems (UNDP, 2012; Patrinos & Tanaka, 2024).

Early studies primarily approached innovative financing as the development of novel financial structures, instruments, and contractual arrangements designed to mobilize capital for specific sectors and projects. For example, Kearney (1987) examined innovative financing mechanisms in the mining industry, highlighting transactions that combined commodity-linked and tax-related financing features, including debentures with returns linked to gold and copper prices. Similarly, Ortiz and Buxbaum (2008) analyzed long-term concession agreements as innovative mechanisms for financing transportation infrastructure, emphasizing contractual and institutional innovations that enabled private-sector participation in large-scale public projects. In health-related research, much attention was given to health promotion (Tangcharoensathien et al., 2008); innovative financing efficiency (Atun et al., 2012), etc.

From the 2010s onward, the focus of the literature gradually evolved beyond sector-specific financing arrangements toward diversification, institutionalization, technology-enabled financial innovation (Wang, 2025). Moreover, the growing digitalization of financial services stimulated research on electronic payment systems (Arner et al., 2020), crowdfunding platforms (Ribeiro-Navarrete et al., 2022), peer-to-peer lending (Jagtiani & Lemieux, 2019), blockchain applications (Alao & Cuffe, 2020; Zhan et al., 2024), and other forms of digital finance (Dey & Mishra, 2022; Tanveer et al., 2025). Within this stream, the concept of financial technology (fintech) emerged as a dominant research area (Bai et al., 2025; Caro-González et al., 2026), reflecting the increasing role of digital technologies in transforming financial intermediation, capital allocation, and access to financial services. At the same time, a slow but growing research focus was seen in environment-related innovative financing (Gouldson et al., 2015).

Innovative financing became increasingly associated with addressing healthcare, sustainability and climate-related challenges after 2020 (He et al., 2024; Ibikunle & Ferguson, 2025). Thus, there is a significant amount of publication on health-related innovative finance (Badu et al., 2012), with the current focus largely on reduction of health-

care costs (Wang et al., 2025), interconnectedness of health and climate goals (Borghi et al., 2024), health promotion (Niu et al., 2024), etc.

There is a significant research focus on the sector-oriented integrated financing models, particularly in healthcare (Wang et al., 2025; Borghi et al., 2024), agriculture (Dey & Mishra, 2022; Stănculescu et al., 2025), and biodiversity protection (Guo et al., 2026), etc. A lot of recent studies examine innovative financial mechanisms as instruments for mobilizing resources for renewable energy (Mazzucato & Semieniuk, 2018; Polzin & Sanders, 2020; Thanos et al., 2023), blue economy (Tirumala & Tiwari, 2022), biodiversity (Guo et al., 2026), climate mitigation and adaptation, sustainable infrastructure, and broader sustainable development objectives (Thanos et al., 2023; Niu et al., 2024; Omukuti, 2024). This research direction also encompasses topics such as green finance, sustainable bonds, sustainability-linked bonds (SLBs), blended finance, impact investing, and other mechanisms designed to align financial returns with environmental and social outcomes (Murty & Singh, 2026; Ullah & Lin, 2025; Guo et al., 2026, etc.). Within this area, the researchers analyze the evolution of approaches from corporate social responsibility to integrated ESG strategies, as well as the impact of financial markets on accelerating green investments (Habib & Khan, 2025; Strilchuk et al., 2026).

While there is a lot of recent bibliometric studies dedicated specifically to narrower aspects like that of green finance (Gilchrist et al., 2021; Nguyen, 2024), there are only twelve studies partly covering innovative financing (as based on Scopus database, 2005–2026, query: TITLE-ABS-KEY (“innovative financing” AND “bibliometric”). With their focus primarily on renewable energy (Tazvinga et al., 2026, and others), water preservation (Moroz et al., 2026), biodiversity and blue bonds (Joshiyura et al., 2026) and business-related aspects of Sustainable Development Goals integration (Sáenz De Viteri, 2025), there is a scientific gap revealed. In particular, there is a lack of comprehensive, reproducible bibliometric mapping of studies devoted specifically to the development of innovative financing, which would combine descriptive analysis of publication trends, the construction of author networks, the identification of research clusters by

keywords, and the analysis of the conceptual and intellectual structure of the scientific field by research topic.

The article aims to enhance comprehension of the current state of innovative financing research, to carry out bibliometric mapping, systematization of the evolution of scientific discourse on innovative financing.

2. METHODOLOGY

Methodologically, the study is grounded on bibliometric analysis as a tool for the quantitative synthesis and structural mapping of scientific discourse. Unlike a traditional narrative literature review, the bibliometric approach enables not only to capture the dynamics of publication activity but also to reconstruct the conceptual architecture of the research field, identify thematic clusters, nodes of scholarly collaboration, and key categories linking financial innovations, innovative financial instruments. In line with the article’s purpose, the study specifically focuses on scholarly discourse on the development of innovative finance.

The analytical design of the study combines two complementary components. The first component encompasses an analysis of the temporal dynamics of publications, citation patterns, subject areas, and the institutional and geographical distribution of research. The second component involves science mapping, that is, the construction of scientific maps based on network relationships among authors and keywords. It is precisely that this combination enables researchers to move beyond a simple description of the body of publications toward an interpretation of the evolution of the research agenda, shifts in its intellectual core, and the identification of structural transformations within the field of study.

2.1. Source selection logic through an adaptation of the PICOS approach

To enhance the transparency of the methodological design, the study employs a PICOS approach (Population, Interest/Intervention, Comparison, Outcomes, Study Design), that serves as an adapt-

Table 1. Source inclusion criteria under the adapted PICOS framework

Element	Inclusion criteria
Population (P)	Scholarly publications devoted to innovative financing, trends in its development, and related instruments
Interest/Intervention (I)	Innovative financial mechanisms and instruments that facilitate capital mobilization
Comparison (C)	Comparison of instruments, approaches, countries, thematic clusters, and stages in the development of scholarly discourse; identification of differences among regulatory, market-based, and institutional financing models
Outcomes (O)	Identification of publication dynamics, conceptual clusters, key nodes of collaboration, and dominant categories linking financial innovations
Study Design (S)	Articles, conference papers, book chapters, reviews, books and other publications indexed in Scopus, and selected based on the title, abstract, and keywords fields within a time horizon up to and including 2025

ed transparency framework to formalize the logic for including publications in the final analytical block, where ‘Population’ means a pool of publications, ‘Interest’ refers to a core field of research, ‘Study Design’ - to types of publications included to a sample (Table 1).

