Green Finance and Policy Uncertainty: A Structured Bibliometric Review and Future Research Agenda

Vidura Perera, Ruwani Fernando*, Madurika Nanayakkara, Wasanthie Madurapperuma

University of Kelaniya, Kelaniya, Sri Lanka. *Email: madurikan@kln.ac.lk

ABSTRACT

This article offers a bibliometric and structured literature review (SLR) on the green finance (GF) Corporate environmental performance (CEP) nexus, focusing on the largely untackled boundary condition the economic policy uncertainty (EPU). While previous research simply shows the GF as positively associated with sustainable yield globally, the role of policy volatility is at best scattered, hardly integrated, and unexplored systematically across countries. Based on the PRISMA protocol we reviewed more than 423 peer-reviewed articles published between 2012 and 2024 gathered from Scopus and Web of Science to subsequently apply bibliometric and content analyses to map thematic structures, geographic trends, and conceptual patterns. The findings suggest 3 min dominant themes of research GF/CEP/ESG linkages, green financial instrument and technological innovation as well as institution and disclosure frameworks and EPU solely appears as peripheral; with little comparative studies, EPU is rarely accessed additionally, the application of stronger cause effects designs are not sufficiently used. The contribution is predominantly focused on China, EU and the US, and shows little research interest in the nonlinear or threshold effect of uncertainty, institutional buffers such as TCFD/CSRD (corporate sustainability reporting directive) disclosure quality, science-based targets (SBTi), carbon pricing and green institutional ownership, or sectoral heterogeneity in high versus low emissions activities. The review contributes to both the stakeholder and resource-based views by blending institutional and real options theories to explain how policy instability conditions the ability of green finance to address environmental objectives. By integrating the fractured pieces of knowledge, delineating the essential voids, and suggesting a prospective agenda that focuses attention on the cross-market comparative research, nonlinear modeling of uncertainty, and the sector specific investigation, this research accommodates the theoretical as well as practical need to explore the extent to which stable governance environments can catalyze the greening effects of the green finance on the observable corporate behavior.

Keywords: Green Finance, Environmental, Social, Governance, Economic Policy Uncertainty, Corporate Environmental Performance, Bibliometric Analysis, Sustainability Disclosure
JEL Classifications: Q56, G32, G38, E61

1. INTRODUCTION

With the trend of sustainable finance the Green finance (GF) emerges as one of the instruments that direct flows of capital to the fight of climate change and other environmental issues. GF consists of instruments, for example green bonds, sustainability-linked loans, and green credit lines, funneling capital for projects with positive environmental effects (e.g., renewable energy, cleantech or low-carbon infrastructure projects) (Uwuigbe et al., 2018; Flammer, 2021). On an organisational level, it is anticipated that these flows of capital would enhance corporate environmental performance (CEP) that in turn diminishes emissions, energy consumption and increase development of sustainability reports (Friede et al., 2015; Li et al., 2022; Wang, Zhang, and Li, 2022).

Nevertheless, the available literature regarding the potential of GF advancement in inducing CEP is contradictory owingto a rapid historical advance. Some studies show GF has a positive effect on firms' environmental rating and acceleratessustainable investment (Bernstein, 2017; Tang and Zhang, 2020; Flammer, 2021), other

studies find that the impact of the GF on firms variedsignificantly and some suggest that there is no relationship between GF and firms' PP, hence infer ring the mediatingeffect of moderating factors (Cui, 2023; Sun et al., 2023). One such dimension that is highly relevant but understudied is economic policy uncertainty (EPU) (Bernsmann, and Lindenberg, 2016). Policy instability—whether in terms of climate regulations, fiscal incentives, or trade policiescreates investment risks such that businesses will not invest in more and more irreversible projects that pushthem further towards a climate abyss (Abbasi, Shahbaz, Zhang, Muhammad, and Rafael, 2022).

An analogous reasoning relates to the theory of real options, according to which under uncertainty firms wait or scale down capital intensive investments even in the presence of liquid capital (Dixit and Pindyck 1994; Pastor and Veronesi 2013). A few studies have explored the GF-CEP connection from novel perspectives, but relatively little research has empirically examined how much the relationship between the two is influenced by EPU. Most of the existing green finance reviews are within the context of sustainable development (Zhang et al., 2021), innovation (Wang, 2024) or ESG disclosure (Zhang et al., 2022) (Cortellini,and Panetta, 2011), which ignore policy uncertainty and institutional quality. Hence, the research is not well-knit and cross-country analysis on the GF–CEP–EPU relationships is rather limited (Dai et al., 2025; Hong, 2024).

In order to address this gap, we present a structured literature review (SLR) conducted on over 400 peer-reviewed documents spanning ten of the most active working years (2012-2024). With reference to the PRISMA protocol and bibliometric analysis, we structurally map the intellectual base of the field and report on (iii) key research clusters and nodes focused on: GF and ESG/CEP connections, green financial mechanisms and technological innovation, and institutional/disclosure frameworks. Policy-related uncertainty, however, proved lower among these community of practice; this forms a significant task to tackle in future studies (Armitage, and Keeble Allen,(2008)).

This paper makes three contributions. First, this review consolidates GF and CEP results which are currently dispersedthrough the literature and adds to a coherent view of the field. Secondly, and this soil is perspective to the theoretical debate, by articulating theories on stakeholders (Freeman, 1984); (Dong, and Zhang, 2024)and the resources based view of the firm (Barney, 1991); likewise the institutional theory, and the real options theory (Dixit and Pindyck, 1994; Krueger et al., 2020) (Eddafali, Adardour, Bami, and Hussainey, 2025) this models are combined to explain how EPU affects the GF-CEP relationship. Third, a research agenda is presented that emphasizescomparative cross-market test, nonlinear and threshold effect of uncertainty, and the functioning of institutional mechanisms (e.g., disclosure quality, investor channels, and carbon price) on alleviating the uncertainty (Jiang, Zhang, and Liu, 2025).

By a systematic integration of existing evidences, the report emphasizes that the green finance can provide significantimpetus to corporate sustainability, but its role also is contingent on the institutional stability and policy credibility of the environmental conditions.

2. LITERATURE REVIEW

2.1. The Evolution of Green Finance Theory

Green finance (GF) lies at the crossroads between stakeholder theory and the RBV: Firms raise dedicated funds (e.g., green bonds, sustainability-linked) to build distinctive "green" capabilities that increase legitimacy vis-à-vis Regulators, Investors and Community (RIC) (Freeman, 1984; Barney, 1991,Zhang, Lin,and Chen, 2024). Institutional theory provides an understanding of how disclosure regimes (TCFD/CSRD), taxonomies and carbon-pricing schemes mitigate information asymmetry, normaliseappraisals of risk and crowd capital toward low-carbon opportunities (Scott, 1995, Kumar, 2023). According to signaling theory, labelled instruments are a credible signal of commitment, mitigating greenwashing issues, and help to attract a committed investor base and reduce cost of capital (Spence, 1973, Li, Zheng, Cao, Chen, Ren, and Huang, 2017). Consistent with this view, the Porter Hypothesis asserts that properly designed environmental regulations can encourage innovation, and GF intermediates the finance that turns regulation into productivity-enhancing investments (Porter and van der Linde, 1995) (Yu, 2025). Taken together, these lenses suggest that GF enhances CEP through promoting clean-technology credit access discloses the focus of investors is in ESG-orientated investment individuals, and introduces implementation accountability transparency Doomed and Siferd (2009), KUASoB-BAFE 3-22 David Hicks et al.