2.2. Dataset construction process

The study is based on the international scientometric database Scopus, which provides sufficiently comprehensive metadata for the construction of bibliometric networks and the subsequent mapping of the research field. The choice of this particular database is justified by its high representativeness across the fields of economics, finance, sustainable development, energy transition, and interdisciplinary research.

The search was conducted as of January 30, 2026 within the title, abstract, and keywords fields, which is methodologically justified for bibliometric studies, as these fields most comprehensive-

ly capture the substantive core of a publication (Table 2). The Scopus search query was “innovative financing”. Plural forms and alternative terminology were not included. All document types and source types were selected. Language restrictions were not used in order not to narrow a sample. After the initial selection the sample-cleaning was conducted in order to avoid duplicates. As a result, no duplicates were identified.

2.3. Bibliometric analysis procedures

The analytical processing of the final source sample was carried out in the VOSviewer software environment, which enables the authors to construct and interpret bibliometric networks based on the principle of visual mapping for transition from a broad term to the conceptual identification of thematic areas. Within the scope of the study, the following procedures were applied:

1. Co-authorship analysis – to identify the configuration of scholarly collaboration among

Table 2. Description for the selection of publications

Design component	Methodological implementation in the study	Analytical purpose
Econometric database	Scopus	Formation of the publications pool and export of complete bibliographic metadata for subsequent network analysis
Search fields	TITLE-ABS-KEY	Identification of publications in which the research terminology is recorded in the title, abstract, or keywords
Search query	“Innovative financing”	Formation of the initial broad bibliographic core of the study
Type of logical search	Exact search by key phrase followed by thematic interpretation	Minimization of losses of relevant records at the initial stage
Time horizon of analysis	≤ 2025	Identification of the long-term dynamics of publications, citation patterns, and thematic evolution
Language restriction	No language restrictions	Avoidance of the research scope limitation
Initial sample size	893 publications	Formation of the full pool of publications as of January 30, 2026
Sample-cleaning procedure	Duplicate handling procedure was conducted. No duplicates were identified	Formation of relevant, cleared pool of publications

authors, reveal the degree of fragmentation within the research field, and determine the presence of stable cooperation nodes. Counting method used for co-authorship analysis is a full counting method. Some thresholds were set: documents with a large number of authors were ignored (maximum number of authors per document – 25); minimum number of documents of an author – 2. Verification of selected authors proved that there are no technical duplicates. Of the 2610 authors, 172 meet the threshold.

2. Keyword co-occurrence analysis – to reconstruct the conceptual structure of scholarly discourse, identify thematic clusters. Counting method used for co-occurrence analysis is a full counting method. To enhance the analytical quality of a keyword co-occurrence network modelling, cleaning of the keyword dataset was carried out: synonyms were replaced and spelling of closely related terms was normalized by using a thesaurus file in VOSviewer, technical words lacking conceptual significance, words with spelling mistakes were removed. Minimum number of occurrences of a keyword is set as 5. After cleaning procedures, the number of keywords that meet the threshold is 304. Clustering was performed based on the strength of links between the units of analysis, which made it possible to identify not only frequent but also structurally significant thematic nodes.

Except network analysis structural analysis was conducted, that includes such criteria as institutional affiliations, countries, sponsors, subject areas, and allows providing a multidimensional re-

construction of the structure of the scientific field. Analysis of publication and citation dynamics was used to identify temporal stages of research activity.

2.4. Methodological limitations of the study

Despite the analytical advantages of the proposed approach, the study has several limitations. First, reliance solely on the Scopus database may result in incomplete coverage of the relevant literature, particularly regional publications, interdisciplinary journals, or works indexed in other databases. Second, searching within the title, abstract, and keywords fields increases the thematic relevance of the dataset; however, it may also lead to the omission of works in which the relevant concepts are not explicitly reflected in the metadata, even though the article is substantively relevant.

3. RESULTS

Innovative financing is a topic of high interest and importance among researchers. This area began to develop in the research presented in the Scopus database in 1974 and is becoming increasingly relevant today. It should be noted that a significant number of researchers are engaged in the selected topic (2,610 authors), but most of them are not connected to each other. Out of 172 authors that meet threshold (have at least 2 publications), only 18 are connected (Figure 1).

This indicates insignificant connections and confirms the lack of a comprehensive approach and a certain fragmentation of research.

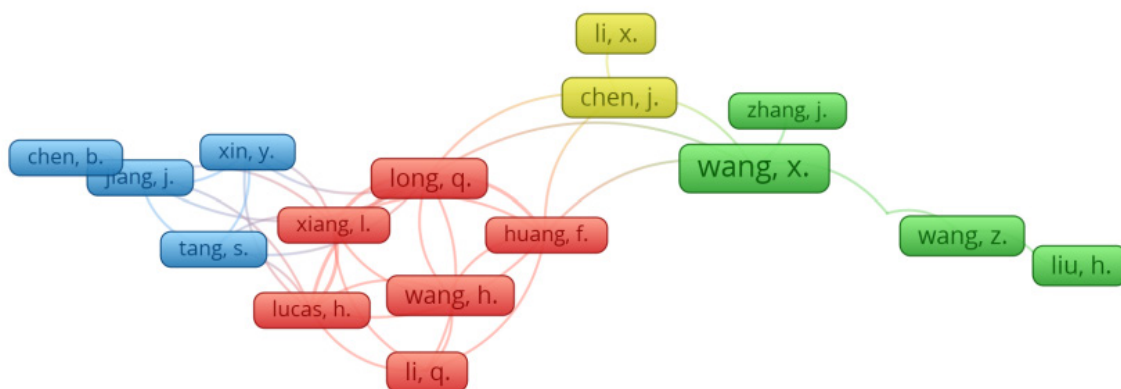


Figure 1. Bibliographic co-authorship network for a keyword 'innovative financing'

According to Scopus data, 893 research papers related to innovative financing were published (Table 3).