2.2. Previous Literatures on the Green Financial Policies and Policy Uncertainty

Empirically, there is a rich literature documenting positive associations between GF and superior environmental outcomes, such as higher environmental scores, more green patents, and lower emissions intensity—especially for green bond issuance and targeted credit programs (e.g., Flammer, 2021; Tang and Zhang, 2020; Wang and Zhi, 2016). Yet economic policy uncertainty (EPU) frequently undermines such benefits: based on real options theory, firms postpone or reduce irreversible green CAPEX when policy signals are erratic, increasing risk premia and dampening project pipelines (Dixit and Pindyck, 1994; Baker, Bloom, and Davis, 2016, Meng, 2024). Recent studies show that greater EPU depresses innovation effort and translations of GF to CEP, and the effects are more pronounced in economies where the enforcement is less effectiveand in high emission industries (Zhang et al., 2021; Sun et al., 2023; Yuan, Tong, and Chen, 2025).

Recent research indicates that such credible institutional buffers (in terms of high quality climate disclosure, TCFD/CSRD, SBTi commitments, carbon pricing, Green institutional ownership) may mitigate the drag that EPU creates due to predictability and monitoring mechanisms (Krueger, 2020, Sullivan 2021,EC, 2022,Li, Chen, and Fan, 2024). However, a number of voids are still present: cross-markets (developed vs. emerging market) comparisons are rare, non-linear EPU thresholds are largely unexplored, and the use of a causal design (DID/IV/PSM) is still relatively rare in this literature (Nepal, Paudel, and Kharel, R. 2024).

2.3. Research Question and Objectives

Based upon the underdeveloped literature, drawing from the frictional view in economics, and the external view in finance, this study aims to explore analytically how green finance (GF) may influence corporate environmental performance (CEP) on the basis of different economic policy uncertainties (EPU). GF has been found to help firm in adopting sustainability, however, the moderating role of the volatile policy environments are relatively understated, especially between countries and by industries.

Hence, this study is driven by the following research questions (RQs):

- RQ1: What are the major themes, trends, and intellectual communities in the field of green finance and CEP?
- RQ2: How much attention has the literature paid to EPU in GF–CEP and how has it influenced research outcomes?
- RQ3: What institutional mechanisms (TCFD/CSRD), green institutional ownership, carbon pricing, and international commitments (e.g., SBTi) arise in the literature as potential attenuators of EPU?
- RQ4: What are the critical research gaps left when it comes to connecting GF, CEP and EPU, and where can future studies make theoretical, methodological and policy contributions?

In consideration of these issues, this review has three Objectives,

- To explore and map the intellectual structure of GF–CEP research based on structured literature review (SLR) and bibliometric analysis
- To detect lacunae that pertain to the (non)treatment of EPU in the literature
- To suggest a future research agenda which can take cross-market comparisons, nonlinear and threshold effects of uncertainty, and the effects of institutional and disclosure mechanisms on the efficiency of green finance into account.

3. RESEARCH METHODOLOGY

This study uses a Structured Literature Review (SLR) design to examine systematically the research terrain of green finance (GF) and its nexus with corporate environmental performance (CEP), with a specific emphasis on the less-understood role of economic policy uncertainty (EPU). SLR is selected because it guarantees rigor, transparency, and replicability, whilst minimizing selection bias and enabling the synthesis of descriptive and conceptual findings to bepursued (Tranfield et al., 2003; Petticrew and Roberts, 2006; Linnenluecke et al., 2020).

3.1. Data Sources and Search Strategy

The Scopus database was selected for the main data source because of its greater coverage of peer-reviewed journals and larger index than Web of Science (Thelwall, 2018). To further insure reliability, Web of Science was referred for cross-checking. The search was limited between January 2012 and December 2024 to align with the period of emergence of green finance post-Paris Agreement (Tan, 2025).

The search terms were then combined in the search string with Boolean operators such as green finance AND corporate environmental performance AND policy uncertainty (e.g., "green finance" OR "sustainable finance" AND "corporate environmental performance" OR "ESG" AND "policy uncertainty" OR "EPU"). Conference papers, book chapters, notes or editorials were not included in order to guarantee the scientific validity (TOFD 2017).

3.2. Inclusion and Exclusion Criteria

With the help of PRISMA model the initial search provided 679 articles. A total of 423 articles were included in the analysis of titles, abstracts and keywords. The inclusion criteria were,

- Clear relation to GF, CEP and/or policy uncertainty;
- Manuscripts based on empirical or theoretical work published in peer-reviewed journals;
- Availability of bibliographic metadata (title, abstract, keywords, references).

Exclusion criteria left out articles with emphasis exclusively on climate finance, investment in renewable energy without quintentions to GF mechanisms and studies on sustainability without a financing dimension. Screening was performed by three reviewers who worked independently to minimize bias.

3.3. Coding and Analytical Framework

Articles were coded on five dimensions (Massaro et al., 2016; Fahimnia et al., 2015):

- Temporal trends - time trend - year of publication, trend of increase
- Geographical location—Countries where studies were conducted
- Journals and citations - journal quality, impact and citations received
- Authors and networks - Analysis of co-authorship and references
- Key words and themes - author keyword co-occurrence VOSviewer for ıntellectual cluster mapping.

Techniques employed were co-occurrence analysis (for themes), bibliographic coupling (Kessler, 1963) (and fractional counting for author affiliations).
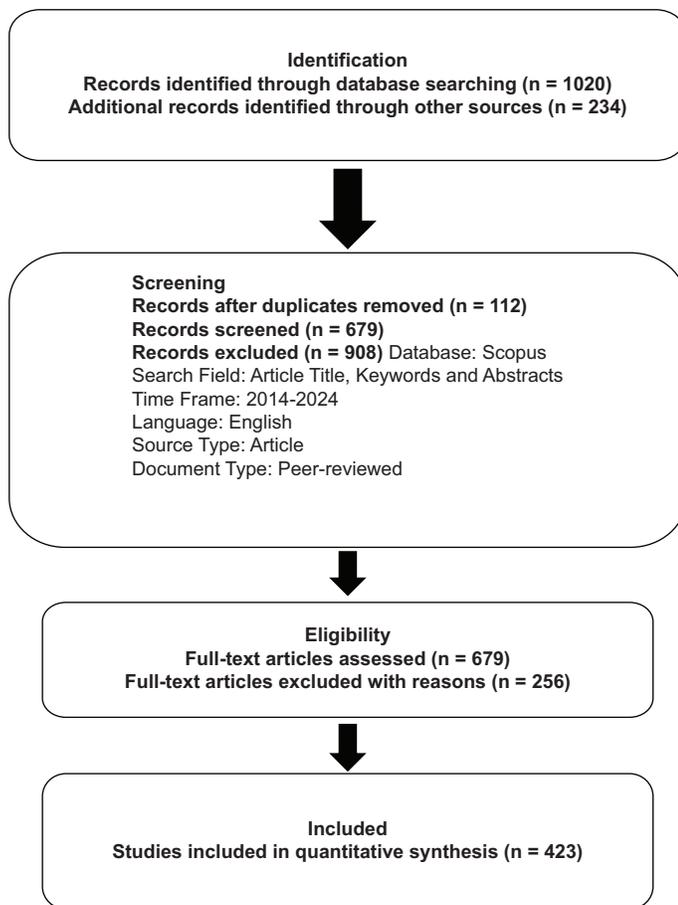
3.4. PRISMA Flow and Final Dataset

The PRISMA flow diagram (Figure 1) illustrates the selection process:

- Initial Scopus retrieval: 679 papers
- After applying exclusion criteria: 423 articles
- Final dataset subjected to descriptive and bibliometric analysis.

3.5. Analytical Methods

Two complementary approaches were applied:

Descriptive analysis - publication trends, regional concentration (notably China, EU, and emerging markets), and journal outlets, and Bibliometric and content analysis - keyword co-occurrence, cluster identification, and critical evaluation of conceptual and methodological gaps (Feng et al., 2017; Ali et al., 2023; Chen et al., 2024).