Table 3. Structure of relevant publications for the keyword ‘innovative financing’ in the Scopus database by the type of publication

Publication type	Number of publications
Article	460
Conference paper	156
Book chapter	152
Review	76
Book	21
Others	28
Total	893

At the early stage, the number of related publications annually was rather insignificant (less than 5 items annually) and there were only 83 publications in the Scopus database from 1974 till 1999. The largest increase in research is observed from the mid-2000s (Figure 2).

A bibliometric analysis of research for the period 1974–2025, based on aggregated data from the Scopus database, demonstrates a fundamental transformation of research interest. There are several periods of the increase of publication activity in the field of innovative financing as depicted on the graph. These periods are tightly connected to different challenges in the global scale such as economic, social crises, policy shifts. The dynamics of publications on the keyword ‘innovative financing’ demonstrates stable technical evolution, characterized by cyclicity and the presence of individual ‘impact events’ (Table 4).

If the peak in citations in 2016 was a reaction to the Paris Agreement and the UN Sustainable Development Goals, then the surge in publications in the mid-2020s is a direct response to the humanitarian challenges facing society in connection with the COVID-19 pandemic, the need for research on health financing, and the launch of

Table 4. Periodization of research development in the field of innovative financing

Period	Characteristics	Influencing factors	Evolution of scholarly focus
Before 2010 (formative stage)	Moderate research interest	Macrofinancial turbulence (2008–2009 crisis) Institutional experiments in development finance and PPP	Instrument-centric conceptualization Sectoral and project-based application Institutional and contractual innovation focus
2010–2020 (diversification and institutionalization stage)	Volatility with an upward trend	Paris Climate Agreement, UN Sustainable Development Goals 2016	Technological reconfiguration of finance Field diversification and cross-sector diffusion Institutional embedding and scaling logic
2021 – present (acceleration and convergence phase of the green-social agenda)	Rapid growth	1) Social challenges: COVID-19 pandemic 2) Environmental vector: European Green Deal, Fit for 55, InvestEU	Dominance of sustainability and ESG logic Convergence of financial innovation and sectoral policy goals

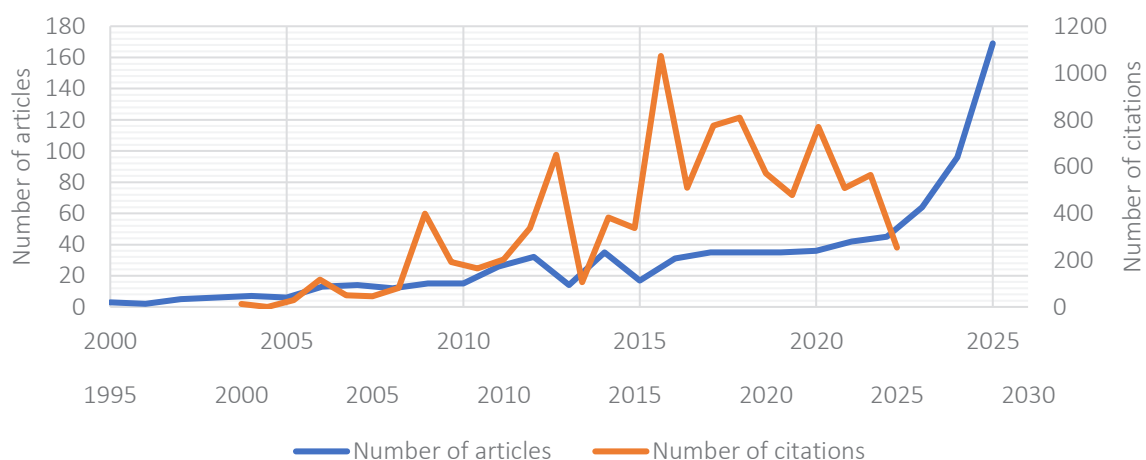


Figure 2. Number of relevant publications and citations for the keyword ‘innovative financing’ in the Scopus database for the period 2000–2025

the European Green Deal and the Fit for 55 package. Thus, at different stages of economic development, the understanding of innovative financing changes, and new priorities, instruments and practices emerge.

A significant number of citations indicates the interest of researchers in this field and the significant impact of the research. Table 5 presents the twenty most-cited publications retrieved using the specified Scopus query. To avoid reproducing complete bibliographic information already provided in the reference list, the publications are identified using author–year citations. The table summarizes each publication’s principal research focus and its relationship to innovative financing.

Analysis of the most influential publications confirms that innovative financing is considered by researchers in the context of the green transition, namely the development of a green economy (Randjelovic et al., 2003; Barbier, 2011), low-carbon development (Yadoo & Cruickshank, 2012; Zhan & de Jong, 2018), energy efficiency (Bertoldi et al., 2021; Sarkar & Singh, 2010; Kar et al., 2016; Shah et al., 2015; Liu et al., 2022), and also in the context of the development of the healthcare sector (second place in terms of the number of publications among the top 20 most cited studies, namely 5 publications), and other minor spheres, such as financial market development (Cummins, 2008; Tang et al., 2018). It is worth noting that the top 3 studies by number of citations belong pre-

Table 5. Top-20 most-influential papers on the keyword ‘innovative financing’ in the Scopus database