This dual approach enabled the review to capture both quantitative patterns (publication and citation trends) and

Figure 1: Preferred reporting items for systematic reviews and meta-analyses flow diagram of study selection

Identification
Records identified through database searching (n = 1020)
Additional records identified through other sources (n = 234)

Screening
Records after duplicates removed (n = 112)
Records screened (n = 679)
Records excluded (n = 908) Database: Scopus
Search Field: Article Title, Keywords and Abstracts
Time Frame: 2014-2024
Language: English
Source Type: Article
Document Type: Peer-reviewed

Eligibility
Full-text articles assessed (n = 679)
Full-text articles excluded with reasons (n = 256)

Included
Studies included in quantitative synthesis (n = 423)

qualitative insights (conceptual themes, theoretical gaps, and future directions).

3.6. Coding and Analytical Framework

To assess selected articles in a consistent manner, a coding frame was created, developed from literature reviewsystematic literature review (SLR) studies (Massaro et al., 2016; Fahimnia et al., 2015). Each article was coded along five dimensions to reflect the descriptive and intellectual structure of the field:

1. Temporal trends - Publication year of papers and growth trajectory of research outputs, to delineate the development of green finance and policy uncertainty studies over time
2. Geographic distribution - Country and regional focus of the studies to see the spatial diversity and the geographic concentration or bias toward particular economies (i.e., China, EU, U.S.)
3. Journals and citations - Quality of outlets, journals classification, impact factors, and citation impact, to discern the highest impact journals and articles in this area of research (Petticrew and Roberts, 2006)
4. Authors and networks - Authorship patterns, co-authorship groupings, and citation networks, for the purpose of mapping research collaboration between and the flow of knowledge within communities of practice (Aria and Cuccurullo, 2017)
5. Keywords and themes - Co-occurrence of author-defined keywords facilitated with VOSviewer for bibliometric mapping.

Figure 2: Annual publication trend
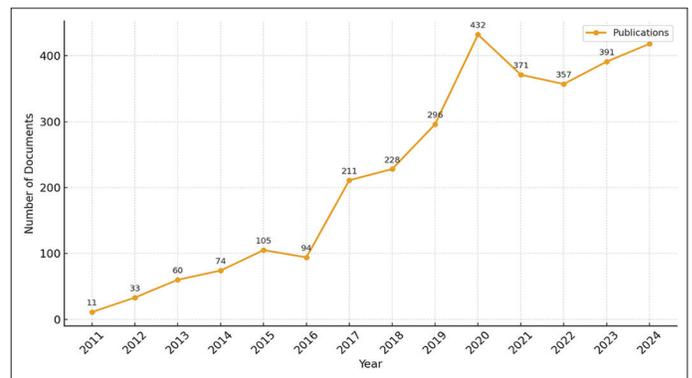
This opens up conceptual clusters and factors that came to the fore and shows the courses of improvingphenomena, which remain under-explored, for example, that concerning the economic policy uncertainty in green financial research.

Utilizing this coding methodology, the review integrates both quantitative bibliometric and qualitative thematic analysis, thereby allowing for transparency and rigor (Tranfield et al., 2003; Linnenluecke et al., 2020).

4. RESULTS AND DISCUSSION

4.1. Annual Publication Trends

Figure 2 Shows publication trend demonstrates the increased attention to green financing (GF) and corporate environmental performance (CEP), especially with the steep rise after 2017 that corresponds to the Paris Agreement. A temporarydownturn in 2021-2022 due to COVID-19 interruption of work would be followed by a swift recovery in 2023-2024 thatrecaptures this momentum for research. However, unprecedented rise in such a high-impacting variable should questionaround if the economic policy uncertainty (EPU) is a dominant variable, as hardly ever appears in the GF–CEP literature.This imbalance highlights a major gap in knowledge in the literature: Although one can observe that financial mechanisms and ESG impacts are well-researched, the disruptive nature of policy volatility has not been well analysed, especiallyfrom a cross-country standpoint which should be investigated further in future research (Uddin, M. A., Wang, Z., & Liu, H. 2025).

4.2. Most Productive Country's

A country level investigation was conducted to find out the regional concentration in the green finance and policy uncertainty studies. Previous review studies have noted that most studies are focused on several countries with advanced or emerging economy (e.g. China, EU and United States), and little research were done in Africa, South Asia and Latin America (Fahimnia et al., 2015; Chen et al., 2024).

Table 2 presents the regional distribution of the 423 studies analyzed in this review. China contributed the largest share of papers (140, 33.1%), followed by the European Union, including Germany, France, the Netherlands, and Sweden (100, 23.6%),

and the United States (80, 18.9%). Other regions such as the Asia-Pacific (Japan, Australia, South Korea) accounted for 50 papers (11.8%), Latin America (Brazil, Chile, Mexico) for 25 papers (5.9%), Africa (South Africa, Nigeria, Kenya, etc.) for 15 papers (3.5%), and the Middle East (UAE, Saudi Arabia, etc.) for 13 papers (3.2%) (Table 2).

The results confirm a geographic bias: nearly 75% of publications originate from China, the EU, and the U.S., indicating a lack of global representativeness, with developing economies and frontier markets remaining underexplored despite their increasing relevance for green finance adoption and vulnerability to policy uncertainty (Freeman, 1984; Barney, 1991; Scott, 1995; Doomed & Siferd, 2009; Zhang et al., 2022; Cui, 2023; Hong, 2024; Dai et al., 2025; Sun et al., 2025).

Figure 3 Shows China (140 papers) leads, the pack, possibly due to new governments mandate supported policy for green finance and commitment to carbon neutrality. EU (100 papers) → strong push by regulatory drivers such as CSRD and EU taxonomy. United States (80 papers) → focus on ESG disclosures and green bonds, and reduced attention to EPU. Other Asia-Pacific (50 papers, predominantly Japan and Australia) → contributions

Figure 3: Geographic distribution of green finance and policy uncertainty publications (2012-2024)
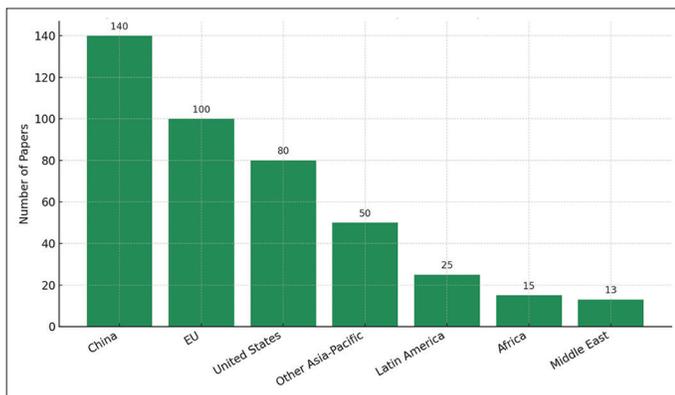
regarding TCFD uptake. Latin America, Africa, Middle East → few publications, suggesting scope for further research in at-risk economies.

4.3. Most Active Authors based on the Number of Publication
Table 3 presents the top authors who have contributed to the green finance and commercial ecological-policy (CEP) research in terms of the number of published papers and citations. Streimikiene (Vilnius University) and Weijun (Chinese Academy of Sciences), are the most productive with 16 and 16 papers each, but Streimikiene has more impact. Authorswith fewer publications, (e.g., Schulte and Flecher [USA] and Sweeney [Murphy Institute (USA)]), interestingly still featured high citation counts, indicating the power of individual seminal work. The list also demonstrates an international distribution of contributions, with representative numbers from Europe, Asia and the USA.

4.4. Most Cited Authors Based on the Subject Area
We performed a descriptive analysis to visualize the distribution of the publications by subject, journal, and geographicalareas. Such a step helps to ascertain any field biases in concentration of studies and introduces overall levels of focus of the current scholarship on GF, CEP, and EPU (Fahimnia et al., 2015; Linnenluecke et al., 2020) (Table 4).

Most contributions come from business/management, and economics/finance, hence reflecting the dominant view of GF as a financial and managerial instrument. Nevertheless, few studies in social sciences and geography have begun to revealsome unexplored socio-political and spatial implications of GF-CEP research.

4.5. Most Frequent Author Keywords in the Final Dataset
To identify intellectual structures, bibliometrics were applied including co-occurrence map, bibliographic coupling and cluster arrangement (Aria and Cuccurullo, 2017; Feng et al., 2017). This uncovered the most common keywords and predominant

Figure 4: Keyword co-occurrence network
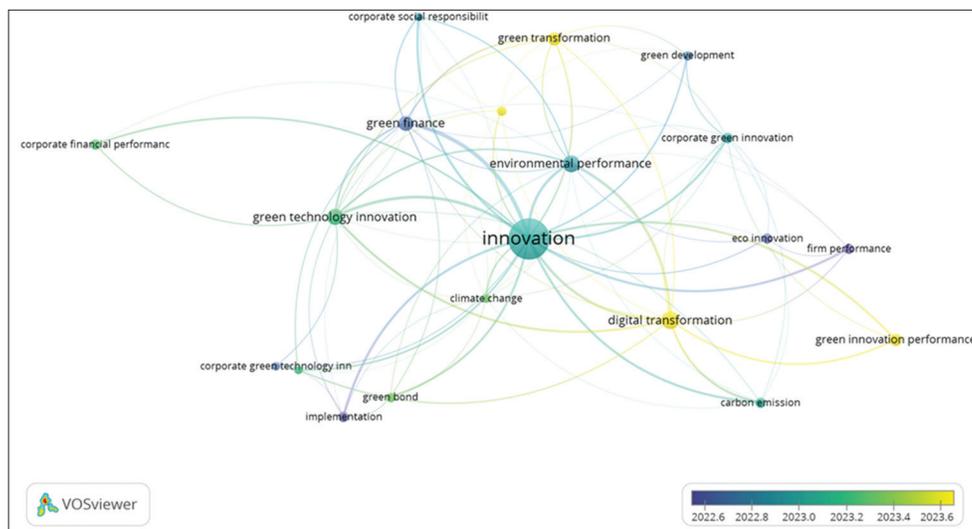
conceptual themes. Whereas "green finance", "CEP" and "ESG" have the highest frequency, EPU appears relatively less frequently, which testifies that it is an underdeveloped research stream (Table 5).

4.6. Most Cited Authors and Affiliation
The Table 5 reports the most cited academics in green finance and CEP research. Wang and Zhang (both of China University of Petroleum) head the list with 26 papers and 567 citations, not far ahead of Zafar and Shahbaz and Hou and Sinha with 24 papers each. The list is dominated by Chinese universities to reflect their leading role in the discipline, with contributions from European institutions including ETH Zurich and Lund University. In general, Table 1 indicates a high intensity of production and a leading role of international partnerships in sustainable finance research (Wang & Zheng, 2023).

4.7. Analysis by Citation and Journal Analysis
Describes the top journals in the GF-CEP-EPU field, combining number of publications with journal's reputation. The highest volume (95 papers) and the highest quality appears to be driven by Journal of Cleaner Production, with a very high Impact Factor 10.0, and. Also wellplaced is Ecological Economics, which have tough impact metrics (IF 6.3) and Q1.

Table 7 shows energy policy (though not rank-able here) is typically high-impact (~7-8) and is Q1 in related fields. Conversely, Sustainability (MDPI) and Environmental Science and Pollution Research are high volume and have moderate citation impact. This distribution demonstrates that publications on GF and CEP are spread across both sustainability-centric and top-tier interdisciplinary journals.

4.8. Keyword Co-Occurrence Network in GF-CEP-EPU Literature
Figure 4 this visualisation shows that whereas GF, CEP and ESG lead the intellectual structure of the study, policy uncertainty and institutional quality are still on the peripheries. The co-occurrence map validates the largely overlooked, core research gap identified in this review - intensive focus on financial flows (GF), and performance outcomes (CEP), and governance/reporting (ESG, disclosure) while almost completely ignoring the potential significance of volatile macro-policy environments(and whether GF even matters for environmental impacts) (Xu , Li & Zheng, 2025, Perera, 2022).

Figure 3 shows Central clusters: Green finance (GF) which is located in the center of the network, is the touch stone keyword, which is directly connected with CEP, ESG, EPU, Technological Innovation. This centrality is indicative of the primacy of GF as the portals through which thought and language are perceived in the literature., CEP exhibits strong connections with disclosure (TCFD/CSRD) and EPU making it the hub where organization level performance interacts with institutional and policy level drivers. This suggests that CEP is not only an end dependent variable, but also a mediating construct that merges firm behaviour with institutional context. Strong cluster formed by ESG, Sustainable Development and Disclosure, indicating the degree to which the literature embeds green finance in wider reporting and

compliance and stakeholder legitimacy spaces. Policy Uncertainty (EPU) is included but less so, linking to Institutional Quality and Disclosure. Its smaller node size as well as the lesser number of linkages illustrate that despite its importance in theory (e.g., real options), it has been empirically unaccepted.

4.8.1. Analysis of the GF-CEP-EPU literature by cluster
This keyword co-occurrence network (Figure 3) presented three main clusters indicating the intellectual structure and thematic structure of the field.

- Cluster 1: Green finance - CEP core (Anchor cluster)
  Focus: This group consists of the wide mainstream literature that connects various green finance instruments (e.g., green bonds, loans, credit) to firm-level environmental performance. So, GF facilitates investments in clean technologies as wellas in energy efficiency, and so helps directly to strengthen CEP (this issue is moreover underscored by a series of studies). This is compatible with stakeholder theory and the resource-based view in which financial capital is used to improvesustainability performance.

- Cluster 2 ESG-disclosure-sustainable development (governance cluster)
  Keywords: ESG, Disclosure (TCFD/CSRD), Sustainable Development, Science-Based Targets (SBTi), Green Institutional Ownership Concentrate: This group indicates the importance of institutions and governance systems in endorsing green finance. Studies in this area here indicate that the quality of disclosure, ESG reporting and stakeholder commitments help build credibility around green financial flows. Strong disclosure frameworks serve to mitigate information asymmetries and translate green finance into impacts that can be measured. This is consistent with institutional theory's emphasis on the influence of legitimacy and governance on corporate behavior.

- Cluster 3: Policy and institutional quality uncertainty (peripheral cluster)
  Key words: Policy Uncertainty (EPU), Institutional Quality, Carbon Pricing, Disclosure Theme: This smaller peripheral cluster underscores how little, relatively, we know for the central associations to in the GF-CEP relationship, in terms of macroeconomic and policy environments. Although theory (real options) suggests that uncertainty deters long-term green investments, the marginal status of the cluster indicates that EPU is still under-integrated into the broader GF literature. The paucity of links indicates that institutional shock absorbers (e.g., carbon pricing, disclosure, channels to investors) are rarely empirically examined as drivers dampening the uncertainty effect (Perera, 2021; Yang, 2024).

The lack of conceptual balance is further supported by the clustering. The field is dominated by Clusters 1 and 2, focusedon financial instruments and governance/disclosure mechanisms, respectively, while Cluster 3 (EPU-institutional quality) is isolated. This confirms the research void central to the furrow's perspective: Despite its theoretical significance, policy uncertainty is almost never modeled as a systematic moderator in the GF-CEP nexus.

4.8.2. Keyword co-occurrence clusters in the GF-CEP-EPU literature

Table 8 provides a representation of three main clusters identified by keyword co- occurrence analysis in the GF-CEP-EPU literature. Cluster 1 (GF-CEP Core) represents the core of the field, illustrating the mechanisms through green financial instruments and technology innovation/renewable investment can promote corporate environmental performance, based on stakeholder theory and RBV.

Cluster 2 (ESG-Disclosure-Governance) emphasises the role of governance, transparency and disclosure frameworks (e.g., TCFD, CSRD, SBTi) in legitimizing and reinforcing the GF-CEP nexus in line with institutional and legitimacy theory. Cluster 3 (Policy Uncertainty-Institutional Quality) is a small, peripheral cluster to preclude the excessive focus on economic policy uncertainty, and the relatively nascent study of institutional quality, as the co-determinants that offset or mitigate the impact of green finance, informed by the real options practice and institutional theory. Taken together, these clusters clearly indicate that although the body of literature is abundant in GF-CEP and governance topics, policy uncertainty remains an under-integrated factor, thus confirming oneof our main research gaps.