Rank	Reference	Citations	Main research focus	Relationship to innovative financing
1	GBD 2015 Child Mortality Collaborators (2016)	648	Global, regional, national, and subnational trends in stillbirths and mortality among children under five	Contextual. Innovative financing appears within the broader discussion of health-system strengthening and resource mobilization rather than as the principal research object
2	Cooke et al. (2019)	489	Policy, prevention, diagnosis, treatment, and health-system measures required to eliminate viral hepatitis	Related. The study discusses sustainable and innovative funding mechanisms as part of the institutional strategy for expanding hepatitis services
3	Cutts et al. (2007)	328	HPV epidemiology, vaccine development, effectiveness, implementation, and access	Contextual. Financing is relevant to vaccine introduction and equitable access, but it is not the review’s central analytical subject
4	Tang et al. (2018)	290	Procurement decisions involving suppliers subject to financial constraints and performance risk	Direct. The study examines financing arrangements intended to alleviate supplier liquidity constraints and improve supply-chain performance
5	Liu et al. (2022)	276	Relationships among green finance, FinTech, financial inclusion, and energy efficiency	Direct. Emerging financial mechanisms are explicitly evaluated as determinants of energy-efficiency outcomes
6	Bertoldi et al. (2021)	229	Existing and emerging instruments for financing energy renovation of residential buildings in the European Union	Direct. The review systematically examines innovative financing instruments that can address investment barriers in building renovation
7	Yadoo and Cruickshank (2012)	202	Contribution of renewable-energy mini-grids to poverty reduction and climate strategies in developing countries	Related. Financing and institutional arrangements are considered as enabling conditions for implementing decentralized low-carbon energy systems
8	Barbier (2011)	185	Policy challenges associated with the green economy and sustainable economic development	Related. Innovative financing is positioned among the policy instruments needed to support green investment and sustainable economic transformation
9	Carling (1993)	157	Housing and community-support models for people with mental illness	Contextual. Financing is connected to the provision and sustainability of supported housing services but is not the principal focus of the review
10	Cummins (2008)	149	Development and market structure of catastrophe bonds and other risk-linked securities	Direct. Catastrophe bonds are innovative capital-market instruments used to transfer and finance disaster-related risks
11	Sarkar and Singh (2010)	146	Experience with financing energy-efficiency projects in developing countries and the barriers that remain	Direct. The article evaluates financing mechanisms and institutional solutions for mobilizing investment in energy efficiency

Table 5 (cont.). Top-20 most-influential papers on the keyword ‘innovative financing’ in the Scopus database

Rank	Reference	Citations	Main research focus	Relationship to innovative financing
12	Wang et al. (2024)	135	Role of urban green infrastructure in biodiversity conservation and sustainable urban development	Contextual. Innovative financing is one possible implementation mechanism for urban green infrastructure, but the publication primarily addresses ecological and adaptive-management issues
13	Maresova et al. (2023)	126	Identification of determinants and barriers affecting mobility among older adults	Contextual. Financing may be discussed in relation to accessible services, infrastructure, or technological solutions, but it is not the study's principal analytical focus
14	Kar et al. (2016)	118	Development, policy conditions, investment barriers, and prospects of the Indian solar-energy market	Related. Financing availability and investment mechanisms are considered among the factors shaping solar-market development
15	Randjelovic et al. (2003)	108	Emergence, characteristics, and development of venture capital directed toward environmentally oriented businesses	Direct. Green venture capital represents an innovative financing mechanism for environmentally oriented firms and technologies
16	Gong et al. (2020)	106	Distribution of benefits from online financing within a sharing-economy e-tailing platform	Direct. The study evaluates a platform-based financing model and its effects on participating firms and supply-chain actors
17	Makepa and Chihobo (2024)	103	Technological, commercial, regulatory, infrastructural, and financial barriers to biorefinery deployment	Related. Access to capital and suitable financing mechanisms are examined as part of the broader set of barriers to commercialization
18	Shah et al. (2015)	90	Technical and economic performance of hybrid distributed-energy systems combining solar photovoltaics, batteries, and combined heat and power	Contextual. Financing is relevant to system deployment and investment feasibility, but the study primarily evaluates technical and economic performance
19	Zhan and de Jong (2018)	83	Financing arrangements used in the development of eco-cities and low-carbon cities, illustrated by the Shenzhen case	Direct. The study explicitly analyzes financing structures for large-scale low-carbon urban-development projects
20	Nguyen et al. (2012)	80	Effect of a voucher program on the use of maternal healthcare services in Bangladesh	Direct. The voucher program constitutes a demand-side financing mechanism intended to improve access to maternal health services

cisely to research in the field of healthcare, where innovative financing and its tools are considered a necessary prerequisite for the development of medicine, improving access to medical services, and overcoming serious diseases.

Analysis of publications, namely keyword co-occurrence research, has enabled us to identify the main clusters that characterize the focus of research. Keyword analysis uses the most popular keywords to provide a thorough assessment of major research trends and subjects (Li et al., 2016). Clustering helps structure existing research and identify connections between different topics that may be important for the further development of the topic. So, taking into account the frequency and links, the main clusters with 8,633 links are identified (Figure 3).

304 connected keywords that meet thresholds mentioned in the method section were found in

the set of articles analyzed. Each cluster reflects a specific area of research in the field of innovative financing. The largest cluster is a red one, it contains 171 items mainly connected to financial and environmental issues: investments, financing, banking, blockchain, financial markets, fintech, project management, tax, green bonds, sustainability, renewable energy, clean energy, solar energy, decarbonization, climate change, biodiversity, blue economy, circular economy, green economy, etc.

A green cluster includes 79 items covering human development issues, mainly healthcare (human, economics, financial management, health insurance, health care access, health care delivery, health care facility, health care financing, health care system, education, costs, poverty, etc.). A blue cluster includes 54 keywords, most of them represent different diseases issues (global health, COVID-19, disease control, drug industry, HIV