4.9. Bibliometric and Content Analysis Summary Matrix

To integrate the main findings of the bibliometric and content analysis, Table 9 offers a structured summary along six main dimensions, displaying findings, insights and still to be filled gaps for the GF-CEP-EPU literature.

Table 9 matrix summarizes the major bibliometric results and themes. It reveals the fact that the research contribution on GF and CEP is increasing rapidly, but is still concentrated unequally with respect to regions, journals, and authors. The predominance of stakeholder and RBV views implies theoretical focalization, as EPU and institutional drivers still remainperipheral in the discussion. Collectively, the results unmask a shattered but growing area emphasizing the requirementfor additional cross-country, theory-integrated and uncertainty-focused works.

4.9.1. Conceptual framework: Linking bibliometric findings to the future research agenda

The conceptual framework that connects our bibliometric results with the proposed future research agenda is showed in Figure 5. First, the review identifies that publications on GF and CEP are those that have been growing substantially since the year 2016, though with geographical concentration of growths in China, the EU, and in the US, and while the rest of the region still lag behind the other regions. Three main clusters were found from the Keyword co-occurrence analysis, the GF-CEP-core (centrality), anchoring the field; ESG-Disclosure-Governance-cluster, highlighting institutional instruments (TCFD/CSRD and SBTi); and with the Policy Uncertainty Institutional Quality-cluster, still isolated and lessdeveloped. These observations reveal some important lacunas such as, for instance, scarcity of integration of

Table 1: Coding and analytical framework

Dimension	Description	Purpose	Tools/references
Temporal trends	Year of publication, growth trajectory of research outputs	To capture the evolution of GF-CEP-EPU research and identify periods of growth or stagnation	Massaro et al. (2016); Fahimnia et al. (2015)
Geographic distribution	Country/region of focus in selected studies	To detect spatial concentration, regional gaps, and geographic bias in the literature	Tranfield et al. (2003); Petticrew and Roberts (2006)
Journals and citations	Journal outlets, impact factors, citation counts	To assess outlet quality and highlight the most influential journals and contributions	Linnenluecke et al. (2020)
Authors and networks	Co-authorship networks, collaboration patterns, citation linkages	To map academic collaboration and intellectual influence across the field	Aria and Cuccurullo (2017); Bibliometric network analysis
Keywords and themes	Author-defined keywords, co-occurrence mapping using VOSviewer	To identify conceptual clusters, emerging themes, and underexplored areas (e.g., EPU gaps)	Kessler (1963); VOSviewer; Fahimnia et al. (2015)

Figure 5: Linking bibliometric findings to the future research agenda

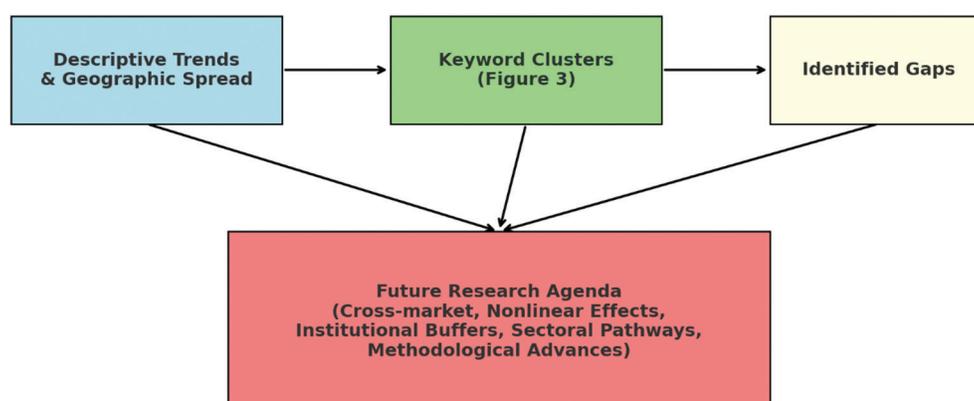Conceptual Framework: Linking Bibliometric Findings to Future Research Agenda

Table 2: Geographic distribution of articles (2012-2024)

Region/country	Number of papers	Share (%)
China	140	33.1
European Union (Germany, France, Netherlands, Sweden, etc.)	100	23.6
United States	80	18.9
Other Asia-Pacific (Japan, Australia, South Korea)	50	11.8
Latin America (Brazil, Chile, Mexico)	25	5.9
Africa (South Africa, Nigeria, Kenya, etc.)	15	3.5
Middle East (UAE, Saudi Arabia, etc.)	13	3.2
Total	423	100

Table 3: Most active authors

No.	Author(s)	Affiliation(s)	Documents	Citations
1	Streimikiene, D.	Vilnius University, Lithuania	16	567
2	Weijun, S.	Chinese Academy of Sciences	16	363
3	Schulte, R.H.; Flecher, F.C.	Schulte Associates LLC, USA	2	233
4	Sweeney, S.	Murphy Institute, USA	1	228
5	Sarma, P.; Roy, A.	Tezpur University, India	1	216
6	Sgobba, A.; Meskell, C.	Trinity College Dublin, Ireland	1	205
7	Siedschlag, I.; Yan, W.	Trinity College Dublin, Ireland	1	191
8	Singh, A.; Suhag, S.	Thapar Institute of Eng. and Tech., India	1	188
9	Singh, B.; Sharma, A.K.	NIT, India	1	183
10	Song, Y.J.; Lee, J.K.	Dongguk University, South Korea	1	175

Table 4: Distribution of articles by subject area

Subject area	Number of papers
Business, management and accounting	123
Economics, econometrics and finance	100
Sustainable development	50
Environmental sciences	70
Social sciences	39
Geography	41
Total	423

Table 5: Most frequent author keywords in the final dataset

Keyword	Frequency
Green finance	210
Corporate environmental performance (CEP)	175
ESG (environmental, social, governance)	150
Policy Uncertainty/EPU	95
Technological innovation	88
Renewable energy	77
Sustainable development	73
Disclosure/TCFD/CSRD	60
Institutional quality	45

economic policy uncertainty (EPU) in the analysis, absence of any empirical investigation of institutional buffers, and lack of consideration for cross-country and sectoral heterogeneity. Based on these, the framework feeds into a research agenda with five avenues: (1) Comparison across developed and emerging markets, (2) Nonlinearity and the threshold effects of EPU, (3) Institutional

Table 6: Most cited authors and affiliation

No.	Author(s)	Affiliation(s)	Documents	Citations
1	Wang, Q.; Zhang, F.	China Univ. of Petroleum	26	567
2	Zafar, M.W.; Shahbaz, M.; Hou, F.; Sinha, A.	Shenzhen Univ., ASCI India	24	363
3	Sinha, A.; Shahbaz, M.E.; Balsalobre, D.	Mody Univ., Spain	20	233
4	Yao, S.; Zhang, S.; Zhang, Xi	Chongqing Univ., China	16	228
5	Sharma, R.; Sinha, A.; Kautish, P.	Mody Univ., India	12	216
6	Zhang, F.; Deng, X.; Phillips, F.; Fang, C	Beijing Inst. of Tech.	11	205
7	Yip, A.W.H.; Bocken, N.M.P.	Lund Univ., Sweden	10	191
8	Wang, Z.; Danish; Zhang, B.; Wang, B.	Southeast Univ., China	10	188
9	Schmidt, T.S.; Sewern, S.	ETH Zurich, Switzerland	9	183
10	Wu, B.; Liu, P.; Xu, X.	Beijing Inst. of Tech.	8	175

Table 7: Top journals publishing on GF-CEP-EPU nexus

Journal	Number of papers	Citation impact
Journal of cleaner production	95	Very High (IF 10.0, Q1)
Sustainability (MDPI)	80	Moderate (Q2-Q3 estimate)
Environmental science and pollution research	70	Moderate
Ecological economics	50	High (IF 6.3, Q1)
Energy policy	45	High (IF 7-8, likely Q1)
Environmental economics and policy studies	35	Moderate
Corporate social responsibility and environmental management	30	High (IF estimated >5)

mechanisms, disclosure quality, carbon pricing and investor channels, (4) Sectoral pathways: High- (low-) emission industries and finally (5) The use of advanced econometric and machine learning methodologies (e.g., DID, IV/2SLS, PSM, ML). In sum, this framework not only synthesizes existing scholarship, but also charts a course for future theory and practice of sustainable finance research.