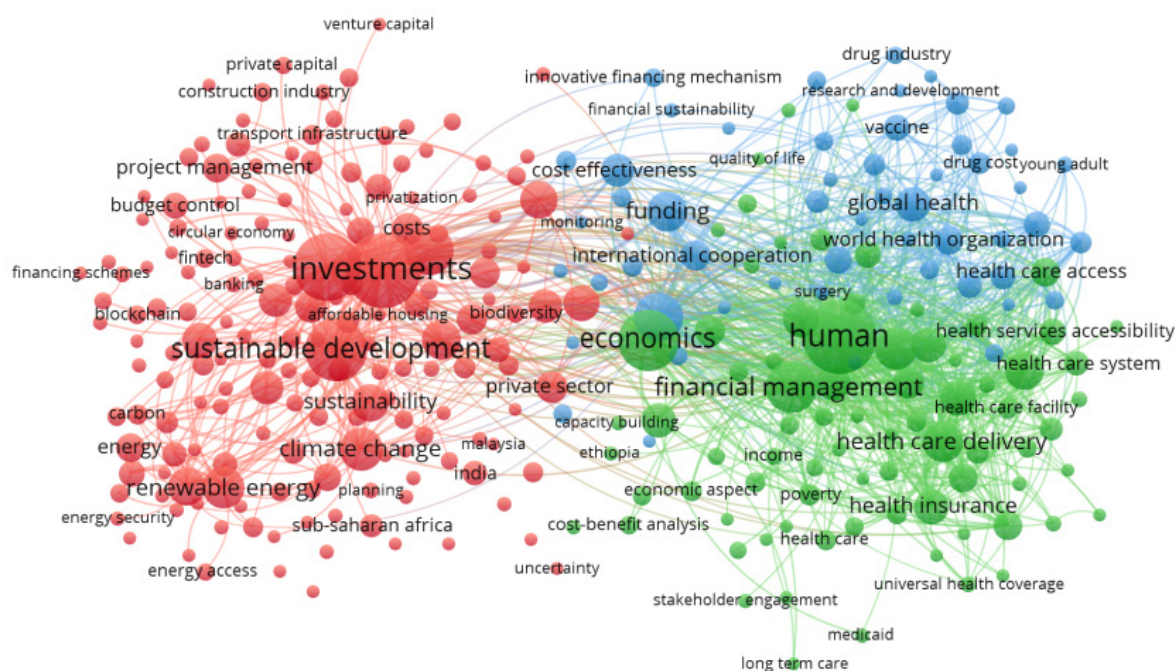


Figure 3. Keyword co-occurrence network

infections, malaria, infection control, pandemics, mental health, therapy, vaccine, etc.), as well as economic aspects (innovative financing mechanism, financial stability, international cooperation, funding, social economics, etc).

The keywords co-occurrence layout (Figure 4) shows that the most attention has been paid to the issue of innovative financing in recent decades, namely in the period after 2010.

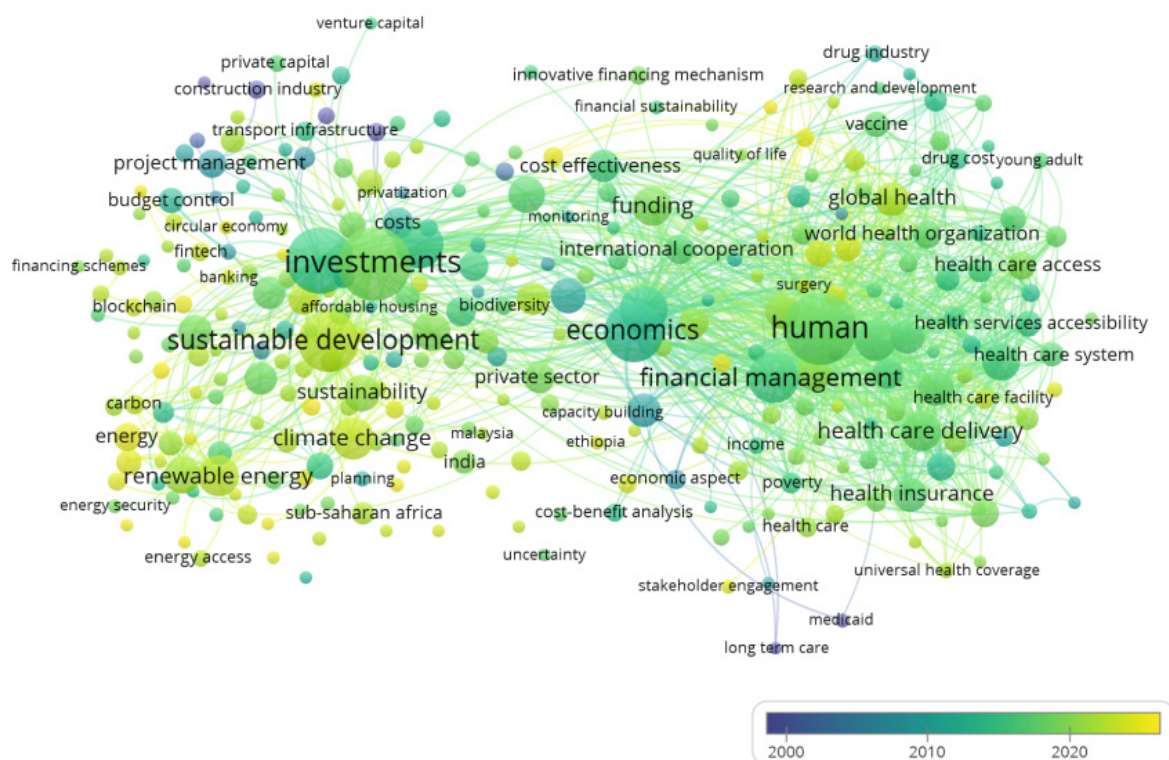


Figure 4. Keyword co-occurrence layout

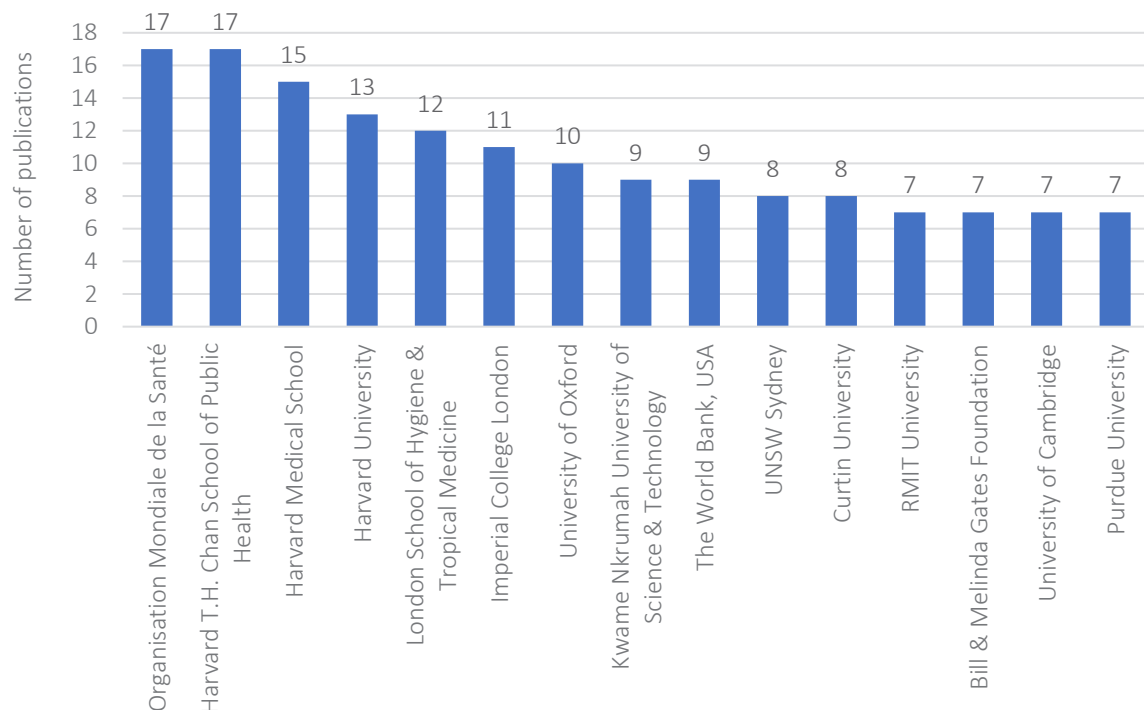


Figure 5. Number of relevant publications on the keywords ‘innovative financing’ by institutional affiliation of authors

The results obtained correlate with the dynamics of the number of publications and citations presented above and confirm that there has been a rapid growth in the research interest for innovative financing issues and publication activity in this area during abovementioned period. The earliest publications keywords include the most general issues (marketing, management, long-term care etc.) while the most recent ones are connected to sustainability (climate change, renewable energy, clean energy, fintech, blockchain, supply chain).

Bibliometric analysis of the institutional affiliation of authors in the Scopus database (Figure 5) revealed hidden semantic patterns and significant polysemy of the concept under study.

Distribution of publications for the keyword ‘innovative financing’ by institutional affiliation of authors demonstrates that institutions in the sphere of healthcare occupy the leading positions.

The geographical distribution of publications in the field of innovative financing (Figure 6) shows that the United States is the leader by the number of studies.

In general, the British-American cluster (US, UK) dominates. However, it is notable that researchers from European countries also represent a significant share, almost the same as the USA.

It is notable that 100 publications, that is 6.67%, belong to the ‘Undefined’ category that includes supranational institutions such as the World Bank, the OECD, and the European Commission. Thus, the ‘Undefined’ category is a structural feature, rather than a metadata error.

An important aspect of bibliometric analysis is the identification of key institutions that finance research, as this reflects the strategic priorities of global and regional policy. Among all 893 publications for the keyword ‘innovative financing’, 163 items have a funding sponsor mentioned. Structural analysis of the publications where funding sponsors are mentioned shows the main investors (Figure 7).

An analysis of Scopus data shows that only about 12 % of all publications have funding sponsors indicated. The distribution of publications by sponsors for the keyword ‘innovative financing’ shows

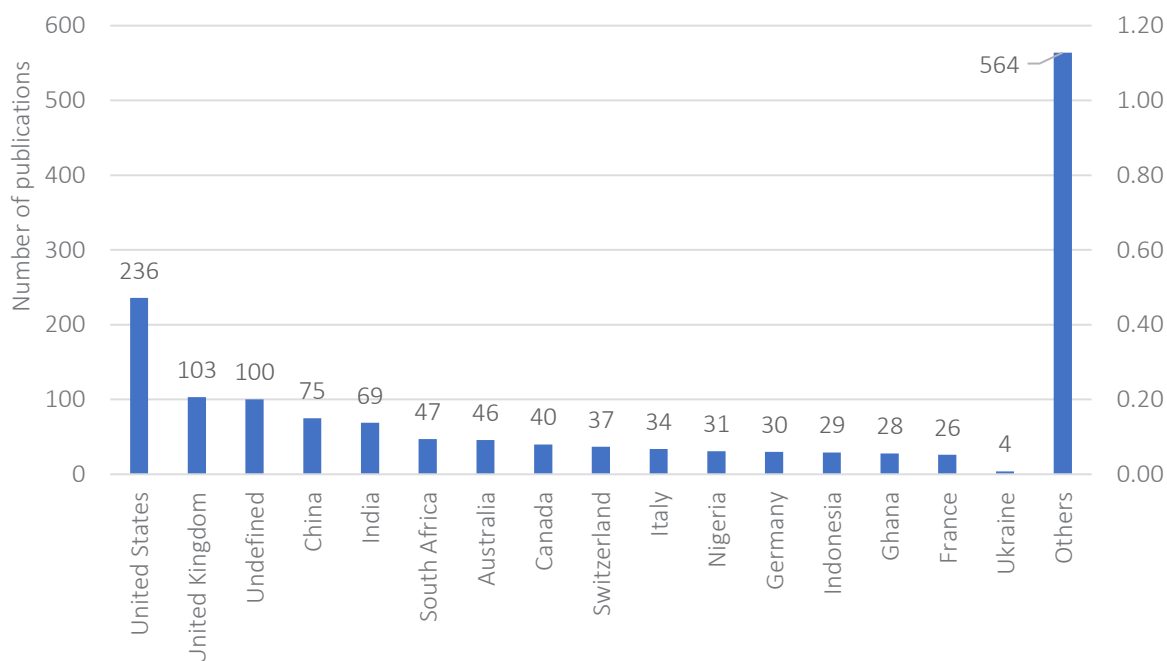


Figure 6. Number of relevant publications on the keyword 'innovative financing' by the authors' country of origin for the period 1974–2025