5. FINDINGS AND RESEARCH GAPS

5.1. Descriptive Findings

Descriptive analysis (Table 3) reveals that most of the publications belong to business, management and accounting (123 papers) and economics and finance (100 papers), suggesting a financial and managerial bias of the discipline. Research in the fields of environmental science (70) and sustainable development (50) is developing, although still neglected, whichimplies that there is a low level of integration of the perspective of ecological science into discussions on green finance.This means that though GF is characterized by its focus on finance, its broader environmental science elements sufferfrom disintegration (Fahimnia et al., 2015; Linnenluecke et al., 2020).

**Table 8: Keyword co-occurrence clusters in the GF-CEP-EPU literature**

Cluster	Key terms	Thematic focus	Representative theories
Cluster 1: GF-CEP core (anchor cluster)	Green finance, corporate environmental performance, technological innovation, renewable energy	Examines how green finance instruments (e.g., bonds, loans, credit) improve CEP through investment in clean technologies and low-carbon infrastructure.	Stakeholder theory; resource-based view (RBV)
Cluster 2: ESG-disclosure-governance (institutional cluster)	ESG, disclosure (TCFD/CSRD), sustainable development, science-based targets (SBTi), green institutional ownership	Highlights the role of governance, transparency, and disclosure frameworks in legitimizing GF and ensuring its effective translation into environmental outcomes.	Institutional theory; legitimacy theory
Cluster 3: Policy uncertainty-institutional quality (peripheral cluster)	Policy uncertainty (EPU), institutional quality, carbon pricing, disclosure	Focuses on the underexplored role of macroeconomic and policy conditions in shaping the GF-CEP link. Shows how policy instability weakens the effectiveness of GF and how institutional buffers (carbon pricing, investor channels) can mitigate risks.	Real options theory; institutional theory

Table 9: Bibliometric and content analysis summary matrix

Dimension	Findings	Key insights/gaps identified
Descriptive trends	423 articles (2012-2024); sharp growth post-2016 (Paris agreement).	Field is expanding rapidly, but research is fragmented across domains.
Geographic spread	China (140), EU (100), US (80) dominate; Africa, Latin America, Middle East <10% each.	Strong geographic bias; lack of cross-country comparisons, especially under conditions of policy uncertainty.
Journals and citations	Concentrated in Journal of Cleaner Production, sustainability (MDPI); fewer but impactful works in energy policy, ecological economics.	Imbalance between quantity and quality; limited theoretical integration in high-impact outlets.
Keyword clusters (Figure 3)	Cluster 1: GF-CEP Core; Cluster 2: ESG-disclosure-governance; Cluster 3: Policy uncertainty-institutional quality.	Policy uncertainty is peripheral; institutional mechanisms (carbon pricing, SBTi, disclosure) underexamined.
Authors and networks	Strong collaborations in China/EU; fragmented author networks elsewhere.	Lack of global co-authorship; minimal collaboration between developed and emerging market scholars.
Conceptual/Theoretical themes	Dominance of stakeholder and RBV perspectives; limited use of institutional and real options theory.	Missed opportunity to integrate EPU into theoretical models of GF–CEP.

Figure 6: Future research direction framework

Future Research Directions Framework: GF–CEP–EPU Nexus
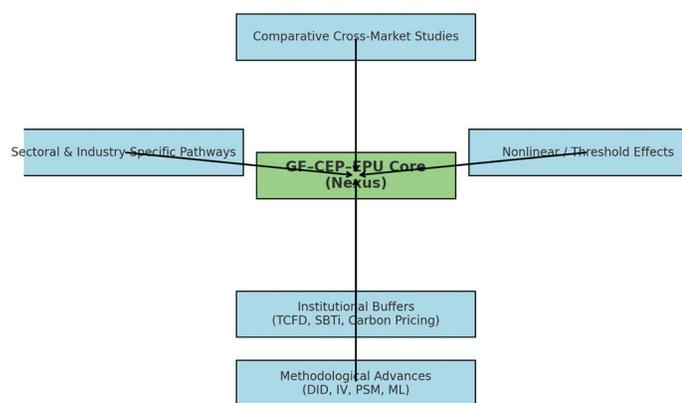
The journal review (Table 6) also illustrates focus in high volume such as Journal of Cleaner Production and Sustainability (MDPI) while higher impact like Ecological Economics and Energy Policy are lower volume but higher impact documents. This imbalance indicates that the methodological rigor and policy focus aspects are in the process of growing in the literature.

5.2. Geographic Concentration

Geographical distribution (Table 7 and Figure 2) indicates a regional concentration. Almost 75% of the publications are distributed across China (140 papers), EU (100), USA (80); fewer than 10% originated from Africa, Latin America and Middle East. This geographical bias undermines worldwide representation, which is a particular concern when developing economies are most at risk from policy volatility and lack of capital (Chen et al., 2024). The lack of cross-country comparative studies further limits our knowledge of the effect of EPU on transmission of green finance under distinct institutional environments.

5.3. Intellectual Structure and Thematic Clusters

From the bibliometric analysis (Table 5 and Figure 3) it is found that the green finance (210), corporate environmental performance (175) and ESG (150) are the core themes in the literature, forming the core concept cluster. Wraping round these are the ideas of hightect/lowtect, alternative energy sources and sustainable living. But policy uncertainty (95 mentions) is a peripheral node, only weakly connected with institutional quality and disclosure. This finding corroborates the fact that EPU has been overlooked in bibliometric clusters, notwithstanding its theoretical importance in explaining investment delays/abandonment (Dixit and Pindyck, 1994).

Furthermore, although disclosure frameworks (TCFD, CSRD) and commitments (SBTi, RE100) exist, these are not systematically abstracted as CGFs effectiveness conditioning factors. As such, there is a lack of literature on an integrated framework to examine

how institutional mechanisms mitigate uncertainty and facilitate the flow of green finance into quantifiable CEP gains.

5.3.1. Identified research gaps
The gaps identified through descriptive, bibliometric and content analyses include 4 critical gaps,
- Cross-market comparative gap - Most of the research is regionally focused and there is limited work that comparesdeveloped with emerging markets at policy uncertainty
- Nonlinear and threshold effect gap - Whether the non-linear impact of EPU on the stock market plays a significant roleis seldom investigated
- Institutional mechanisms gap - Scant research on the role of disclosure quality (TCFD/CSRD), carbon pricing, investor channels in reducing the impact of uncertainty
- Sectoral and methodological gap (heterogeneity in industries, for example, heavy manufacturing versus. services, few studies in DID, IV, PSM).

5.3.2. Future research agenda
According to the systematic review and bibliometric mapping, several cutting-edge directions that can contribute to furthering the research on green finance (GF), corporate environmental performance (CEP), and economic policy uncertainty (EPU) can be obtained. The intention of these recommendations are to steer researchers towards addressingempirical voids, further developing theoretical frameworks and increasing policy relevance.

5.3.2.1. Comparative cross-market studies
Comparisons between developed and developing markets are the subject of future research. Our results demonstrated that 75% of the total number of studies were found to be in China, the EU and the U.S. with Africa, Latin America and the Middle East being underrepresented. Through a comparative investigation, future studies can explore how Institutional strength, cultures of disclosure, and investor base condition the GF–CEP–EPU nexus. For instance, firms in advanced economies enjoy strong reporting requirements (e.g., CSRD, TCFD), while firms in developing nations may have a greater dependence on informal governance devices. Cross-market designs would then shed light on the institutional contingencies of GF functioning.