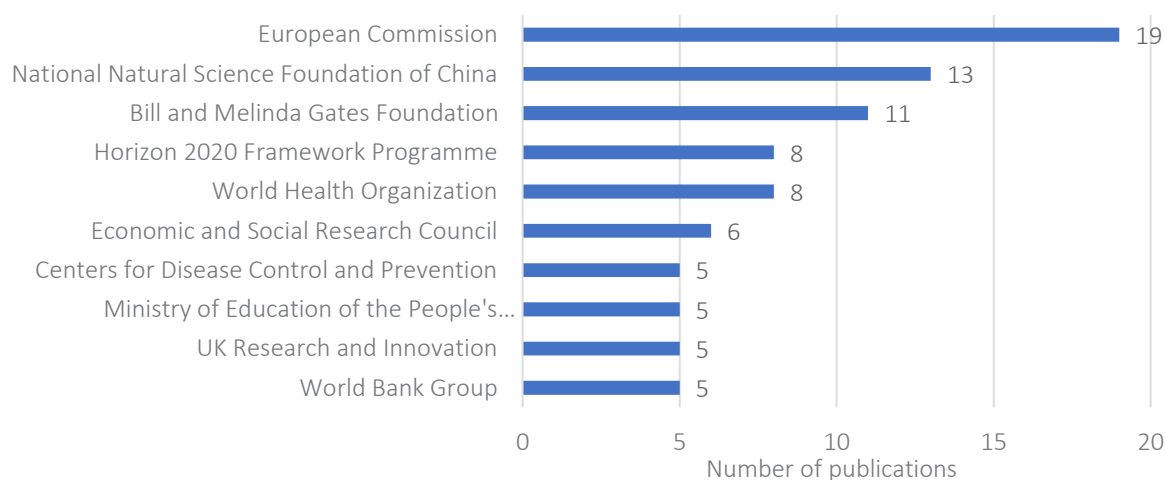


Figure 7. Structure of relevant publications by the keyword 'innovative financing' by funding sponsors for the period 1974–2025

a clear focus of investments into research of new financing mechanisms. According to the data obtained, the undisputed leader in research support is the European Commission, which ranks first among the top 10 sponsors (19 publications). The National Natural Science Foundation of China (NSFC) is particularly active, ranking second (13 publications). This demonstrates the globalization of scientific discourse on financing sustainable development. An analysis of sponsors using the key-

word 'innovative financing' revealed a significant presence of organizations in the health and development sectors, in particular the Bill and Melinda Gates Foundation (11 publications, 3rd place) and the World Health Organization (8 publications). This indicates that the term 'innovative financing' is often associated with mechanisms for financing global public goods. Therefore, the concept under study should be considered as an intersectoral category formed at the intersection of finance, public



Figure 8. Number of relevant publications on the keyword ‘innovative financing’ by subject area for the period 1974–2025

policy, health care, sustainable development and the management of public goods.

It should be noted that publications in the field of innovative financing are interdisciplinary, as evidenced by their distribution by subject area in the Scopus database (Figure 8).

Figure 8 confirms the pronounced interdisciplinary character of innovative financing research. Since the Scopus classification system allows each publication to be assigned to several subject areas simultaneously, the total number of subject-area assignments (1,636) exceeds the number of publications in the sample (893), reflecting the cross-disciplinary scope of the field rather than a data inconsistency. Social Sciences accounts for the largest share of publications (242, or 27.1% of the sample), followed by Engineering

(200, 22.4%), Environmental Science (194, 21.7%), Medicine (180, 20.2%), Business, Management and Accounting (175, 19.6%), and Economics, Econometrics and Finance (166, 18.6%). It is notable that Economics, Econometrics and Finance – the subject area most directly associated with the term “innovative financing” – ranks only sixth, behind the social, engineering, environmental, medical and managerial domains. This confirms that, in the Scopus discourse, innovative financing is conceptualized primarily as an applied, cross-sectoral instrument for addressing social, technological, environmental and health-related problems, rather than as a narrowly financial category. A second, mid-sized group of subject areas – Energy (120, 13.4%), Computer Science (64, 7.2%), Earth and Planetary Sciences (53, 5.9%) and Agricultural and Biological Sciences (44, 4.9%) – highlights the relevance of innova-

tive financing to the energy transition, digitalization and natural-resource management agendas. The remaining subject areas, including Decision Sciences, Arts and Humanities, Mathematics, Biochemistry, Genetics and Molecular Biology, Immunology and Microbiology, and a long tail of specialized natural-science and medical disciplines (Materials Science, Veterinary, Psychology, Physics and Astronomy, Chemistry, Pharmacology, Dentistry, Health Professions, Nursing, Chemical Engineering and Neuroscience), each account for fewer than 40 publications (under 4.5% of the sample). Their presence, though marginal in frequency, indicates that the discourse on innovative financing extends into highly specialized scientific niches, reinforcing its role as a boundary concept that links the financial-economic core of the topic with engineering, environmental, medical and social-scientific perspectives.

Obtained findings indicate that the scientific discourse on innovative financing is developing unevenly and has a distinctly interdisciplinary character. Its evolution can be traced through both the growth of publication activity and changes in its substantive core. In particular, there has been a shift from a predominantly instrumental understanding of innovative financing as a set of separate financial mechanisms to a broader interpretation, in which it is associated with health care, sustainable development, climate challenges, and financial resource management. At the same time, the results do not provide grounds for asserting that a fully formed and integrated scientific field has emerged. On the contrary, the co-authorship network, the structure of keywords and the subject-area distribution of publications indicate fragmentation, thematic heterogeneity and the presence of several relatively autonomous research vectors.

4. DISCUSSION

The publication dynamics allows interpreting the development of research on innovative financing as a gradual transition from an early, predominantly sectoral and instrumental stage towards more complex financing models, with an acceleration after 2020. This result is proved by keywords network overlay and is consistent with the previ-

ous research. For instance, early studies considered innovative financing mainly through the lens of new financial structures, contractual mechanisms, project finance and public-private partnerships. In the works of Kearney (1987) and Ortiz and Buxbaum (2008), the innovativeness of financing was primarily associated with the search for new ways to mobilize capital for specific sectors or infrastructure projects. The bibliometric results confirm that, at the initial stage, the research field under consideration developed rather as a set of applied solutions across different sectors.