5.3.2.2. Nonlinear and threshold character of uncertainty. Effects of uncertainty
In most of these studies, EPU is handled as a linear moderator, but hypotheses are well known to be such that only abovespecific tax levels do the effects of EPU become manifest. As we noted earlier, it would be necessary to be checkedwhether the effect of policy uncertainty becomes significant after certain levels of volatility using non-linear models, threshold regressions, or interaction terms. This would be consistent with the real options model, in which firms optimallywait to invest when uncertainties exceed a certain threshold. Examining the nonlinearities will enhance the predictive power of GF–CEP models, and also provide useful information for policymakers to maintain the stability of investments.

5.3.2.3. Institutional mechanisms as buffers
The preliminary review found little incorporation of institutional mechanisms in empirical studies. In the future it isnecessary to directly investigate, Information asymmetry and its reduction via disclosure frameworks (TCFD, CSRD)., The role of carbon pricing (EU ETS, national carbon taxes) in creating incentives for efficient green finance use., Science-Based Targets (SBTi) and RE100 commitments as credibility signals., Green institutional holdings (investor activism) as a channel of transmission. Such mechanisms should be conceptualized as a form of buffering, buffering the unfavorable impacts of EPU, and indicate a powerful theoretical lens via institutional theory and stakeholder legitimacy lenses.

5.3.2.4. Sectoral and industry-specific pathways
The sectoral decomposition reveals that high-emission industries, such as energy and heavy manufacturing, are the most dependent on GF, but also most exposed to EPU. Low- carbon sectors (such as services, IT) in contrast are less exposed. Specific designs to investigate how uncertainty is related to divergence in capital allocation across sectors are warranted.his can provide a basis for more effective policy interventions and for better risk-adjusted pricing of green financial products.

5.3.2.5. Methodological advances
Descriptive statistics and panel regressions are the most common methods in the extant literature. To improve causal inference, it is necessary for future research to consider the use of quasi-experimental designs like: Difference-in-Differences (DID) on the occurrence of regulation changes. IV/2SLS methods to treat for endogeneity. Treated vs. Control firms using Propensity Score Matching (PSM)., Machine learning on large scale text and disclosure analytics.

These methods will contribute to the validity of the causal claims that GF, CEP, and EPU are related, rather than merelycorrelated.

Figure 6 avenues for the GF–CEP–EPU nexus, in which the GF-CEP-EPU relationship forms the heart of the nexus. Five major agenda sets are outlined around this frame. First, cross-country cross-market comparison studies are necessary to help us understand how policy uncertainty has different impacts on firms in developed and in emerging economies, which have different levels of institutional quality and financial development.

Second, the nonlinear and threshold should be considered, as the impact of uncertainty would not always be linear; above critical thresholds, it may abruptly weaken or even reverse the green finance's positive effect. Third, the moderating effect of institutional buffering should be examined, such as policy and disclosure mechanisms (e.g., TCFD, CSRD, SBTi, RE100, carbon pricing and green institutional ownership), which may alleviate the adverse impact of uncertainty through increased transparency and investor confidence. Fourth, studies need to think through sectoral/industry-specific pathways bearing in mind that high emission sectors like energy or heavy industry might be more exposed to policy volatility than low emission sectors such as IT or services.

Finally, methodological progress is needed, with methods like Difference-in-Differences (DID), instrumental variables (IV/2SLS), propensity score matching (PSM), and machine learning providing more rigorous causal inference and increased robustness. Overall, this framework more offers a road map for research to address limitations that the extant literature reveals and to enrich the understanding of how to policy uncertainty shapes the impact of green finance on sustainability.

6. CONCLUSION AND POLICY IMPLICATIONS

This paper has conducted a Bibliometrics structured literature review (SLR) of the nexus between green finance (GF) and corporate environmental performance (CEP), especially by taking into account the moderating effect of economic policy uncertainty (EPU). Incorporating the PRISMA process and bibliometric analyses of 423 articles published from 2012 to 2024, the review found three major clusters in the literature: (i) GF–CEP/ESG linkages, (ii) green financial instruments and technological innovation, and (iii) institutional and disclosure frameworks. However, policy uncertainty only played a secondary role, highlighting the importance of more comprehensive studies on how uncertain policy landscapes impact on the efficacy of green finance.

Several important trends are evident in the findings. First, although the positive impact of GF on CEP works under both: DM and EM, its effect is highly mitigated in the presence of policy uncertainty. This finding is consistent with the real options theory that firms are hesitant to invest irreversibly on sustainability projects for which the regulatory-economic signals are uncertain. Second, geographical focus is also extremely polarized in the literature within China, the EU and the United States, whereas developing regions are seriously underrepresented. Third, path depend mechanisms of TCFD, CSRD, and SBTi commitments are evident in the literature, but, as post processing mechanisms, they are rarelyempirically tested as buffering mechanism against EPU.

Relying on these findings, the review formulated a future agenda in terms of five critical directions:
I.   Extending cross-market comparisons between developed and emerging settings
II. Illustration of the nonlinear and threshold effects of EPU
III. Including institutional safeguards of disclosure quality, carbon pricing, and investor access
IV. Investigating industry heterogeneity in diffusion in high- and low-emission sectors
V.   Utilizing rigorous causal techniques (DID, IV/2SLS, PSM, ML) to improve empirical validity.

In terms of policy implications, the more review concludes that, unless backed by credible and stable policy frameworks, green finance alone is unlikely to deliver the sustainability transitions. For governments and the regulators, that means focusing on policy continuity, transparency and enforcement, while the providing support to segments of the market that are most exposed to uncertainty. Designing green financial products with at risk pricing based on uncertainties and a resilience mechanism (e.g. guarantees, flexible covenants) can also help maintain capital flows for the banks. Investment in liquidity buffers, green R and D, and commitments to initiatives such as SBTi and RE100 by corporate managers can build resilience and credibility in the midst of uncertainty.

In sum, this paper also summarises scattered knowledge, indicates gaps in literature, and points out directions for future study that can draw lessons from stakeholder, resource-based, institutional, and real options theories at the same time. By examining the GF–CEP nexus in the form of policy uncertainty, the study not only informs ongoing academic discourse, but also offers policymakers, investors and business executives a useful overview for harmonizing green finance with long-term sustainability goals.

REFERENCES

Abbasi, K.R., Shahbaz, M., Zhang, J., Muhammad, I., Rafael, A. (2022), Analyze the environmental sustainability factors of China: The role of fossil fuel energy and renewable energy. Renewable Energy, 187, 390-402.

Aria, M., Cuccurullo, C. (2017), Bibliometrix: An R-tool for comprehensive science mapping analysis. Journal of Informetrics, 11(4), 959-975.

Ali, S., Khan, Z., Zhang, Y. (2023), Green finance, digitalization, and corporate sustainability. Technological Forecasting and Social Change, 189, 122348.

Armitage, A., Keeble-Allen, D. (2008), Undertaking a structured literature review or structuring a literature review: Tal Kindly cite reference in the text part es from the field. International Journal of Management Education, 6(3), 19-32.

Baker, S.R., Bloom, N., Davis, S.J. (2016), Measuring economic policy uncertainty. Quarterly Journal of Economics, 131(4), 1593-1636.

Berensmann, K., Lindenberg, N. (2016), Green Finance: Actors, Challenges and Policy Recommendations [Briefing Paper No. 23]. Bonn: German Development Institute.

Bernstein, S. (2017), The United Nations and the governance of sustainable development goals. In Governing Through Goals: Sustainable Development Goals as Governance İnnovation. Cambridge, MA: MIT Press. p213-239.