The subsequent expansion of the research focus, recorded in the results, is also consistent with the scientific discourse on the transition from individual financial instruments to technologically and institutionally mediated financing models. Since the 2010s, innovative financing has increasingly been considered alongside the digitalization of financial services, the development of fintech, crowdfunding, peer-to-peer lending, blockchain solutions, and new platform models of financial intermediation (Wang, 2025; Arner et al., 2020; Jagtiani & Lemieux, 2019; Alao & Cuffe, 2020; Zhan et al., 2024; Bai et al., 2025; Caro-González et al., 2026). At the same time, obtained bibliometric results show that, within the search query “innovative financing”, the digital dimension does not form an independent dominant cluster. It should be noted that this clarifies previous studies, since digital financial innovations serve as an important part of a broader financial transformation. However, in the scientific discourse directly marked by the term ‘innovative financing’, other thematic areas emerge as central, such as health care, sustainable development, environment.

The most pronounced result of the keyword co-occurrence analysis is predominance of a red cluster connected to sustainability, environmental and financing issues. It demonstrates the gradual entry of green transition issues into the core of innovative financing research. This result correlates with contemporary literature, where innovative financial mechanisms are considered as instruments for mobilizing resources for renewable energy, climate adaptation, sustainable infrastructure development, biodiversity, the blue economy (Mazzucato & Semieniuk, 2018; Polzin & Sanders, 2020; Tirumala & Tiwari, 2022; Guo et al., 2026;

Thanos et al., 2023; Niu et al., 2024; Omukuti, 2024). At the same time, the results do not provide grounds for claiming that the climate direction completely dominates the other components of the field.

Another important result of research is a demonstration of two human-oriented clusters. A green one covers mostly healthcare, but also poverty, education, quality of life and other social issues. A blue one represents diseases issues and also economic aspects such as innovative financing mechanism, financial stability, international cooperation. It is notable that these two clusters are tightly interconnected as both of them concerns to human development, and connection between them is mediated by the category 'human'. This finding is consistent with the results of the literature review. Many authors consider innovative financing as a mechanism for attracting resources for global public goods, particularly in health promotion, healthcare financing, disease management, pharmacoeconomics, and access to medical services (Tangcharoensathien et al., 2008, Atun et al., 2012). The studies by Badu et al. (2012), Wang et al. (2025), Borghi et al. (2024), and Niu et al. (2024) demonstrate that the medical and social direction is one of the important channels through which the concept of 'innovative financing' has been formed. In this sense, the results obtained demonstrate that the concept of innovative financing has broader origins and cannot be reduced solely to digitalization, green or climate finance.

Defined clusters represents the coexistence of social and environmental directions, connection between which is mediated by such categories as: 'international cooperation', 'funding', 'cost effectiveness', 'economics', 'financing', 'public-private partnership'. It confirms that innovative financing in the research is tightly related to both a macro-level policy of resource mobilization and as a set of specific financial and managerial solutions in the field of sustainability and ESG paradigm development.

The subject-area distribution of publications confirms the topic's interdisciplinary nature. In particular, the predominance of Social Sciences, combined with the substantial representation of Engineering, Environmental Science, Medicine, Business, Management, and Accounting, indicates that innovative financing is not a purely financial category in the narrow sense. It functions as an applied analytical framework for studying how financial instruments, institutional mechanisms and managerial decisions can be used to address complex social, infrastructural, medical and environmental challenges. The results obtained are consistent with the contributions of many authors, whose works examine innovative financing as a component of the broader architecture of sustainable development (Wang et al., 2025; Borghi et al., 2024; Dey & Mishra, 2022; Stănciulescu et al., 2025; Guo et al., 2026).

CONCLUSIONS

The present study pursued the objective of bibliometric mapping and systematization of the evolution of scientific discourse on innovative financing. Based on structural and dynamic analysis of 893 publications indexed in the Scopus database for the period 1974–2025, as well as networks created by means of VOSviewer, the following findings are drawn.

First, the structural evolution of research activity in the field of innovative financing admits a tripartite periodization: the formative stage (prior to 2010); the stage of diversification and institutionalization (2010–2020); the stage of acceleration and thematic convergence (2021 – present).

Second, co-authorship network analysis reveals a fragmentation of the scientific collaboration structure. This finding indicates a deficit of interdisciplinary integration within the field.

Third, keyword co-occurrence analysis delineates two dominant thematic clusters: the first one is environmental oriented that covers environmental, sustainability and financing issues and occupies a structurally pivotal position within the network. There are also two human-oriented clusters: a green one

covers healthcare and other social issues such as poverty, education; a blue one is connected to diseases and economic aspects. The inter-cluster connectivity is mediated by bridging categories: ‘international cooperation’, ‘funding’, ‘cost effectiveness’, ‘economics’, ‘financing’, ‘public-private partnership’, ‘human’. This architecture reflects the dual logic of the field: the coordination of macro-level public policy with micro-level financial mechanisms for fostering sustainable development, namely in environmental and social directions.

Fourth, analysis of the institutional affiliation of authors and the geographical distribution of publications establishes the dominance of health-oriented organizations, and preponderance of the researchers from the United States and the European countries leading by the United Kingdom. Additionally, there is a notable structural presence of supranational institutions as publications’ sponsors, with the European Commission leading research funding, among all publications where sponsors are mentioned.

Fifth, the disciplinary distribution of publications confirms the pronounced interdisciplinarity of the field, which is shared predominantly across the Social Science, Engineering, Environmental Science, Medicine, Business, Management and Accounting.

This study is subject to several limitations, primarily its reliance solely on the Scopus database that may exclude relevant regional or non-indexed literature. Furthermore, the usage of the exact phrase “innovative financing” ensures thematic focus, but may exclude relevant studies that use related terms. At last, the results should not be extrapolated to specific vectors of innovative financing, since the sample represents precisely those publications in which the category innovative financing is explicitly used.

Further research may be directed towards expanding the bibliometric base by including other scientometric databases, and combining bibliometric analysis with expert interviews or case studies. This would enable not only to map the structure of the scientific discourse, but also to explain in greater depth how specific instruments of innovative financing are transformed under the influence of regulatory changes, the green transition, social challenges and the needs of post-crisis recovery.

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