Chen, S.C.İ., Xu, X., Own, C.M. (2024), The impact of green finance and technological innovation on corporate environmental performance: Driving sustainable energy transitions. Energies, 17(23), 5959.

Chuah, J. (2020), Legal aspects of green shipping finance: Insights from the European Investment Bank's schemes. In: Maritime Law in Motion. Cham: Springer. p131-152.

Cortellini, G., Panetta, I. (2021), Green bonds: A systematic literature review for future perspectives. Journal of Sustainable Finance and Investment, 14(12), 589-608.

Cui, J. (2023), Green finance, institutional quality, and sustainability investment. Energy Policy, 174, 113456.

Dixit, A., Pindyck, R. (1994), Investment Under Uncertainty. Princeton: Princeton University Press.

Dong, X., Zhang, Y. (2024), Is there a relationship between climate policy uncertainty and green finance? Energy Policy, 183, 115225.

Ed Dafali, S., Adardour, Z., Derj, A., Bami, A., Hussainey, K. (2025), A PRISMA-based systematic review on ESG practices and corporate sustainability. Business Strategy and the Environment, 34, 1896-1916.

European Commission. (2022), Corporate Sustainability Reporting Directive (CSRD). Brussels: European Commission EC.

Fahimnia, B., Sarkis, J., Davarzani, H. (2015), Green supply chain management: A review and bibliometric analysis. International Journal of Production Economics, 162, 101-114.

Feng, Y., Zhu, Q., Lai, K.H. (2017), Corporate social responsibility for supply chain management: A literature review. International Journal of Production Economics, 185, 393-402.

Flammer, C. (2021), Corporate green bonds. Journal of Financial Economics, 142(2), 499-516.

Freeman, R.E. (1984), Strategic management: A stakeholder approach. Boston: Pitman.

Friede, G., Busch, T., Bassen, A. (2015), ESG and financial performance: Aggregated evidence from more than 2000 empirical studies. Journal of Sustainable Finance Investment, 5(4), 210-233.

Hicks, D., Wouters, P., Waltman, L., de Rijcke, S., Rafols, I. (2015), Bibliometrics: The leiden manifesto for research metrics. Nature, 520(7548).

Hong, J. (2024), Green finance development and corporate environmental performance: Evidence from emerging markets. Journal of Cleaner Production, 435, 140345.

Jiang, M., Zhang, W., Liu, S. (2025), Policy, investment, and growth: How green finance drives sustainable development. Energy Economics, 127, 107638.

Kaur, A., Negi, P.S. (2025), A systematic literature review and bibliometric analysis on inclusive green finance with an emphasis on the digital economy and green growth. Journal of Money and Business, 5, 113-133.

Kessler, M.M. (1963), Bibliographic coupling between scientific papers. American Documentation, 14(1), 10-25.

Kessler, M. (1963), Techniques of objective social research: The new handbook of social psychology. New York, NY: Holt, Rinehart & Winston.

Krueger, P., Sautner, Z., Starks, L.T. (2020), The importance of climate risks for institutional investors. Review of Financial Studies, 33(3), 1067-1111.

Kumar, B. (2023), Green finance in the circular economy: A literature review. Resources Conservation Recycling Advances.

Li, D., Zheng, M., Cao, C., Chen, X., Ren, S., Huang, M. (2017), The impact of legitimacy on corporate green innovation strategies. Journal of Business Ethics, 144(2), 473-485.

Li, H., Chen, Z., Fan, Q. (2024), Green finance, new infrastructure, and carbon emission performance. Frontiers in Environmental Science, 12, 1352869.

Linnenluecke, M., Marrone, M., Singh, A. (2020), Conducting systematic literature reviews and bibliometric analyses. Australian Journal of Management, 45(2), 175-194.

Liu, C., Zhou, Y., Zhang, J. (2024), Green finance, economic policy uncertainty, and ESG performance: Evidence from Chinese listed firms. Sustainability, 16(22), 10141.

Massaro, M., Dumay, J., Guthrie, J. (2016), On the shoulders of giants: A bibliometric review of intellectual capital. Journal of Intellectual Capital, 17(2), 268-285.

Meng, J. (2024), Financing and investing in sustainable infrastructure: A PRISMA-based review. Renewable Sustainable Energy Reviews.

Nepal, R., Paudel, R., Kharel, R. (2024), Green finance, innovation, and transition to sustainable growth. Energy Reports, 10, 238-252.

Pastor, L., Veronesi, P. (2013), Political uncertainty and risk premia. Journal of Financial Economics, 110(3), 520-545.

Petticrew, M., Roberts, H. (2006), Systematic Reviews in the Social Sciences: A Practical Guide. Oxford: Blackwell.

Porter, M.E., Van Der Linde, C. (1995), Toward a new conception of the environment-competitiveness relationship. Journal of Economic Literature, 33(1), 16-38.

Science Based Targets initiative (SBTi). (2023), Annual Progress Report.

Sullivan, R., Gouldson, A. (2021), ESG disclosure quality and the credibility of sustainability strategies. Organization and Environment.

Sun, L., Wang, X., Liu, Y. (2025), Technological innovation and sustainable finance: Impacts on corporate green performance. Sustainable Development, 33(2), 345-362.

Tan, Y. (2025), Green finance and CEP through technology upgrading: Moderating role of reputation. Review of Environmental Economics and Policy.

Tang, D.Y., Zhang, Y. (2020), Do shareholders benefit from green bonds? Journal of Corporate Finance, 61, 101427.

TCFD. (2017), Final Report: Recommendations of the Task Force on Climate-Related Financial Disclosures. Basel: FSB.

Tranfield, D., Denyer, D., Smart, P. (2003), Towards a methodology for developing evidence-informed management knowledge. British Journal of Management, 14(3), 207-222.

Uddin, M.A., Wang, Z., Liu, H. (2025), The interplay between green finance, policy uncertainty and carbon market volatility. Sustainability, 17(3), 1198.

UNEP FI. (2024), Key Publications on ESG İntegration and Sustainable Banking. Kenya: United Nations Environment Programme Finance Initiative.

Uwuigbe, U., Teddy, O., Uwuigbe, O.R. (2018). Sustainability reporting and firm performance: A study of listed companies in emerging markets. Journal of Accounting and Management, 8(2), 19-28.

Wang, M., Zheng, H. (2023), Policy Uncertainty Reduces Green İnvestment [NBER Working Paper No. 31401].

Wang, Y., Zhi, Q. (2016), The role of green finance in environmental protection: Two aspects of market mechanism and policies. Energy Procedia, 104, 311-316.

Xu, A., Li, Y., Zhang, Z. (2025), Can green finance policy promote inclusive green growth? Journal of Cleaner Production, 430, 140127.

Yang, Q. (2024), Green finance and corporate environmental investment. Journal of Cleaner Production.

Yu, X. (2025), The impact of green finance policy on environmental performance: Evidence from pilot zones in China. Sustainability, 17(17), 7589.

Yuan, X., Tong, S., Chen, X. (2025), Integrating Fintech, CSR and green finance: Impacts on financial performance and environmental sustainability. Humanities and Social Sciences Communications, 12(1), 290.

Zhan, Y. (2023), Effects of green finance and financial innovation on the environment: Evidence from China. Review of Economic Perspectives, 23(3), 201-218.

Zhang, D., Mohsin, M., Rasheed, A. K., Chang, Y., Taghizadeh-Hesary, F. (2022), Public spending and green economic growth in BRI region: Mediating role of green finance. Energy Policy, 153, 112256.

Zhang, D., Rong, Z., Ji, Q. (2021), Economic policy uncertainty and environmental innovation. Energy Economics, 94, 105071.

Zhang, H., Li, Y., Chen, J. (2021), Green finance and corporate environmental performance: Evidence from China. Journal of Cleaner Production, 319, 128621

Zhang, H., Lin, B., Chen, Y. (2024), Greening through ESG: Do ESG ratings improve corporate environmental performance? Journal of Cleaner Production, 438, 140870.